



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

November 17, 1978

Docket Nos. 50-277
and 50-278

Mr. Edward G. Bauer, Jr., Esquire
Vice President and General Counsel
Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Dear Mr. Bauer:

We have completed our review of your August 12, 1977 submittal which responds to staff requests for additional information on Peach Bottom, Units 2 and 3 fire protection. The additional information you provided in response to previous staff positions was also considered in our review. We have found that your submittals have not resolved all staff concerns on the adequacy of the Peach Bottom fire protection program and that, in some cases, further evaluation is required to permit us to judge the adequacy of your program.

We have taken several staff positions to resolve our concerns. These positions are listed in Enclosure 1. In order to resolve these concerns, we request that you address each of these items in one of the following ways:

1. Commit to implement the staff positions;
2. Propose an alternative method to resolve the staff concern; or
3. Provide the basis by which the present fire protection program addresses the concern without further action.

We request that you address the staff positions as described above within 30 days of the receipt of this letter. For those positions requiring an evaluation, you should provide the analysis within 90 days. Further, your submittal should include a schedule for completion of the modifications to which you agree.

Sincerely,

7811290078

Thomas A. Appolito
Thomas A. Appolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosures and ccs:
See next page

Philadelphia Electric Company

- 2 -

November 17, 1978

Enclosure: Staff Positions on
Fire Protection

cc w/enclosures:

Eugene J. Bradley
Philadelphia Electric Company
Assistant General Counsel
2301 Market Street
Philadelphia, Pennsylvania 19101

Troy B. Conner, Jr.
1747 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

Raymond L. Hovis, Esquire
35 South Duke Street
York, Pennsylvania 17401

Warren K. Rich, Esquire
Assistant Attorney General
Department of Natural Resources
Annapolis, Maryland 21401

Government Publications Section
State Library of Pennsylvania
Education Building
Commonwealth and Walnut Streets
Harrisburg, Pennsylvania 17126

M. J. Cooney, Superintendent
Generation Division - Nuclear
Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Edward G. Greenman
Nuclear Regulatory Commission
Office of Inspection and Enforcement
631 Park Avenue
King of Prussia, Pennsylvania 19406

ENCLOSURE 1

STATEMENT OF STAFF POSITIONS

PEACH BOTTOM, UNITS 2 AND 3

PF-16 (Rev.)	Control Room Complex - Fire Protection
PF-18 (Rev.)	Fire Barrier Electrical and Mechanical Penetration Seal Qualification
PF-21 (Rev.)	Cable Spreading Room - Fire Protection
PF-24 (Rev.)	Radwaste Building: Fire Zones 4B, 4C, 12B and 12C - Fire Protection
PF-26	Safe Shutdown Analysis
PF-27	Smoke Detection Systems Tests
PF-28	Supervision of Fire Doors
PF-29	Emergency Switchgear Rooms - Fire Protection
PF-30	Station Battery Rooms - Fire Protection
PF-31	Emergency Diesel Generator Building - Fire Protection
PF-32	Emergency Lighting
PF-33	Emergency Communication
PF-34	Primary Containment - Safe Shutdown Requirements
PF-35	Emergency Diesel Generator Fuel Oil Transfer Pumps
PF-36	Combustible Liquid Curbs
PF-37	Turbine Building - Fire Detection
PF-38	Turbine Building - Hydrogen Seal Oil Unit Fire Protection
PF-39	Torus Compartments - Fire Protection
PF-40	Floor Drains - Combustible Liquid Areas
PF-41	Portable Smoke Removal Equipment
PF-42	Recombiner Building - Fire Hazards Analysis
PF-43	Reactor Buildings - Modifications for Safe Shutdown
PF-44	Reactor Buildings - Fire Protection
PF-45	Circulating Water Pumphouse - Fire Protection
PF-46	Radwaste Building Fire Zone 72A- Fire Protection
PF-47	Fire Hose Testing
PF-48	Yard Area - Fire Protection
PF-49	Interior Hose Stations
PF-50	Administrative Controls and Quality Assurance

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-16 (Rev.) Control Room Complex - Fire Protection

a. Cables Above the Suspended Ceiling

Staff Concern:

A single control room with a suspended ceiling is provided for both units. A moderate quantity of nonsafety-related cables is located above the suspended ceiling in a large open space. This open space contains ventilation equipment and supports for the ceiling which make access to the area difficult. A fire in this space would not damage safe shutdown equipment but the large quantity of smoke which could be produced could force an evacuation of the control room below. The units are provided with remote shutdown panels so that they can be shut down from a central location outside the control room. However, all unnecessary hazards to the occupancy of the control room should be avoided.

Staff Position:

- (1) All exposed cables above the suspended ceiling should be covered with a fire retardant material which has been demonstrated effective by testing or install smoke detectors in this space which are located in accordance with the applicable NFPA standards.
- (2) Provide a stepladder adequate to reach the cables in this space. This ladder should be stored at a dedicated location within the control room complex with a sign affixed reading "FOR EMERGENCY USE - DO NOT REMOVE FROM CONTROL ROOM."
- (3) Provide two 2 1/2 gallon pressurized water portable extinguishers in the control room complex such that they are available for use in all rooms of the control room complex.

b. Control Panels and Consoles

Staff Concern:

Some of the enclosed panels in the control room contain redundant divisions of safety-related equipment, including equipment required for safe shutdown. Control cable for redundant equipment is routed in close proximity within these panels. A fire in these panels could disable redundant safety-related equipment or force an evacuation of the control room if it were not detected and suppressed in

its incipient stages. In response to the original staff position, PF-16a., the licensee has provided an analysis of the effects on safe shutdown of a fire in these panels. The licensee's analysis makes certain assumptions that are not consistent with the staff position regarding safe shutdown analyses and therefore does not provide adequate justification for not providing additional protection for equipment located in panels (See PF-26).

Further, the licensee has stated that at least one panel (Panel 00C123) contains equipment that is not isolated from the remote shutdown panels and that is required for safe shutdown in the event of a loss of offsite electrical power. If a fire were to occur in such a panel, operator actions at remote locations of the plant would be required to achieve hot shutdown.

Staff Position:

- (1) Propose modifications as necessary to assure that no redundant equipment (including cables) required for safe shutdown is located in a single panel without a solid fire barrier between compartments containing the redundant equipment. The functional requirements for a safe shutdown are discussed in staff position PF-26.
- (2) All enclosed panels containing redundant safety-related equipment should be provided with an early warning smoke detection system.
- (3) The licensee should verify that there is sufficient hose on the CO₂ hose reels in the control room to reach all areas of the control room that contain electrical equipment.

c. Enclosed Rooms Within the Control Room Complex

Staff Concern:

Enclosed spaces for offices, shops and a small kitchen are located in the control room complex. None of these spaces contain safety-related equipment but they do contain combustible material. A fire in these areas could force an evacuation of the control room if it were not detected and suppressed in its incipient stages.

