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June 1, 1981

RE: Docket Nos. 50-277  
50-278

Mr. Darrell G. Eisenhut, Director  
Division of Licensing  
US Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: Peach Bottom Atomic Power Station  
Emergency Facility Design



Dear Mr. Eisenhut:

The enclosures to this letter provide the remaining information requested by Generic Letter 81-10, dated February 18, 1981, D. G. Eisenhut to All Licensees of Operating Plants regarding the upgrade of emergency support facilities. A Peach Bottom emergency staffing proposal was previously submitted on April 3, 1981, S. L. Daltroff, Philadelphia Electric Company to D. G. Eisenhut, NRC. The remaining information specifically requested in the February 18, 1981 letter referenced above is presented in Enclosure 1. The description of the emergency facilities supplements the information presented in Enclosure 8 of the January 2, 1980 letter, S. L. Daltroff, Philadelphia Electric Company to D. G. Eisenhut, NRC.

Enclosure 2 of this letter requests an exception to the Technical Support Center and Emergency Operations Facility location criteria identified in the February 18, 1981 letter and NUREG 0696, Functional Criteria for Emergency Response Facilities, and provides a justification for the selected location at which these facilities are currently under construction. The facilities as described will be fully operational in accordance with the October 1, 1982 implementation date specified in the February 18, 1981 letter. Based on the

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expanded scope of the work, we are requesting that this schedule commitment supersede our previous commitment identified in the April 3, 1981 letter referenced above.

Should you have any questions regarding this submittal, please do not hesitate to contact us.

Very truly yours,

Enclosures

# PEACH BOTTOM ATOMIC POWER STATION

## Enclosure 1

### Additional Emergency Support Facility Staffing and Conceptual Design Description

- I. Describe the task functions of the individuals required to report to the TSC AND EOF upon activation and for each emergency class.

#### Response

A functional description of the individuals reporting to the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) during declared emergencies is provided below. In addition, consultants such as NSS Supplier-General Electric, A/E-Bechtel, Nuclear Utilities Services, Southwest Research Institute, Radiation Management Corporation, etc., and off-site Philadelphia Electric engineering personnel will supplement the staffs of the TSC and EOF as needed. The location of the Peach Bottom TSC and EOF in the same building has the distinct advantage of enhancing the interface between personnel assigned to these facilities, and promotes greater flexibility in the availability and utilization of personnel in responding to an emergency. The Technical Support Center is activated during Alert Conditions, Site Area Emergencies, and General Emergencies. The Emergency Operations Facility is activated during the Site Area and General Emergencies.

#### Technical Support Center Staffing

1. Emergency Director: Station Superintendent

Function: Provide overall direction of plant operation, and corrective actions in the response to an emergency. In this capacity, the duties of the Emergency Director include:

- a. Verifying the classification of the emergency.
- b. Conferring with shift supervision on plant status.
- c. Initiating activation of additional plant staff personnel as indicated by the existing conditions, as necessary to support activated off-site resources, and based upon his analysis of the likely duration of the emergency.

- d. Confirming the activation of appropriate emergency facilities.
- e. Performing assessment actions.
- f. Assuming communication responsibilities to off-site support organizations from shift supervision until relieved of such responsibility by the Site Emergency Coordinator. The Site Emergency Coordinator is activated during Site Area and General Emergencies.
- g. Conferring with the Site Emergency Coordinator in regard to necessary additional facilities, equipment, supplies, or technical services which may be needed, keeping the Site Emergency Coordinator informed of plant status and operational plans, and requesting necessary support.
- h. Implementing the provisions of the Emergency Plan and applicable plant procedures.
- i. Conferring with shift supervision regarding protective measures on site.
- j. Determining the necessity for and timing of emergency organization evolution from the initial response phase to the longer term recovery and restoration organization in coordination with the Site Emergency Coordinator, the Emergency Control Officer, and the Corporate-Government Liaison.
- k. Provide recommendations for protective actions directly to the county's Emergency Operations Center when warranted under General Emergency conditions.

2. Technical Engineer & other engineers and technicians as necessary as determined by the Emergency Director

- a. Maintain close liaison with shift supervision concerning plant status and on-site protective actions.
- b. Perform assessment actions and advise shift personnel of recommended actions.
- c. Provide continued input to the Emergency Director concerning plant operations, corrective actions, and protective actions.

