

**PSEG Site
ESP Application
Part 5, Emergency Plan**

SECTION 9

EMERGENCY FACILITIES AND EQUIPMENT

1.0 PSEG - Emergency Facilities and Equipment

Emergency facilities and equipment are maintained both onsite and offsite. Equipment specifically for monitoring and assessment of operational, radiological, geophysical events, and similar instrumentation is described in Section 10, Accident Assessment. The Emergency Operations Facility and Emergency News Center/Joint Information Center are offsite facilities that serve PSEG.

Although onsite facilities are described separately in Sections 2.0, 3.0 and 4.0, to reflect station specifics, they have common functions, and fulfill the same organizational and operational commitments.

1.1 Control Rooms

The Control Room continues its control functions during emergency response. The classification and notification responsibilities are met from the Control Room until other emergency facilities are activated. The radiological protection emergency equipment and communications support that are available to the Control Room are shown in Tables 9-1 and 7-1. The specific features of major communications systems are described in Section 7, Emergency Communications.

1.2 Operations Support Center

The Operations Support Center (OSC) functions as an information relay station, dispatching office, assembly and assignment point, and also as an accountability station for teams assigned from the OSC. Radiological protection emergency equipment and communication systems that are available to the OSC are presented in Table 9-1 and Table 7-1, respectively. Specific features of the communications systems are described in Section 7, Emergency Communications.

Refer to Attachments 6 through 9 for additional information regarding the OSC for each proposed technology.

1.3 Technical Support Center

The Technical Support Center (TSC) provides a well equipped location onsite to support plant management during an emergency. The TSC functions as an augmented communication/analysis center of technical data to supplement the Control Room staff's technical analysis and to support plant operations personnel. Figure 3-2 illustrates the staffing and organization of the TSC.

The TSC is used by members of the emergency response organization to relieve control room operators of (and remove from the control room) any plant specific duties not directly related to the direct handling of plant controls. Such duties include directing analysis and assessment of the emergency conditions and performing functions associated with the Emergency Operations Facility, when that is not activated. The TSC is activated for Alert, Site

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Area Emergency, or General Emergency action levels and may be activated at an Unusual Event, if deemed necessary by the EC. The TSC is used as the assembly point for PSEG personnel, onsite vendor support, NRC, or for the personnel who are directly involved in assessment of an accident and mitigation. After TSC activation, if it becomes uninhabitable for any reason, the TSC personnel will transfer to an unaffected station TSC.

The TSC emergency response facility can be staffed and activated within 90 minutes of an Alert or higher emergency classification. This staffing and activation time could vary if severe weather conditions or acts of nature/terrorism were experienced at the same time as the ERO callout. The Emergency Duty Officer (EDO) determines when the TSC is staffed based on manning requirements as identified in the PSEG Emergency Organization Chart. The EDO's discretion may be used to declare the TSC activated with less than the staffing required in the organization chart based on extenuating circumstances and plant conditions. Efforts to staff all required positions shall continue until the positions are filled or the emergency is terminated.

Radiological protection emergency equipment and communications support that are available to the TSC are presented in Table 9-1 and Table 7-1, respectively. When activated, the TSC becomes the primary on-site communications center during an emergency. The TSC provides reliable voice communications to the Control Room, OSC, EOF, NRC, and other offsite agencies. In addition, it provides facsimile transmission capability and electronic transfer capabilities. The specific features of the communications systems are described in Section 7, Emergency Communications.

1.4 Emergency Vehicles

An ambulance is available to transport injured or contaminated-injured personnel to Memorial Hospital of Salem County or another facility.

2.0 Onsite Emergency Facilities and Equipment – Salem – Not Used

3.0 Onsite Emergency Facilities and Equipment – Hope Creek – Not Used

4.0 Onsite Emergency Facilities and Equipment – PSEG Site

Emergency facilities and equipment were developed to meet the intent of NUREG-0737, Supplement 1, except as indicated. Additional information related to the specific locations design, and function of the PSEG Site Control Room, TSC and OSC is in Attachments 6 - 9 of this Plan.