Staff Position:

- (1) All enclosed rooms within the control room complex should be provided with an early warning fire detection system.

- (2) No unnecessary combustible material should be stored in these rooms.
- (3) The hose stations located in the turbine building adjacent to the control room complex should be equipped with sufficient hose length to apply a water fog stream to all areas for the control room complex. In addition these hose stations should be equipped with a variable gallonage fog nozzle with a ball-type shut off.
- (4) All doors to enclosed rooms should be automatically closed in the event of a fire or maintained closed at all times by administrative procedures. Ventilation ducts and openings in the walls and doors between these enclosed rooms and the main control room should be fitted with dampers that are equipped with either a manual or automatic closing device to prevent smoke and heat from entering the main control room. If a manual closing device is used it should be capable of being operated from within the main control room at the opening to the room and a permanent sign should be posted at the device stating that it should be operated in the event of a fire in an adjacent area.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-18 (Rev.) Fire Barrier Electrical and Mechanical Penetration Seal
Qualification

Staff Concern:

The NRC staff has taken the position (PF-18) that all electrical penetrations in fire barriers surrounding safety-related fire zones and fire areas should be sealed by methods demonstrated effective by testing. The licensee has identified several different types of electrical (cable and trays and conduits) and mechanical (pipes and ventilation ducts) penetration seals that exist at the plants. Although the licensee has responded to the initial staff position and has provided a brief description of some testing, it is not clear that all the various types of penetration seals in safety-related zones and areas have been tested and that these tests demonstrate the effectiveness of the seals.

Staff Position:

As stated in the initial NRC staff position PF-18, all electrical penetrations in fire barriers surrounding fire zones and fire areas containing safety-related equipment (including cables) should be sealed by methods demonstrated effective by testing. In addition, mechanical penetrations in these fire zones and fire areas should also be sealed when significant quantities of combustible material are present in the vicinity of the penetration on both sides, or where the barrier separates safety-related equipment from fire zones or areas with a heavy combustible loading (e.g., cable spreading room, emergency switchgear rooms, diesel generator building rooms, battery rooms, control room, zones or areas containing combustible liquids, HPCI and RCIC rooms and MG set rooms).

The licensee should provide a detailed description (including drawings and materials lists) for each of the types of electrical and mechanical penetration seals that are used at the plant. A description of the test procedure and test results which are relied upon as proof of each type of seal's qualification should be provided.

Any new penetration seals that are installed in the future or existing seals which must be replaced, should be qualified by an independent testing laboratory in accordance with ASTM E-119 and the following conditions.

1. The cables used in the test should include the cable insulation materials used in the facility.

2. The test sample should be representative of the worst case configuration of cable loading, cable tray arrangement, anchoring, and penetration fire barrier size and design. The test sample should also be representative of the cable sizes in the facility. Testing of the penetration fire barrier in the floor configuration will qualify the fire stop for use in the wall configuration also.
3. Cables penetrating the fire barrier should extend at least three feet on the unexposed side and at least one foot on the exposed side.
4. The fire barrier should be tested in both directions unless the fire barrier is symmetrical.
5. The fire barrier should be tested with a pressure differential across it that is equivalent to the maximum pressure differential a fire barrier in the plant is expected to experience.
6. The temperature levels of the cable insulation, cable conductor, cable tray, conduit, and fire stop material should be recorded for the unexposed side of the fire barrier.
7. Acceptance Criteria - The test is successful if:
 - a. The cable penetration fire barrier has withstood the fire endurance test without passage of flame or ignition of cables on the unexposed side for a period of three hours,
 - b. The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature is sufficiently below the cable insulation ignition temperature, and
 - c. The fire barrier remains intact and does not allow projection of water beyond the unexposed surface during the hose stream test.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-21 (Rev.) Cable Spreading Room - Fire Protection

Staff Concern:

Safety-related and nonsafety-related control cables for both Unit 2 and 3 are located in a single cable spreading room below the control room. Cables for the individual Units are generally located in opposite halves of the single room, however, at the center of the room cables for both Units come together and are not separated by a barrier. Auxiliary control equipment (e.g., relays and terminal boards) for both Units is also located in the room at opposite ends. Only a small number of power cables are present and these cables are in conduit.

The licensee has stated that almost all of the cables in the cable spreading room are jacketed with flame retardant neoprene and has provided a description of tests which were performed to verify the flame retardant characteristics of the cable. The licensee relies upon this fire retardancy along with: (1) the minimum separation of redundant cables that exists; (2) the effectiveness of the installed manually actuated total flooding CO₂ system; and (3) a proposed upgraded fire detection system to provide assurance that redundant equipment will not be disabled by a fire. We have considered all of the information the licensee has provided and have reached the following conclusions:

1. The fire retardancy tests which were performed are not representative of the quantity and configuration of the cables that exist at the plant and therefore, do not conclusively demonstrate that a fire in a cable spreading room would not propagate between redundant cables required for safe shutdown.
2. The combination of the proposed upgraded fire detection system and the manually actuated total flooding CO₂ system do not provide adequate assurance that a fire in this extremely congested area will be detected and suppressed before it becomes developed to the stage that the CO₂ system would not be effective.
3. Safety-related equipment (including cables) located in the cable spreading room can be classified into two categories: (1) safety-related equipment required for safe shutdown; and (2) safety-related equipment not required for safe shutdown. Modifications should be made to the fire protection system to provide an adequate level of protection for safety-related equipment not required for safe shutdown.

4. Equipment required for safe shutdown requires a higher level of protection than equipment that performs a safety function but is not required for safe shutdown. The information we have received to date from the licensee, indicates that equipment required for safe shutdown that is located in the cable spreading room is subject to damage from a fire in the room even if the above mentioned modifications are made. Therefore, additional modifications should be made to assure that safe shutdown conditions can be achieved and maintained with equipment that is independent of the cable spreading room.