3. Record Keeper and Communicator

Function: Maintains logs to record pertinent data, events, and communications. He communicates with other personnel and facilities involved with the emergency as directed.

4. Data Display Operators: Instrument and Control Technicians.

Function: Maintain the operability and operate the TSC data display system as directed.

Emergency Operations Facility Staffing

1. Site Emergency Coordinator: Superintendent, Generation Division/Nuclear.

The Site Emergency Coordinator has at his disposal additional on-site and off-site technical personnel (including consultants) that he may call upon to provide support in performing the function of the EOF. His duties include:

- a. Maintaining awareness of plant status and off-site consequences of the emergency.
- b. Coordination between the on-site emergency organization and the off-site emergency organization in regard to obtaining necessary additional facilities, equipment, supplies, personnel, or technical services.

- c. Managing and supervising of the Emergency Operations Facility.
  - d. Serving as the primary on-site contact for Federal, State, and Local radiological emergency response agencies which dispatch personnel to the plant vicinity.
  - e. Providing management direction for the development of the Emergency Support Center, if needed.
  - f. Providing direction for PECO emergency organization personnel who are dispatched to the plant vicinity, such as Public Information representatives and Stores Division personnel, and for any support personnel activated by Philadelphia Electric Company.
  - g. Keeping the Emergency Control Officer and the Emergency Director appraised of actions taken and the status of off-site consequences.
  - h. Determining the necessity for and timing of emergency organization evolution from the initial response phase to the longer term recovery phase in coordination with the Emergency Director and the Emergency Control Officer.
  - i. Informing the various emergency response groups when the recovery response phase organization is to be implemented.
2. Record Keeper and Communicator
- a. Maintain logs to record pertinent data, events, and communications.
  - b. Relay information and instructions to appropriate personnel as directed.
3. Fire and Damage Team Leader

Directs fire fighting efforts and repairs to damaged equipment.

4. Personnel Safety Team Leader

Directs the actions of the various Personnel Safety Team groups. These include contamination and injury checks, accountability, and accompanying injured to hospitals.

5. Radiation Survey Team Leader

Directs the actions of the various Radiation Survey Team Groups, including plant and offsite surveys, sampling and sample analysis, and dose assessment.

6. Dose Assessment Functional Group Leader

- a. Participate in the evaluation of radiological and meteorological data and use this to calculate refined contamination dose rate and projected dose estimates in accordance with EP-316, Cumulative Population Dose Calculations.
- b. Coordinate with the other Radiation Survey Team groups in obtaining additional radiological release data and use this to continue to refine the dose rate estimates.

7. Public Information Representatives

- a. Assure prompt and accurate relay of all emergency related information to the public information outlets at the near site news center and Corporate Headquarters. This information will be obtained from the technical personnel on duty at the Emergency Operations Facility.

8. Data Display Operator (I & C Technician)

Maintain the operability of, and operate the EOF data display system as directed.

- II.a. Describe TSC instrumentation, instrument quality, instrument accuracy and reliability (request 2 in NRC's February 18, 1981 letter)
  
- b. Describe the TSC data display systems (request 4 in NRC's February 18, 1981 letter)
  
- c. Describe the data transmission system to be installed between the TSC and control room (request 5 in NRC's February 18, 1981 letter).

Description:

The following discussion describes the systems identified above. The Technical Support Center Information System (TSCIS) provides data to the Technical Support Center staff for their evaluation. The TSC consists of a Closed Circuit Television System (CCTV), telephone communication equipment, access to control room recorders and their associated hard copy, and other supporting equipment.

The objectives of the Technical Support Center Information System are as follows:

- A. To provide information in the Technical Support Center for analysis of the plant conditions and to alleviate the problem of control room overcrowding during an accident.
  
- B. To provide the basis for guidance to the control room operating personnel in the management of abnormal conditions and in accident mitigation.
  
- C. To provide the basis for supporting the data needs of management personnel who will be located in the near-site Emergency Operations Facility (EOF) during recovery operations.