4.1 Control Room Area

The PSEG Site Control Room is designed to meet the habitability requirements of the General Design Criteria 19 and Standard Review Plan Section 6.4. The radiological protection emergency equipment provided in the Control Rooms and Operations Support Center is shown in Table 9-1.

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4.2 Operations Support Center (OSC)

In the event of an emergency, operations personnel not on duty and other support personnel report to the OSC to form repair and corrective action teams. Additionally, an OSC Coordinator is designated to coordinate the teams' efforts. The TSC will serve as a backup OSC if required.

4.3 Technical Support Center (TSC)

The TSC meets all habitability requirements outlined in NUREG-0737, Supplement 1. This center supplies technical support to the operations personnel in the Control Room area. The analytical and assessment capabilities assigned to the PSEG Site TSC include:

Safety Parameter Display System (SPDS)
Computerized Dose Assessment
Plant Engineering Support

Documentation available within the TSC supports emergency classification, procedures, and assessments. Document groups include:

Emergency Plans and Procedures
Operating Procedures (Emergency and Normal)
Departmental Support Documents
Technical Specifications
Engineering Support Material
Updated Final Safety Analysis Report
Technical Drawings

4.4 Control Point (CP)

During normal operations, this area serves PSEG Site as the access control point for personnel entering or leaving the Radiological Controlled Area. The radiological protection emergency equipment provided at this location is shown in Table 9-1. Communications equipment is described in Section 7, Emergency Communications.

5.0 Offsite Emergency Facilities and Equipment

5.1 Emergency Operations Facility - General Description

The Emergency Operations Facility (EOF) is controlled and operated by PSEG. It serves as the near site support center to form management of the aggregate response to a radiological emergency as defined by NUREG-0654, Revision 1, and Appendix 1. PSEG commits to operating the EOF so as to fulfill the functional requirements of paragraph 8.4.1 of NUREG-0737, Supplement 1. It should be noted that based on the backup EOF exemption granted for the Salem Generation Station Plan, and the fact that the PSEG Site, Salem and Hope Creek Generating Stations are co-located, the exemption is applicable to all EOF requirements for the PSEG Site.

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The EOF provides facilities and equipment to support staff performance of four major functions:

1. Management of overall emergency response activities.
2. Coordination of radiological and environmental assessment.
3. Development of recommendations for protective actions for the public.
4. Coordination of emergency response operations with Federal, state, and local agencies in accordance with the Emergency Plan.

The communications systems available at the EOF are presented in Table 7-1. Specific features of those systems are described in Section 7, Emergency Communications.

The EOF emergency response facility can be staffed and activated or ready to activate, within 90 minutes of an Alert or higher emergency classification. This staffing and activation time could vary if severe weather conditions or acts of nature/terrorism were experienced at the same time as the ERO callout.

Activation of the Emergency Operations Facility is at the option of PSEG at the Alert emergency classification. The option is exercised depending upon management's evaluation of the potential consequences of the situation based upon the nature of initiating conditions, trends subsequently perceived, and results of actions taken to mitigate potential consequences. EOF activation is mandatory in the event of declaration of a Site Area Emergency or General Emergency.

An individual who is designated as the Emergency Response Manager (ERM) manages the activated EOF. The ERM directs PSEG's offsite response activities and coordinates actions with and provides appropriate support to the Technical Support Center (Emergency Duty Officer). The EOF is staffed by PSEG and other (Federal, state, and support personnel, as required) emergency personnel designated by the PSEG Emergency Plan.

The ERM determines when the EOF is fully staffed based on manning requirements as identified in the PSEG Emergency Organization Chart. The ERM's discretion may be used to declare the EOF activated with less than the staffing required in the organization chart based on extenuating circumstances and plant conditions. Efforts to staff all required positions shall continue until the positions are filled or the emergency is terminated.

Equipment is provided in the EOF for acquisition, recording, display and evaluation of containment and operational conditions, radiological releases, and meteorological data. The data is analyzed and evaluated to determine the nature and scope of any protective measures, which may be recommended to state and local officials for protection of the public health and safety, if the magnitude and potential effects of a radioactive release dictate. The equipment includes a display of information collected by the Radiological Monitoring System (RMS). All equipment, displays, and instrumentation to be used to perform essential EOF functions are located in the EOF.