Staff Position:

- a. The licensee should proceed with its plan to upgrade the existing fire detection system. The upgraded system should be demonstrated effective by testing as discussed in NRC staff position PF-27.
- b. The existing manually-initiated total flooding CO₂ system should be converted to an automatically-initiated system.
- c. Hose stations located in the turbine building adjacent to the cable spreading room should be equipped with sufficient hose length to apply a water fog stream to all areas of the cable spreading room. In addition, these hose stations should be equipped with a variable gallonage fog nozzle with a ball-type shut off.
- d. Provide modifications as necessary (e.g., relocate one redundant division of safe shutdown equipment to outside of the room) to assure that both plants can be safely shutdown regardless of damage to any equipment (including cables) located in the cable spreading room. The following functions should be considered required for safe shutdown:
 1. Placing the reactor in a subcritical condition and maintaining the reactor subcritical indefinitely.
 2. Bringing the reactor to hot shutdown conditions and maintaining it at hot shutdown for an extended period of time (i.e., longer than 72 hours) using only normal sources of cooling water.
 3. Maintaining the reactor coolant system inventory indefinitely using only normal sources of makeup water.
 4. Bringing the reactor to cold shutdown conditions within 72 hours.

No credit should be taken for actions by plant personnel to repair damage to equipment required for functions 1., 2., and 3. The capability to perform all control actions necessary for functions 1., 2., and 3. must

be maintained in the control room or at the remote shutdown panels, and all power requirements for these functions must be satisfied by onsite sources.

In lieu of assuming that redundant equipment required for safe shutdown will be damaged by a single fire in the cable spreading room, the licensee may elect to demonstrate by test or analysis that the separation of redundant equipment is (or can be made to be) sufficient to prevent such an occurrence. Any assumptions used in an analysis must be verified by test data for materials and equipment arranged in a configuration similar to that installed in the plant. The possible deleterious effects of combustion products and water or other fire suppression agents must be considered. External ignition sources and transient combustibles must also be considered.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-24 (Rev.) Radwaste Building: Fire Zones 4B, 4C, 12B, and 12C - Fire Protection

Staff Concern:

Fire zones 4B and 12B on the 116-foot elevation contain safety-related emergency motor control centers. These areas also contain the oil pumps and oil reservoirs for the recirculation pump motor-generator sets. Fire zones 4C and 12C on the 135-foot elevation contain the reactor recirculation pump motor-generator sets and safety-related cabling. Pipes containing oil pass through openings in the floor slab separating the two fire zones. An unmitigated fire involving one of the oil lines or oil reservoirs could spread to the MG set room directly above and could result in damaging equipment and cabling required for shutdown.

Staff Position:

- a. The licensee should provide sprinkler protection in fire zones 4C and 12C.
- b. The open pipe penetrations through the floor slabs separating zones 4B and 4C from 12B and 12C should be sealed with a water tight, 3-hour fire rated sealant method (See PF-34).
- c. Curbing should be provided within the rooms (fire zones 4B, 4C 12B and 12C) to contain the oil from a leak at the oil reservoir or oil lines to the room of origin.

Additional modifications may be required after the licensee has completed the shutdown analysis referred to in NRC staff position PF-26.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-26 Safe Shutdown Analysis

Staff Concern:

The licensee has provided the results of its comprehensive analysis of the effects of a fire in any area of the plant on the ability to achieve and maintain a safe shutdown. This analysis is useful in identifying which areas of the plant are vulnerable to a fire, but it is not conclusive in that it contains certain omissions and assumptions that the NRC staff does not agree with. Specifically, the analysis does not in all cases address the capability to achieve and maintain both hot and cold shutdown.

Also, the effect of a loss of offsite electrical power on safe shutdown was not considered for all areas. These issues are significant and will bear heavily on the evaluation of the adequacy of the overall fire protection program at Peach Bottom.

Staff Position:

The licensee should reconsider its safe shutdown analysis assuming that offsite electrical power is not available in the event of a fire in any area of the plants. The following should be considered functional requirements for a safe shutdown:

1. Placing the reactor in a subcritical condition and maintaining the reactor subcritical indefinitely.
2. Bringing the reactor to hot shutdown conditions and maintaining it as hot shutdown for an extended period of time (i.e., longer than 72 hours) using only normal sources of cooling water.
3. Maintaining the reactor coolant system inventory indefinitely using only normal sources of makeup water.
4. Bringing the reactor to cold shutdown conditions within 72 hours.

If all of the redundant equipment (including cable in conduit) available to perform any of the above functions (assuming a loss of offsite electrical power) is located in a single fire area, the specific separation that exists and any combustible material between the redundant equipment should be identified. No credit should be taken for actions by plant personnel to repair damage to equipment required for functions 1., 2., and 3. The capability to perform all control actions necessary for functions 1., 2., and 3., must be maintained in the control room or at

the remote shutdown panels and all power requirements for these functions must be satisfied by onsite sources.

The specific results of the above reanalysis should be reported separately for each area in each unit.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-27 Smoke Detection Systems Tests

Staff Concern:

The type and location of ionization smoke detectors may not provide prompt detection of fires in areas where they are used. Ventilation air flow patterns or detector sensitivity may prevent effective fire detection.

Staff Position:

In situ tests should be conducted with a suitable smoke generation device to verify that the products of combustion from a fire would be promptly detected by installed smoke detectors and that ventilation air flow patterns in the area do not significantly reduce or prevent detection response. Bench tests should be conducted to verify that smoke detectors will provide prompt response and have adequate sensitivity to the products of combustion for the combustibles in the area where smoke detectors are installed. If any fire detection systems are found to be inadequate, appropriate modifications should be made to provide adequate detection system performance.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-28 Supervision of Fire Doors

Staff Concern:

Fire doors must be closed to provide an effective barrier against the spread of fires between different areas as well as to contain suppression agents for total flooding suppression systems.

Staff Position:

Appropriate administrative controls should be provided to assure the effectiveness of fire doors protecting safety-related areas as follows:

- a. Fire doors should be inspected semi-annually to verify that self-closing mechanisms and latches are in good working order.
- b. Fire doors should be provided with electrical supervision from the control room or maintained closed by one of the following:
 - (1) Locked closed and inspected weekly to verify that the doors are in the closed position. The fire brigade commander should have ready access to keys for all locked doors.
 - (2) Provided with automatic release mechanisms and inspected monthly to verify that doorways are free of obstructions.
 - (3) Provided with self-closing mechanisms and inspected daily to verify that they are in the closed position.
- c. Areas protected by automatic total flooding, gas suppression systems should have electrically supervised self-closing fire doors.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-29 Emergency Switchgear Rooms - Fire Protection

Staff Concern:

Separate rooms surrounded by a 2-hour fire barrier are provided for redundant emergency switchgear. Due to the low combustible loading and installed fire detection system in each room, the licensee's proposal to rely on manual fire fighting is acceptable if adequate manual suppression equipment is provided and if the rooms are maintained as separated fire areas.