The design functions established for the Technical Support Center Information System (TSCIS) are as follows:

- A. The TSCIS shall provide to plant management and technical personnel the technical data which will enable them to:



1. Evaluate and diagnose plant conditions.
  2. Provide guidance to control room personnel in management of accident conditions, accident mitigation, recovery from accident conditions, restoration of the plant into a safe condition, and resumption of normal plant operation.
  3. Provide technical information to personnel in the Emergency Operation Facility (EOF).
- B. During the recovery operation, the TSCIS shall aid the Technical Support Center (TSC) staff in their review of the accident sequence and the determination of the status of operations.
- C. The TSCIS shall aid the TSC staff in their review of the plant steady state operating conditions prior to an accident, the transient conditions producing the initiating event, and the plant systems' dynamic behavior throughout the course of the accident.
- D. The TSCIS shall also be capable of presenting the Safety Parameter Display System (SPDS) data in the TSC.
- E. Data provided in the EOF shall also be available in the TSC via the TSCIS.
- F. The TSCIS shall provide to TSC personnel the current value and time history of selected parameters available in the control room.

In order to meet these criteria a CCTV system will be installed, telephone communication will be established between the TSC, Control Room and EOF, and a procedure will be established to permit Technical Support Center personnel to have access to hardcopy from control room recorders. The dedicated communicators in the control room would be available to obtain the hard copies from the control room recorders.

The CCTV System will consist of four cameras installed in the control room. The cameras will have remotely controlled pan/tilt and zoom capabilities. Each camera will be connected via video cable to a dedicated TV monitor located in the TSC. Individual

controls will be provided in the TSC for each camera to enable the cameras to be operated independently. The camera controls will allow TSC personnel to manipulate the cameras for viewing of control room instrumentation on the TSC TV monitors. This will provide TSC personnel with current value information for selected plant data parameters. The CCTV system will also provide TSC personnel with an overall view of the control room and aid in communication with the control room personnel. A videotape recorder will be provided to permit recording of selected activities. The CCTV System will be designed with an availability objective of 99%.

TSC personnel will utilize hardcopy from control room recorders to determine time history and trends of pre-event and post-event data.

The TSC Information System will also provide TSC personnel with meteorological and radiological data.

Monitors capable of continuously measuring the concentrations of airborne particulate radioactivity, radioiodine, and noble gases present in building air will be placed in the TSC and EOF. Each monitor is capable of providing a local alarm when pre-set levels are exceeded.

Philadelphia Electric will, as part of a study to upgrade the present process computer, investigate the possibility of adding a Safety Parameter Display System (SPDS) function to a new plant process computer. If this approach proves feasible, a CRT-based SPDS display will be provided in the control room and the Technical Support Center.

III. Describe the TSC power supply systems, power supply quality, reliability and availability and consequences of power supply interruption.

#### System Description

The TSC and the EOF will be normally fed from a 33 kV line with an onsite 1000kW, 480 volt diesel generator available for emergency power as shown on the attached sketch. The 33 kV line feeds a 2400 volt bus through a Westinghouse, 2000 kVA, 33 kV to 2400 volt transformer. This 2400 volt bus feeds another 2400 volt bus through tie breakers. Both 2400 volt buses are Westinghouse indoor type switchgear. Each

2400 volt bus feeds one 480 volt load center, which is also Westinghouse indoor type equipment, through a Westinghouse, 1000/1333 kVA, AA/FA, 2400-480 volt transformer. One load center feeds four Westinghouse 480 volt motor control centers which supply power to the Technical Support Center, and the other load center feeds three Westinghouse 480 volt motor control centers, which supply power to the Emergency Operations Facility. The seven motor control centers are classified as either essential or non-essential depending on the function of the equipment that they feed. The two 480 volt load centers are interconnected by two load center tie circuit breakers which are open under normal conditions. The enclosed sketch depicts the power supply system for the emergency support facilities.

The equipment loads at the Technical Support Center and the Emergency Operations Facility consist of TV monitors, radiation monitors, motors, electric heaters, lighting, instruments, and controls. There is no computer equipment currently planned for the Technical Support Center or Emergency Operations Facility. The TSC and EOF electrical power supply is independent of the Unit 2-3 power systems and therefore will not degrade the capability or reliability of any Peach Bottom Unit 2 or 3 safety-related power source.

#### Power Supply - Offsite

The 33 kV supply line originates at Susquehanna Substation which is fed from Conowingo Hydro Generating Station. The voltage and frequency on the 33 kV line are very stable under non fault conditions and are maintained within limits that will not degrade the performance of any of the essential loads at the Technical Support Center or the Emergency Operations Facility. The 33 kV line has sufficient capacity available to feed the Technical Support Center and the Emergency Operations Facility.