Facilities are provided in the EOF for NRC, FEMA, New Jersey, Delaware and local emergency response agency personnel responsible for implementing emergency response actions for protection of the general public. This arrangement enhances coordination of activities and exchange of information among participating agencies and the PSEG

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emergency response organization. The agencies also operate from other offsite control centers located at their respective agency facilities.

To ensure EOF activation readiness, PSEG provides normal industrial security for the EOF complex including lock and key control, a personnel identification system, exterior lighting, and a perimeter security system providing offsite alarm notification and response by local police department. If the EOF is activated, access to the building and facility is restricted to authorized personnel by the industrial security system.

5.2 Location, Structure, and Habitability

The Emergency Operations Facility is located in PSEG Environmental & Energy Resource Center (EERC) on Chestnut Street in Salem, New Jersey. This site is located 7.5 miles from the Technical Support Center. The site location is judged to provide operational and logistical benefits with regard to its relationship to the area's transportation system. Salem is at the intersection of the two state highways (Routes 45 and 49). Three county highways, Routes 557, 540, and 581, connect to Routes 45 and 49. A freight only railroad and an airfield serve the city of Salem capable of accommodating small commercial aircraft. In addition, the offsite EERC has a helicopter-landing pad. There is also a landing pad located just outside of the Protected Area. This makes possible rapid movement of personnel between the station and the EOF.

This transportation network makes the EOF readily accessible by road and air to designated personnel of all agencies and activities assigned an emergency response role by the emergency plan.

The physical structure of the facility has been well engineered for the design life of the plant. The building is a 65,000 square foot structure on reinforced concrete footings and floor slab, with supporting steel columns, beams, and joists. The built up roofing material is supported on a steel deck.

The EOF conforms to all applicable building codes and has been designed to withstand winds and floods with 100 year recurrence frequency. The State of New Jersey Department of Environmental Protection identifies the 10 year and 100 year high water levels at the EOF site as 7.1 feet and 8.9 feet above mean sea level, respectively. The floor elevation of the EOF is 9.0 feet. The elevation of the road to the EOF is slightly over 4 feet. Thus, record high water levels would flood the access road and preclude access to the EOF by vehicle and could hamper activities of mobile monitoring teams in some areas. The EOF would continue to be accessible by helicopter. Internal EOF operations would continue without adverse impact. The SGS Final Safety Analysis Report, Environmental Report, Operating License Stage, Appendix B Report, Site environmental studies, identifies high winds with a 100 year recurrence frequency as having a maximum velocity of 100 miles per hour. It is not anticipated that such winds will significantly affect self contained internal EOF operations. This is due to the strength of building construction and the availability of backup power.

However, activities of mobile monitoring teams would have to be suspended. Under such conditions, radiation exposures would be correspondingly low. Remote monitoring would continue to be available to the extent transmission lines survive. Similarly, data transmission could be adversely impacted by damage to microwave and radio antennae and transmission lines, particularly if winds were accompanied by electrical storms, which are often associated

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with squall lines, tornadoes and hurricanes. Under such circumstances, atmospheric conditions could be expected to intermittently affect data transmission and communications.

Protective clothing is maintained at the EOF, in accordance with the emergency plan. In addition, mutual support agreements with other utilities in the region include providing emergency equipment, including radiation survey devices and protective clothing. Potassium iodide for the staff is also stored in the EOF emergency equipment locker.

Additional supplies are available from Radiation Management Corporation, Philadelphia, Pennsylvania or other approved vendors. A description of the methodology to determine airborne I-131 concentrations is presented in Section 10 of the Emergency Plan. Detection limits for I-131 are less than 1E-7 uci/cc if not masked by noble gases. Masking is not expected to be a factor due to use of silver zeolite filter cartridges and adequate purge times in sample collections.

Full face respirators with charcoal filters are maintained in the EOF. However, airborne contamination is not expected to present a major problem at the EOF due to its location and the upgraded ventilation system.