Staff Position:

- a. Portable CO₂ extinguishers should be installed in the corridor on the west side of the area and in the turbine building such that at least two are visible from the entrance to each of the switchgear rooms.
- b. The hose stations located in the turbine building and the corridor on the east side of the area adjacent to the switchgear rooms should be equipped with sufficient hose length to apply a water fog stream to all of the rooms. In addition these hose stations should be equipped with a variable gallonage fog nozzle with a ball type shut off.
- c. The supervision of the fire doors between adjacent switchgear rooms should be in accordance with PF-28.

Additional recommendations may be made after the licensee has completed the safe shutdown analysis referred to in NRC staff position PF-26.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-30 Station Battery Rooms - Fire Protection

Staff Concern:

Separate battery rooms are provided for each safety-related equipment division. However, the bus cables for one division are routed in conduit through the other redundant division room. These conduits are of rigid steel construction and are separated by distance from any significant concentration of combustible material. The battery rooms are not, however, provided with an early warning fire detection system. If a fire involving the battery cases were to become fully developed, the cables in conduit could be damaged.

In addition, an explosion due to a buildup of hydrogen in a battery room could damage both the batteries in the room and cables for the redundant batteries routed through the room. The existing ventilation air flow detection system located at the central exhaust fan may not detect a reduction in air flow for an individual battery room.

Staff Position:

- a. An early warning fire detection system which alarms in the control room should be installed in each battery room. The installed system should be demonstrated to be effective by testing as discussed in NRC staff position PF-27.
- b. The existing ventilation air flow detection system should be upgraded to include an air flow detector in each battery room upstream of the exhaust damper for the room.
- c. The supervision of the fire doors between adjacent battery rooms should be in accordance with PF-28.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-31 Emergency Diesel Generator Building - Fire Protection

Staff Concern:

The diesel generator building consists of five rooms with two floors each separated by three hour fire rated walls. Each of the four diesel generators is located in one of the five separate rooms. The fifth room contains the CO₂ tank and the batteries for the building automatic fire suppression system, the auxiliary boiler fuel oil transfer pump, the emergency service water booster pumps, and valves for the service water systems. The diesel generator fuel oil day tanks are located in a separate three hour fire rated enclosure within the associated diesel generator room.

The walls between adjacent rooms are penetrated at the 127' and 151' elevation by three hour fire rated doors. The integrity of this fire barrier is essential to protecting redundant diesel generators from a common fire hazard. During the staff site visit it was observed that the self-closing and latching devices on the doors at the 127' elevation were not strong enough to assure that the doors returned to the closed and latched position when released. Also, there was no barrier against the flow of liquid combustibles under these doors from one room to the other. The licensee has not addressed the possibility of the floor drains in each of the rooms providing another path for liquid combustibles between the rooms. According to the licensee's response to NRC staff question number Q-22, there may also be ventilation ducts which penetrate the walls between rooms and do not have fire dampers. Any deficiency in the room barrier integrity could reduce the effectiveness of the CO₂ extinguishing system and permit fire, smoke and hot gases to endanger redundant safe shutdown equipment in adjacent rooms.

Four of the five rooms are protected by a system of heat detectors to detect a fire and automatically initiate the CO₂ suppression system. The slow response of this type of fire detection system could result in small easily controlled fires becoming larger fires involving the significant quantities of fuel oil present.

The room containing the emergency service water booster pumps is exposed to a fire hazard as a result of the auxiliary boiler fuel oil transfer pump being located in the room. This area is not provided with a fire detection system to provide early warning of a fire that could disable safety-related equipment including equipment required for safe shutdown.

Staff Position:

- a. A curb should be provided to prevent the flow of combustible liquids under the doors between the individual diesel generator rooms at the 127' elevation. The self-closing and latching devices on all the doors at all elevations should be inspected and repaired or replaced as necessary. The supervision of these doors should be as stated in PF-28.
- b. The licensee should verify that all penetrations in the walls between individual rooms in the diesel generator building are sealed to a three hour rating at all elevations and that any ventilation ducts in the walls have three hour fire dampers.
- c. The licensee should verify that the drains in the individual rooms do not discharge to a common header that would provide a pathway for combustible liquids between rooms.
- d. An early warning smoke detection system which alarms locally and in the control room should be provided for all the rooms in the diesel generator building.
- e. The capability should be provided to trip the auxiliary boiler fuel oil transfer pump manually from outside the area in which it is located. A requirement to trip the transfer pump should be included in a written pre-fire strategy plan for the area to be used in fire brigade training. See also PF-35 for the diesel generator fuel oil transfer pumps.

Additional modifications may be required after the licensee has completed the safe shutdown analysis referred to in NRC staff position PF-26.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-32 Emergency Lighting

Staff Concern:

The licensee has not demonstrated that a fire in any area of the plant containing safety-related equipment would not result in damage to both normal and emergency hardwired lighting systems. During a fire, adequate lighting must be maintained for access and egress by plant operating personnel and fire fighters.

Staff Position:

Fixed emergency lighting consisting of fixed sealed beam units with individual battery power supplies should be provided 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.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-33 Emergency Communication

Staff Concern:

The licensee relies primarily on the fixed public address (PA) system and a separate private automatic branch exchange (PABX) telephone system for emergency communication within the plant. Due to loud background noise and the potential for fire damage, such fixed systems are not considered effective for fire fighting operations.

Staff Position:

Portable two-way radio units capable of communicating with all areas of the plants should be maintained available for the fire brigade. One unit should be available for each on-duty member of the fire brigade.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-34 Primary Containment - Safe Shutdown Requirements

Staff Concern:

The licensee has stated that a fire in the primary containment could damage safety-related equipment but that two methods for safe shutdown would remain available. The licensee's conclusion appears to be based on assumptions made when the safe shutdown analysis was performed that are not in agreement with the NRC staff's position as set forth in PF-26 above. The fact that the primary containment is inerted with nitrogen during normal operation may be the basis for the licensee assuming that redundant equipment required for safe shutdown would not be damaged by a fire. However, there are times (e.g., up to 24 hours after startup and 24 hours prior to a scheduled shutdown) when the primary containment is not required by technical specifications to be inerted. At these times the significant quantities of both liquid and solid combustible material in the primary containment could become involved in a severe fire. The capability to safely shutdown the plant must be maintained at all times.

Staff Position:

- a. The licensee should re-evaluate the effects on safe shutdown of a fire in the primary containment. This re-evaluation should be made in accordance with NRC staff position PF-26.
- b. The existing fire detection system should be demonstrated to be effective as an early warning system in accordance with NRC staff position PF-27.
- c. The licensee should verify that a hose from the existing hose stations in the secondary containment can reach the areas where oil from the recirculation pumps would flow.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-35 Emergency Diesel Generator Fuel Oil Transfer Pumps

Staff Concern:

Each of the diesel generator fuel oil day tanks is served by an automatic fuel oil transfer pump. In the event of a fuel oil leak and fire, the transfer pump would automatically transfer additional fuel to the fire until manually terminated.