#### Emergency Diesel Generator

The diesel generator consists of a Westinghouse 1000 kW synchronous generator and a General Motors diesel engine driver. Tests on the diesel generator verified that the unit can:

1. Start and accelerate to the rated speed of 720 RPM within 15 seconds.
2. Sustain five starts per air receiver. There are 2 air receivers.
3. On reaching speed; pick up a 500 HP load, and in intervals of 10 seconds thereafter 250, 250 and 100HP.

Voltage is automatically controlled by a Westinghouse Transient Voltage Regulator and speed is automatically controlled by a Woodward Industrial governor. Voltage and frequency are maintained within limits that will not degrade the performance of any of the essential loads at the Technical Support Center or the Emergency Operations Facility. The Diesel Generator has sufficient capacity to feed all the essential loads at the Technical Support Center and the Emergency Operations Facility.

#### Quality and Reliability

If the 33 kV line and the diesel generator are both lost, the Technical Support Center and the Emergency Operations Facility would be inoperative, however, the probability of total loss of power is very remote. The total power system has an unavailability of  $5.38 \times 10^{-5}$ . The failure rate of the total power system is  $2.59 \times 10^{-2}$  failures per year. The reliability can be computed for any specific period of time by using the following formula:  $R(t) = e^{-xt}$ , where R is reliability, x is the failure rate of  $2.59 \times 10^{-2}$  failures per year, and t is time.

- IV. Describe the plant records and data available, and record management systems.

#### Description:

Plant design information (descriptions, drawings, specifications) will be provided by a combination of hard copies on file and aperture cards. A reader/copier to be used in conjunction with the aperture cards will be situated in the TSC (third floor of the Unit 1 Administration Building). These records will be controlled in a manner similar to procedures established for Peach Bottom Unit 2-3

records. The following information will be provided from one or both of these sources in the TSC.

- a. General Arrangement Drawings
- b. P & ID's
- c. Piping System Isometrics
- d. Electrical Schematics
- e. Wire & Cable lists( raceway schedules)
- f. Single Line Electrical Diagrams
- g. P&ID's with modification issues
- h. List of completed modifications
- i. Piping area drawings
- j. Single line electrical diagrams with modification issues.
- k. Rack and panel arrangement drawings for the reactor building.
- l. Secondary and controls diagrams
- m. Instrument Index list
- n. Project "Q" list
- o. Equipment lists
- p. Standard Catalog
- q. Vendor prints
- r. Emergency Procedures
- s. Technical Specifications
- t. Final Safety Analysis Report (updated copy)

The following records will be available in the Emergency Operations Facility. Additionally, the location of the EOF in the same building as the TSC facilitates ready access to the information discussed above for the TSC.

- a. General Arrangement Drawings
- b. Single Line Electrical Diagrams
- c. Emergency Procedures
- d. Technical Specifications

The list of records described above for the TSC and EOF is preliminary and may be revised.

V. Describe the data to be provided to the EOF.

Description:

The Emergency Operations Facility Information System (EOFIS) consists of a Closed Circuit Television System (CCTV), telephone communication equipment, access to control room recorders and their associated hard copy, and other supporting equipment.

The objectives of the Emergency Operations Facility Information System are as follows:

- A. Provide information for management of the overall emergency response to an accident which results in Site Area or General Emergency Alerts.
- B. Provide radiological and meteorological data to assess off-site doses.
- C. Provide information to EOF personnel to aid them in informing the NRC and state and local emergency response agencies about conditions potentially affecting the public in accordance with the Peach Bottom emergency plan.