5.3 Size

The EOF meets or exceeds the space requirements of paragraph 8.4.1c of NUREG-0737, Supplement 1. Approximately 5240 square feet of floor space in the EERC is designated for use as the Emergency Operations Facility. This provides approximately 75 square feet of workspace per person for a staff of up to 70 persons and 650 square feet for conference rooms.

Additional space is available in the building to accommodate another 100 persons in the unlikely event of a situation in which a greatly augmented staff would be required. Normal EOF occupancy by all concerned parties and agencies is not expected to exceed 80 persons.

The functional layout of the EOF depicts designated workspaces:

1. Space for EOF data system equipment for data transmission and reception (Data Center, Communications Center).
2. Space to repair, maintain and service equipment displays and instrumentation (in EERC workshops and labs).
3. Space to accommodate communications equipment and its use by EOF personnel to perform their assigned functions.
4. Space for ready access to functional displays of EOF data (Data Center, provisions for installation of remote terminal in the Dose Assessment Area).
5. Space for storage of plant records and historical data or space for the means to readily acquire and display the records.
6. Space for emergency response activities.
7. Office space for state, local and FEMA personnel.
8. Separate office space to accommodate a minimum of ten NRC personnel during emergency activation of the EOF (NRC offices).

Personnel are assigned to work areas in functional groups. Groups, which perform related tasks and therefore would have the most need for face to face interaction, are, in most cases,

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located adjacent to one another. Each workstation is assigned sufficient display space, equipped and staffed as appropriate to its function.

5.4 Radiological Monitoring

The EOF complies with the radiation protection provisions of paragraph 8.4.1B of NUREG-0737, Supplement 1 by providing radiological monitoring equipment in the facility. This equipment provides the capability to monitor airborne radioactivity (gross beta, gamma, iodine, and particulates) to ensure that EOF personnel are not subjected to adverse radiological conditions. Available equipment and a table in a Emergency Plan Implementing Procedure permits the detection of radioiodines at a concentration as low as 1.00E-07 uCi/cc using a field counting methodology (A portable continuous air sampler collects iodine in a silver zeolite cartridge. The cartridge is then counted using a count rate meter. The corrected counts per minute value are then compared to a graph to find the iodine concentration).

The continuous air monitor sampler may be moved to various points in the facility, is equipped with a strip chart recorder, an alarm light, and an alarm bell. The alarm setting is variable and will be set slightly above background to give an early warning of adverse conditions, which may affect EOF habitability. In addition, the alarm light provides visual warning of radiation levels. The air sampler is maintained and calibrated on a regular schedule by station personnel.

More detailed counting analysis is available at the station (emergency situation permitting) or any other licensed facility (i.e., Peach Bottom, Limerick, etc.).

Survey meters are available, which have sensitivity ranges up to 50 R/hr. Additional EOF radiation monitoring equipment includes high and low range self reading dosimeters (or equivalent electronic dosimeters), TLDs, and air samplers. Radiation monitoring equipment is stored in the radiological protection emergency equipment closet (Table 9-1). The radiological assessment staff performs habitability of the EOF, in accordance with procedure.

The Radiological Support Managers have a variety of radiological, health physics, and nuclear power plant experience.

5.5 Instrumentation, Data System Equipment, and Power Supplies

The EOF complies with the provisions of paragraph 8.4 1G NUREG-0737, Supplement 1 by providing an EOF data system consisting of a Radiological Monitoring System, an operational parameter data information system, which provides plant variables to a computer system that displays data and is capable of being printed out.

The EOF data system performs its functions independently of personnel actions in the Control Room and the TSC and will not degrade or interfere with Control Room and plant functions.

Backup power is provided to ensure data system availability. Backup power is supplied by a diesel generator in conjunction with an automatic transfer switch, which activates the generator upon loss of power. The generator provides electrical output sufficient to supply all facility lighting, the telephone system and all EOF data and communications systems described in this document. Electrical equipment load in the EOF does not affect any safety

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related power source. The data system has been designed to preclude loss of any stored data vital to EOF functions due to power supply failure or circuit transient.

5.6 Technical Data and Data System

The comprehensive EOF technical data system is capable of reliable collection, storage, analysis, display, and communication of information on containment conditions, radiological releases, and meteorology sufficient to determine site and regional status, determine changes in status, forecast status and take appropriate actions. Variables from the following categories that are essential to EOF functions are available in the EOF.