Staff Position:

In response to NRC staff question Q-48, the licensee stated that the transfer pump could be turned off by tripping the load center which supplies power to the MCC located within the diesel generator compartment. The licensee's response is acceptable provided: (1) no other equipment required for safe shutdown is supplied from the same load center, and (2) the requirement to trip the load center is included in a written pre-fire strategy plan for the area to be used in fire brigade training.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-36 Combustible Liquid Curbs

Staff Concern:

Curbs are provided to contain leakage from the main turbine lube oil storage tanks and around the reactor feed pump turbine lube oil reservoirs. Three main turbine lube oil storage tanks for each unit are located in a single diked area in rooms on the 116-foot elevation of the turbine building. The reactor feed pump turbine lube oil reservoirs are located in four separate rooms in the turbine building. The doorway to each room is curbed.

The curb around the main turbine oil storage tanks does not provide adequate volume to contain the oil in all three storage tanks. The licensee has not discussed the possibility that all three tanks could be emptied by a single leak. However, in the event of fire and failure of the automatic fire suppression system, rupture of all three tanks would be expected. Lube oil would then spread to areas of the turbine building containing safety-related cables.

The licensee's fire protection program report is not clear on the volume of oil in the reactor feed pump turbine lube oil reservoirs. The curbs around the reservoirs may be inadequate to prevent the spread of a lube oil fire to a fire area containing safety-related cables adjacent to the battery rooms, emergency switchgear rooms and cable spreading room.

Staff Position:

- a. The dikes in the main turbine lube oil storage tank rooms should be upgraded to contain the full contents of all tanks in the room plus the quantity of fire suppression water needed to suppress a postulated fire. This may be accomplished by increasing the height of the existing curbs or by adding curbs at the room doors. If curbs are added at the doors, verification should be provided that an oil fire in this room will not spread to other areas via the floor drains outside the existing curb.
- b. Verification should be provided that the reactor feed pump turbine lube oil reservoir room curbs are adequate to contain the full contents of the reservoir plus an added margin for fire suppression water. If inadequate, the curbs should be upgraded to provide the necessary capacity.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-37 Turbine Building - Fire Detection

Staff Concern:

Automatic fire detection is provided in the turbine building only in the enclosed laboratory spaces and near the hydrogen seal oil units on the 116-foot elevation. Other combustible liquid areas in the turbine building are provided with automatic fixed water suppression systems. However, large portions of the turbine building are not provided with either automatic detection or automatic suppression systems. These areas contain redundant divisions of safety-related cable as well as cable for equipment that would be required to safely shutdown the reactor in the event of loss of offsite power.

A large flexible container, which is used as a surge tank for liquid radwaste, is stored on the 165-foot elevation of the turbine building. This container is fabricated of a nylon material coated on both sides with polyurethane rubber. Although the combustible nature of this container has not been described by the licensee, it is expected that this container represents a large fire load. The container is located in a fire zone (Fire Zone 78U) which contains safety-related cable and is open to other fire zones containing cable for safe shutdown.

Staff Position:

- a. Early warning fire detectors should be provided in all areas of the turbine building where safety-related cables or cables for safe shutdown equipment are routed.
- b. Early warning fire detection should be provided in the Unit 2 turbine generator compartment which houses the flexible liquid radwaste surge tank.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-38 Turbine Building - Hydrogen Seal Oil Unit Fire Protection

Staff Concern:

The hydrogen seal oil units for both Units 2 and 3 are located in an open floor area on the 116-foot elevation of the turbine building. This location is part of fire zone 788 which contains redundant divisions of cables for safe shutdown equipment. A manually actuated sprinkler system and fire detection are provided for each seal oil unit. There are drains in the vicinity of the units but the seal oil units are not diked.

The delay involved in manual actuation of the hydrogen seal oil unit sprinklers could result in a large fire which could spread to areas containing safety-related cables. An unnecessarily large amount of smoke and heat would be released from the burning oil before actuation of the sprinklers. A fire of high intensity could develop over a large area because of this delay in actuation and the lack of curbs around the seal oil units. The lack of curbs could permit the oil to spread beyond the area of coverage of the sprinklers.

Staff Position:

- a. The suppression system protecting the seal oil units should be upgraded to provide automatic actuation.
- b. A curb should be provided to contain the oil in the seal oil units within the area of coverage of the sprinkler system. The curb height should provide sufficient volume to contain the oil plus an added margin for fire suppression water.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-39 Torus Compartments - Fire Protection

Staff Concern:

The compartment which houses the torus for each unit extends from the 91'6" elevation of the reactor building to the 135' elevation. Access to the torus is from the 91'6" elevation pump compartments at the corners of the reactor building. Cables are routed in stacks of cable trays at the 116' elevation on both sides of a catwalk which circles the outer periphery of the torus. The catwalk is only accessible by ladder from the 91'6" elevation.

Redundant divisions of safety-related cables including those for safe shutdown functions are located in the torus compartments. An unmitigated fire in either torus compartment could damage redundant divisions of safe shutdown cable. Because there are no fire detectors in the torus compartments and there are no fire hoses accessible to the cables, a fire in the torus compartments could burn unchecked. Even with fire hoses that could reach to the cable locations, manual fire fighting would be awkward because of the cramped conditions and poor visibility. Smoke removal by the normal ventilation system would be inadequate in the event of a significant fire.

Staff Position:

- a. Early warning fire detectors should be provided in the torus compartments.
- b. In each torus compartment, the ladders to the catwalk should be relocated so that there are four ladders with each one adjacent to a different door from the pump rooms to the torus compartment. The ladders should be designed to permit access to the catwalk by fire brigade members wearing emergency breathing units.
- c. In each torus compartment, four fire hose stations should be provided on the catwalk, one at the head of each ladder. Because the catwalk is in close proximity to the cable trays, a cable fire could render a hose station inaccessible even with early detection of the fire. Therefore, sufficient hose should be provided at each hose station such that all parts of the cable tray system are accessible from two hose stations. The fire hose stations should have 1-1/2-inch hose equipped with combination spray/straight stream nozzles.

- d. Portable smoke removal equipment should be provided with the capability to exhaust smoke outside the building in the event of a fire in either torus compartment (see also PF-41.)

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-40 Floor Drains - Combustible Liquid Areas

Staff Concern:

The recirculation pump motor generator sets are located on the 135-foot elevation of the radwaste building directly above the rooms housing the lube oil pumps and reservoirs for the motor generator sets. Both the motor generator set room and the associated lube oil equipment room for each unit share a common drain system and both areas for each unit contain safety-related cable. The licensee has not adequately addressed the potential for spread of lube oil from the upper room to the lower room via the common drain system.