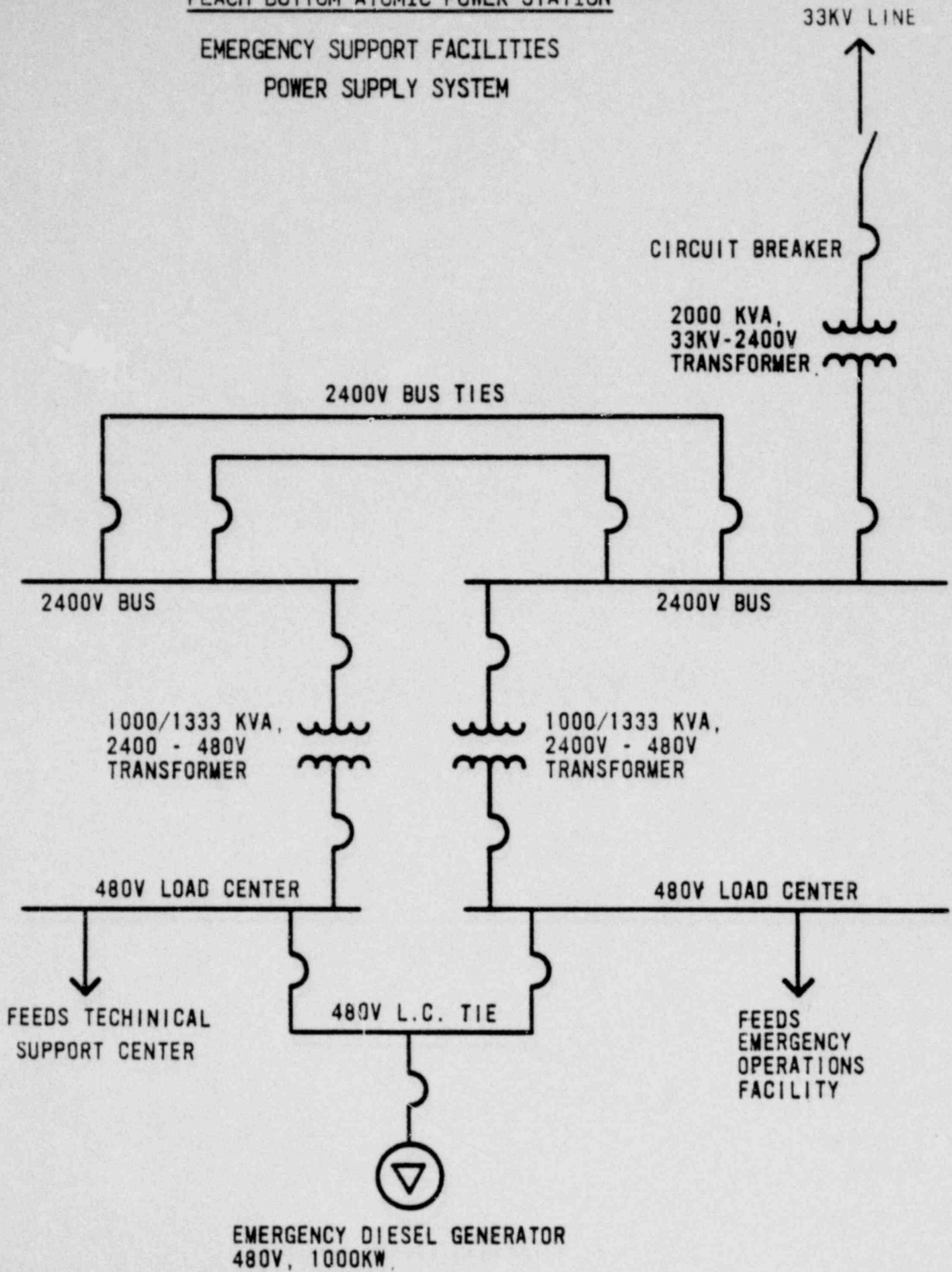
In order to meet these objectives, a portion of the TSCIS CCTV system will be extended to the EOF, telephone communication will be established between the EOF, control room and the TSC, and a procedure will be established to permit Emergency Operations Facility personnel to have access to hardcopy from control room recorders.

The EOFIS CCTV system will consist of camera controls and TV monitors for the two TSCIS cameras which can view the radiological and meteorological control room instrumentation. The EOFIS will provide EOF personnel the current value, time history and trends (where applicable) for meteorological and radiological data, and dose assessment. Emergency Operations Facility personnel will utilize hardcopy from control room recorders to determine time history and trends (where applicable) of meteorological and radiological data.

The Peach Bottom Meteorological Monitoring System will be discussed in correspondence scheduled to be submitted on July 1, 1981 per the schedule in NUREG 0654.

PEACH BOTTOM ATOMIC POWER STATION

EMERGENCY SUPPORT FACILITIES  
POWER SUPPLY SYSTEM



# PEACH BOTTOM ATOMIC POWER STATION

## ENCLOSURE 2

### Technical Support Center & Emergency Operations Facility Request for Exception to Location Criteria

#### Technical Support Center

Philadelphia Electric Company's response to NUREG 0578 in our letter dated October 17, 1979, committed us to establishing an interim Technical Support Center (TSC) by January 1, 1980. In response to a letter from H. R. Denton, NRC Director, to all Operating Nuclear Power Plants dated October 30, 1979, we took action to meet the implementation schedule mandated by that document. Specifically we were to establish an interim TSC by January 1, 1980, and a permanent TSC by January 1, 1981. In order to meet these NRC commitments, Philadelphia Electric decided to use the decommissioned Peach Bottom Unit I Administration Building for the TSC and EOF facilities.