A pipe break in any of the diesel generator rooms, diesel generator building auxiliary bay or diesel fire pump room could result in large amounts of fuel oil entering the floor drain system. Each of these rooms is adjacent to areas containing safety-related equipment and cable. The licensee has not addressed the potential for spread of lube oil from any of these areas to other safety-related areas of the plant.

Staff Position:

The licensee should verify that:

- a. Oil from a leak in either motor generator set room will not spread to the associated motor generator set lube oil room via the floor drain system.
- b. Oil from a leak in a diesel generator room, the diesel generator building auxiliary bay or diesel fire pump room will not spread to other safety-related areas.

If the above verification cannot be provided, the licensee should propose modifications to prevent the spread of oil outside the area of leakage via the drain system.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-41 Portable Smoke Removal Equipment

Staff Concern:

Although the normal air handling systems in the plant could be used for smoke removal, their effectiveness may be limited by the following factors:

- a. The fans and other equipment are not designed to withstand high temperatures and could be rendered inoperative by the heat from a significant fire.
- b. The capacity and configuration of the systems may be inadequate for effective smoke removal.
- c. Fusible link dampers in fire area ventilation systems must be manually opened at the damper before attempting to use normal ventilation systems for smoke removal.

Most of the plant emergency ventilation systems are designed with redundant components which increases the likelihood of their availability during a fire. However, in some plant areas ventilation system controls, motor control centers and power feeds are located within the area served by the ventilation system. There may not be sufficient separation or redundancy of emergency ventilation system components to assure the necessary ventilation system operation for smoke removal. In addition, the emergency ventilation systems are subject to the same limitations as discussed above for the normal air handling systems.

Staff Position:

Portable air handling units should be provided consisting of three fire service, explosion-proof smoke ejectors (5000 cfm each) and flexible ducting for smoke removal throughout the plant. Procedures should be developed for use of this equipment by the fire brigade in all areas of the plant with particular emphasis on compartments with difficult access in the reactor, radwaste and control buildings.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-42 Recombiner Building - Fire Hazards Analysis

Staff Concern:

The recombiner building houses the off-gas recombiner trains for both units as well as the ventilation system for the building. Combustibles in the building include compressor lube oil, oil stored in drums, hydrogen in the recombiner system, cables in open ladder trays, charcoal filters and trash. Fire protection is provided by fire hose stations and heat detectors on the 135-foot and 157-foot elevations and portable extinguishers on all three elevations. An automatic sprinkler system is provided for each of the recombiner building ventilation system charcoal filter units.

The recombiner building is separated from the Unit 3 reactor building by 3-hour barriers. The fire rating of the recombiner building interior barriers has not been described by the licensee. However, because of the explosive nature of the gaseous combustibles and the continuity of solid and liquid combustibles, an unmitigated fire in the recombiner building could damage much of the equipment in the building. The hose stations inside the building do not reach all areas.

The licensee has not provided an adequate fire hazards for the recombiner building. The capability of the sparsely spaced heat detectors to provide early warning of a fire has not been addressed. Also, the capability of the ventilation system to provide for adequate smoke removal has not been verified. However, because the ventilation equipment is in the area served by the equipment, it is possible that the ventilation system would not be available for smoke removal. Also, a fire in the building could cause the filters to clog or could cause ignition of the filters if the ventilation system was used to remove smoke and hot gases. Increased temperature of the charcoal would cause a release of radioactivity even if the filters did not ignite.

The licensee has provided the results of an analysis of the radiological consequences of a fire involving one recombiner unit. However, this analysis was not performed in accordance with the appropriate guidelines.

Staff Position:

The potential for an unmitigated fire in the recombiner building to cause an unacceptable release of radioactivity to the site boundary should be evaluated. The evaluation should be performed in accordance with guidelines in Regulatory Guide 1.98. The releases from both off-gas recombiner trains as well as the ventilation system charcoal filters should be used in the evaluation unless it can be demonstrated that an unmitigated fire would not involve all of this equipment. The potential for gas explosions and the spread of fire via cables and other combustibles should be considered.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-43 Reactor Buildings - Modifications for Safe Shutdown

Staff Concern:

Fire zone 5H is a large open area on the 135-foot elevation of the Unit 2 reactor building. This fire zone is connected by an open hatchway with fire zone 5J, a similar open area on the 165-foot elevation. The corresponding fire zones in the Unit 3 reactor building are fire zones 13H and 13J.

Control cables for valves of redundant safe shutdown systems are located in the same trays in fire zones 5H (13H) and 5J (13J). In addition, power feeds to the motor control centers and load centers for these valves are located in conduit in close proximity to the valves' control cables. The licensee has stated that the valves are normally in position (i.e., open) to perform their safe shutdown function but if the valves failed shut they could be opened at their motor control centers in fire zone 5J (13J). At least one of the valves is located inside the drywell and could not be opened manually at the valve without considerable delay.

A fire in fire zone 5H (13H) or 5J (13J) could damage control cables for redundant safe shutdown systems. A hot short caused by fire damage could cause the valves to fail in the shut position. Although the licensee has stated that these valves could be opened at their motor control centers, it has not been demonstrated that there would be sufficient manpower onsite to perform these actions outside the control room and simultaneously fight a fire at the location of the cables. It has also not been demonstrated that there would be an adequate length of time available to perform these actions to support safe shutdown prior to core damage. Because the motor control centers are located in fire zone 5J (13J), which is connected by an open hatchway with fire zone 5H (13H), a fire in fire zone 5H (13H) or 5J (13J) would generate smoke and hot gases which could delay and hinder operations at the motor control centers. In addition, a fire involving the control cables could also damage the power feeds to the motor control centers, precluding operation of the valves at the motor control centers.

Staff Position:

The licensee should make whatever modifications are necessary (e.g., relocate one redundant division of safe shutdown equipment to outside of the area) to demonstrate by analysis that both plants can be safely shut down regardless of damage to any equipment (including cables) located in fire zones 5H, 5J, 13H or 13J. In determining what modifications are necessary, the following functions should be considered required for safe shutdown:

1. Placing the reactor in a subcritical condition and maintaining the reactor subcritical indefinitely.
2. Bringing the reactor to hot shutdown conditions and maintaining it at hot shutdown for an extended period of time (i.e., longer than 72 hours) using only normal sources of cooling water.
3. Maintaining the reactor coolant system inventory indefinitely using only normal sources of makeup water.
4. Bringing the reactor to cold shutdown conditions within 72 hours.

No credit should be taken for actions by plant personnel to repair damage to equipment required for functions 1, 2, and 3. The capability to perform all control actions necessary for functions 1, 2 and 3 must be maintained in the control room or at the remote shutdown panels, and all power requirements for functions 1, 2 and 3 must be satisfied by onsite sources.

In lieu of assuming that redundant equipment required for safe shutdown will be damaged by a single fire in fire zones 5H, 5J, 13H or 13J, the licensee may elect to demonstrate by test or analysis that the separation of redundant equipment is (or can be made to be) sufficient to prevent such an occurrence. Any assumptions used in an analysis must be verified by test data for materials and equipment arranged in a configuration similar to that installed at the plant. The possible deleterious effects of combustion products and water or other fire suppression agents must be considered. External ignition sources and transient combustibles must also be considered.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-44 Reactor Buildings - Fire Detection/Combustible Storage

Staff Concern:

Redundant divisions of safety-related cables are routed throughout the reactor buildings of both units. These cables are in separately enclosed compartments as well as in large open floor areas on the 135-, 165- and 195-foot elevations which are connected with each other by open hatchways. Other safety-related equipment including motor control centers are located on these reactor building elevations.

None of the safety-related areas on the 135-, 165- and 195-foot elevations of the reactor buildings are provided with fire detection systems. Combustibles in these areas include cable insulation, protective clothing and contaminated trash. During the site visit of March 28 to April 1, 1977, a 55-gallon drum of oil was stored next to a safety-related motor control center.

A delay in suppressing a fire in many areas on these elevations could damage redundant safety-related cables including cables serving equipment used for safe shutdown.

Staff Position:

- a. Early warning fire detection should be provided in the following reactor building fire zones:

Unit 2 fire zones: 5H, 5J, 5K, 19, 20, 21, 23

Unit 3 fire zones: 13H, 13J, 13K, 27, 29, 30, 31

- b. The storage of combustibles in safety-related areas of the reactor buildings should be discontinued.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-45 Circulating Water Pumphouse - Fire Protection

Staff Concern:

The circulating water pumphouse is divided into various compartments labeled fire areas 141, 142, 143, 144, and 145. Area 143 contains the safety-related high pressure service water pumps and the emergency service water pump for Unit 2. This area also contains the electric motor driven fire pump and associated control panel. Fire area 144 which is separated from area 143 by a steel bulkhead and water tight door contains the safety-related high pressure and emergency service water pumps for Unit 3. Fire area 145 is a self-contained room within the area 144 boundaries and contains the diesel driven fire pump and Unit 2 screen wash pump.

A fire in areas 143 and 144 could affect the high pressure service water pumps, the emergency service water pumps, and their associated cabling and motor control centers. The licensee has not identified any methods for shutting down the reactor which does not require offsite power in the event the equipment in areas 143 or 144 is damaged by fire.

The staff concerns with this building are as follows:

1. The high pressure service water pump rooms are provided with heat detectors. The slow response of this type of detector could permit a small fire to damage redundant safe shutdown cables/equipment before the fire is detected.
2. The lack of curbing at the door to the diesel fire pump room could permit a fuel oil fire to damage the high pressure service water pumps used for safe shutdown.
3. A break in the fuel oil line inside the diesel fire pump room could result in continuous pumping of oil into the room. The resultant fire severity could exceed the resistance of the room barriers.
4. Because of the potential fire severity resulting from a fuel oil day tank rupture, the diesel fire pump room boundaries and penetrations should have a three-hour fire rating. The rating of the fire damper in the wall of this room has not been verified.
5. Self-closing devices are not provided for all doors separating redundant safe shutdown equipment of one unit from similar equipment of the other unit and from fire hazards posed by combustible fluids in adjacent rooms.

Staff Position:

The following modifications to the fire protection system for the circulating water pumphouse should be made:

- a. The existing thermal detectors in the high pressure service water pump rooms (fire areas 143 and 144) should be replaced or supplemented with early warning type fire detectors.
- b. Curbing should be provided within the diesel fire pump room (fire area 145) adequate to contain the volume of the day tank plus the volume of water required to extinguish a fire in this room.
- c. A fusible link actuated shut-off valve should be provided in the fuel supply line from the underground storage tank at a point as close as possible to where the line enters the diesel fire pump room.
- d. The existing fire damper in the wall of the diesel fire pump room should be verified as having a 3-hour fire rating or the damper should be replaced with a new 3-hour fire damper.
- e. The water tight doors in the fire zone separations between compartments within the circulating water pumphouse should be supervised as stated in PF-28.

Additional modifications may be required after the licensee has completed the safe shutdown analysis referred to in NRC staff position PF-26.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-46 Radwaste Building Fire Zone 72A - Fire Protection

Staff Concern:

This fire zone encompasses portions of the radwaste building on the 116-, 135- and 165-foot elevations which communicate by means of a hatchway. Also in this fire zone is room 154 on the 116-foot elevation which is a corridor between the door to the turbine building and the radwaste building stairway. Safety-related control cabling necessary for safe shut down is routed through portions of this zone. Other safety-related equipment in this fire zone includes motor control centers, control room/switchgear air handling equipment and the remote shutdown panels all located on the 165-foot elevation. A fire in this zone could affect both division I and division II safeguards channels cabling and equipment.

The staff concerns relative to fire zone 72A are as follows:

1. The doors to stairway number 34 were observed on the staff site visit to be propped open and combustible materials were stored in the stairway. The stairway could provide a path for fire, smoke and hot gases from the corridor on the 116-foot elevation containing large quantities of combustibles to other safety-related areas in this fire zone.
2. The health physics cleaning and repair operations to breathing equipment being conducted in the corridor of the radwaste building (room 154) at the 116-foot elevation involves considerable quantities of combustible material. The presence of this unprotected hazard is inappropriate in an area which could expose safe shutdown equipment/cable.
3. The lack of automatic fire detection in most locations in this fire zone could result in damage to redundant safety-related cables/equipment before the fire would be detected by plant personnel. The spacing of existing detectors in room 381 may not be adequate to provide early warning of a fire which could damage safe shutdown equipment/cables in this location.

Staff Position:

- a. The doors to stairway number 34 in the radwaste building should be supervised in accordance with PF-28, Supervision of Fire Doors.
- b. The fire hazard resulting from health physics cleaning and repair operations being conducted in the corridor of the radwaste building (room 154), at the 116-foot elevation should be mitigated by either:

- (1) Removing all operations and storage from this area.
- (2) Providing a fixed automatic sprinkler system in this area.
- c. Early warning fire detection should be provided throughout all areas of fire zone 72A which contain or expose safety-related cabling or equipment to a fire.
- d. The licensee should verify that the presently installed detection system in room 381 (fan room 165-foot elevation) provides effective early warning indication of a fire. The procedure for determining this should follow the guidelines outlined in PF-27, Smoke Detection Systems Tests.