The Unit I Administration Building is a three story structure located approximately 700 feet from Peach Bottom Units 2 and 3. The onsite Technical Support Center (TSC) is located on the third floor, which was the Unit I Control Room and supporting facilities. In order to meet the design criteria established in NUREG 0578, that "the center shall be habitable to the same degree as the control room for postulated accident conditions"; additional shielding was added to the North Wall of the Control Room and the corridor. We installed a dedicated HVAC system which utilizes HEPA and charcoal filtration and can be isolable from outside air by dampers.

The total habitable area dedicated to the Technical Support Center is 4900 ft<sup>2</sup>. This area includes a plant status display area, NRC office, PECO office, storage area, kitchen, lunch and conference area, records room, rest area and men and women's toilet facilities.

The Technical Support Center lies outside, but adjacent to, the main security boundary of Units 2 and 3. A cyclone fence around the perimeter of Unit I and an entrance guard posted 24 hours per day affords security for the TSC.

NUREG 0696, Functional Criteria for Emergency Response Facilities, recommends a TSC location of 2 minutes walking time to the control room which exceeds the walking time at Peach Bottom. We hereby request exception to this criteria for reasons discussed below.

1. The close proximity of the TSC to the control room was recommended according to NUREG 0696 to facilitate face-to-face interaction between control room personnel and the senior plant manager working in the TSC. The Peach Bottom TSC will have dedicated telephone communications



with the control room, personnel dedicated to communications assigned to the control room, and a closed circuit TV system for monitoring plant status. Additionally, the presence of the Shift Technical Advisor in the control room should enhance communications between the control room and the technical staff located in the TSC. These provisions will provide satisfactory compensation for the planned location of the Peach Bottom TSC.

2. Procedures will be developed to ensure that a motor vehicle will be available for transporting personnel between the TSC building and the Unit 2-3 structure. This should reduce the transportation time between locations to approximately 3 minutes, including the time to walk from the motor vehicle to the control room.
3. The location of the TSC is ideally situated by being readily accessible from both Unit 2-3 and a public road. The latter enhances TSC accessibility to offsite support personnel such as (1) offsite engineering and management personnel, (2) vendors, architect engineers, and consultants, and (3) representatives from the Federal, State, and Local agencies.
4. The recommendation for face-to-face interaction contradicts the TSC function of preventing congestion in the control room as stated in NUREG 0696. Even if face-to-face interaction capabilities are given a high priority, it would be possible to address this concern by the mechanism of assigning a member of the plant's technical staff to the control room during the period that the TSC is activated.

#### Emergency Operations Facility

The Emergency Operations Facility is located on the first and second floors of the Unit I Administration Building. NUREG 0696 published July 1980 states "The location of the EOF shall be balanced between close proximity to the plant to facilitate emergency response and recovery operations and sufficient distance from the plant to enhance habitability." In order to meet this criteria a dedicated HVAC system comprised of HEPA and charcoal filtration was installed for the EOF. The existing shielding was sufficient for meeting the personnel dose criteria identified in NUREG 0578. The total habitable area dedicated to the Emergency Operations Facility is 3100 ft<sup>2</sup>. This area includes a display area, NRC office, PECO office, conference area, records area, toilet facilities, telephone equipment room, and four undesignated office areas for support personnel.

The location of the Peach Bottom TSC and EOF in the same building has the distinct advantage of enhancing the interface between personnel assigned to these facilities, and promotes greater flexibility in the availability and utilization of personnel in responding to an emergency.

NUREG 0696 and Generic Letter 81-10 recommends that Emergency Operations Facilities located within 10 miles of the plant meet the following criteria:

- a. Habitability consisting of ventilation isolation with HEPA (no charcoal).
- b. Provide a backup EOF between 10 - 20 miles.

We have designed the habitability control system for the EOF so as to have the same radiological habitability as the control room under accident conditions. This includes a ventilation system with both high-efficiency particulate air (HEPA) and charcoal filters. Based on the habitability design for the Peach Bottom EOF that exceeds the criteria of Generic letter 81-10 and NUREG 0696, we hereby request exception to the requirement to provide a backup EOF.