Additional modifications may be required after the licensee has completed the safe shutdown analysis referred to in NRC staff position PF-26.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-47 Fire Hose Testing

Staff Concern:

Fire hose deteriorates with time and use and may fail when needed during a fire.

Staff Position:

Fire hose should be hydrostatically tested periodically at a pressure 50 psi above the maximum service pressure of the fire water system. Exterior hose should be so tested annually; interior hose should be so tested every three years.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-48 Yard Area - Fire Protection

Staff Concern:

The hydrants and the equipment stored in the hose carts are essential in fighting a fire in the yard and in some interior areas of the plant. The number of hose carts, i.e., three existing and one proposed, will not allow fast enough application of hose streams in some areas. The existing hose cart houses require that, in the event of a fire, the fire brigade go to a hose cart house, pull the hose cart to the hydrant nearest the fire, connect the hose to the hydrant and lay the hose to the vicinity of the fire before the application of water can commence.

During our site visit it was noted that some hydrants were in need of repair and raising up. Existing hose carts are lacking in some essential equipment for effective firefighting.

Staff Position:

- a. The environmental station pipe located at the hydrant just north of the administration building should be relocated so it does not interfere with the rotation of the hydrant wrench. Opening a hydrant can require as many as 21 full turns.
- b. Hydrants should be kept free of snow and ice accumulations during winter months.
- c. Hose cart houses should be maintained free of snow and ice accumulation during winter months to permit the free access to the hose cart. Where the hose cart house doors are close to grade level, the doors should be modified so that small accumulation of ice will not prevent the doors from opening.
- d. The yard hydrant located in the middle of the yard on the west side of the plant should be turned to allow both 2-1/2-inch outlets to be utilized. At present one outlet faces a wall about 18 inches away.
- e. The hydrant located at the southeast corner of the turbine building is leaking and needs repair. Additionally, this same hydrant is too low and should be raised so that the outlets are at least 18 inches above ground.

- f. A maintenance program should be established for the hydrants which will require that each hydrant have the caps removed, threads lubricated and the hydrant barrel checked to be sure there is no water in the barrel in the fall of the year.
- g. Each hose cart should be provided with the following additional equipment:
 - (1) One 2-1/2-inch hydrant gate valve
 - (2) One forcible entry tool (Halligan or similar)
 - (3) One 2-1/2-inch fog nozzle.
- h. Two hose houses should be provided at the east side of the plant located at the hydrants nearest the northeast and southeast corners of the turbine building. Each house should contain, as a minimum, the following equipment:
 - (1) 150 feet of 2-1/2-inch hose
 - (2) Two 75-foot lengths of 1-1/2-inch hose
 - (3) One gated wye having a female 2-1/2-inch inlet and two 1-1/2-inch male outlets
 - (4) Two 1-1/2-inch and one 2-1/2-inch adjustable spray nozzles
 - (5) One forcible entry tool (Halligan or similar)
 - (6) Hydrant and hose coupling spanner wrenches.
 - (7) One 2 1/2 inch hydrant gate valve.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-49 Interior Hose Stations

Staff Concern:

Some areas of the turbine building, recombiner building, radwaste building and reactor building including access to the dry well, are beyond the reach of a hose stream for effective manual firefighting. The hose at the hose stations are not presently connected to the hose valves which results in an unnecessarily long delay in employing hose streams.

Staff Position:

Additional hose should be provided on interior hose stations as required to assure that all safety-related areas, and areas that pose a fire hazard to safety-related areas, can be reached with sufficient hose to permit effective application of a hose stream to all portions of the areas to be protected. Where more than 100 feet of hose is required to reach these areas, a maximum of 50 feet of 1-3/4-inch hose may be added. Where more than 150 feet of hose is required to reach these areas, additional hose stations should be installed.

All existing and new hose stations should have the hose connected to the hose station valves.

All hose stations in the vicinity of safety-related equipment that could be damaged by a hose stream or near electrical equipment that could be a hazard to fire fighters should be equipped with variable gallonage fog nozzles with a ball-type shut off.

STATEMENT OF STAFF POSITION
PEACH BOTTOM, UNITS 2 AND 3

PF-50 Administrative Controls and Quality Assurance

Staff Concern:

The licensee's commitment to some NRC Administrative Control guidelines is not clearly stated. In addition, the licensee has not justified exceptions taken to various NRC Administrative Control guidelines as noted in staff positions g, h, and i, below.

Staff Position:

- a. Confirm that: (1) the "appropriate time" for removal of combustibles from work areas is normally at the end of each shift or following the completion of the activity, whichever is sooner; (2) for work activities during major outages which require more than one shift operation, the removal of combustibles not necessary for the completion of the work (i.e., rags, debris, oil spills, etc.), will be accomplished at the end of each shift, and following the completion of this prolonged work activity all combustibles will then be removed.
- b. Confirm that the offsite fire departments, at least once a year, will participate in fire brigade drills and practices.
- c. Confirm that: (1) classroom instructions include the correct methods for fighting hydrogen fires, tunnel fires and record file fires; (2) fire brigade practice sessions regarding the proper methods of fighting fires include fires of a similar magnitude, complexity and difficulty as those which could occur in a nuclear power plant and provide brigade members experience in the use of emergency breathing apparatus under strenuous conditions.
- d. Confirm that programs are established for Quality Assurance/Quality Control to verify that personnel are trained in the testing of fire protection systems.

- e. Change the words and phrases such as "may", "should", "should be", "would", "would be", noted throughout in the Fire Protection Plan and August 11, 1978 letter to - "shall", "will", or "shall be", or "will be", as appropriate to the subject under discussion.
- f. Confirm that prefire plan strategies will be established for fighting fires in all safety-related areas and areas presenting a hazard for safety-related equipment. Also indicate whether these plans include requirements to trip: (1) the auxiliary boiler fuel oil transfer pump manually from outside the area in which it is located, and (2) the load center which supplies power to the motor control center located within the diesel generator compartment.
- g. The Shift Supervisor should physically survey all work areas where work is to be performed prior to issuance of the Ignition Source Control Check List.
- h. At 3-year intervals, brigade fire drills should be critiqued by qualified individuals independent of the utility's staff. These critiques will assure that professional fire fighting expertise is available to update and correct mistakes in fire fighting techniques which are not obvious to the utility's staff.
- i. During maintenance and modifications in buildings containing safety-related systems or equipment, the administrative controls governing "transient fire loads" should require: (1) an in plant review to identify potential fire loads, and (2) as necessary, additional fire protection for the work activity procedure.