Appropriate variables from Table 1 of Regulatory Guide 1.97 (Rev. 3) and; the meteorological variables in Regulatory Guide 1.97 (Rev. 3) for site vicinity and regional data available via communication from the National Weather Service.

6.0 Emergency News Center/Joint Information Center (ENC/JIC)

Emergency News Center/Joint Information Center (ENC/JIC) facilities are at the Salem County 911 Center. The ENC/JIC provides space for media briefings; media work area, and telephone access. Separate work areas are maintained for PSEG, NRC, State and County personnel. The facility is convenient to major highways. Designed for public use, the building has sufficient facilities to support use by 100 or more media personnel.

If support for more than 100 media personnel is needed, PSEG will coordinate the use of alternate media briefing locations with State and County officials. The communications equipment is described in Section 7 and summarized in Table 7-1. For media use, commercial telephone lines have been assigned from a physically distant exchange, which would reduce the load on local telephone services during an emergency.

Under appropriate circumstances, space for a limited number of press representatives may be made available at the EOF.

7.0 Additional Offsite Capabilities

7.1 Offsite Environmental Radiological Monitoring

Section 10, Accident Assessment presents a discussion of other assessment capabilities and instrumentation. The Stations are located on a man-made island, which, within four miles, is surrounded by tidal marshlands or river. The thermo luminescent dosimeter (TLD) points of the routine offsite environmental radiological monitoring program include TLDs in neighboring towns and cities and at schools and public assembly points, and at distances sufficiently close to the station to provide meaningful data in the event of an accident. No TLDs were deployed on marshlands where no serviceable roads existed. The Operational Radiological Monitoring program for the Station conforms to the NRC Radiological Assessment Branch Technical Position as described in Section 10 of the Emergency Plan.

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7.2 Meteorological Monitoring

A meteorological program in accordance with the recommendation of NRC Regulatory Guide 1.23 "Onsite Meteorological Program" and Section 2.3.3 of NUREG 75/087 (Rev. 3) has been established. Monitoring and assessment capabilities are discussed in Section 10.

The dose calculation methodology of Section 10 of the Emergency Plan, concerning the transport and diffusion of gaseous effluents, is consistent with the characteristics of the Class A model outlines in NUREG-0654 (November 1980).

7.3 Alternate Reporting Location

An alternate near-site location at the EERC has been identified and equipped in the event that a security or other event prevents the ERO from reporting to the primary onsite Emergency Response Facilities. The ERO would be notified to report to this alternate reporting location instead of to their normal onsite Emergency Response Facilities.

8.0 Field Assessment and Monitoring

The EOF, once activated, is the location for collection and assessment of all offsite radiological monitoring information from the survey teams. Periodically the information on doses calculated in accordance with Section 10 of the Plan is multiplied by the projected sector population data from Emergency Plan Attachment 11 to provide an estimated integrated dose to the affected population.

9.0 Administration and Maintenance of Emergency Facilities and Equipment

The emergency equipment listed in Table 9-1 is inventoried and operationally checked quarterly, and after each use to allow for replacement in the event of normal servicing and calibration. The instrument calibration frequency has been established in accordance with the appropriate technical guidance.

Table 9-1 is a generic listing of typical equipment maintained both on and offsite. Detailed listings are part of emergency preparedness inventory procedures.

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**TABLE 9-1
EMERGENCY EQUIPMENT SUMMARY
(TYPICAL)
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EQUIPMENT	CR/OSC	PSEG Site CP/TSC Field Team Kit	EOF/Field Team Kit
RO2A Survey Instrument *	L	L	E
RM14/EL14ON *	L	L	E
Teletector *	L	L	E
E520 Survey Instrument *	L	L	E
RO2 Survey Instrument *	L	L	E
High Range Dosimeters or Electronic Dosimeters *	L	L	E
Low Range Dosimeters or Electronic Dosimeters *	L	L	E
Dosimeter Charger (not needed for Electronic Dosimeters)	L	L	N/A
Air Sampler (A/S)	L	L	E
DC Powered A/S	L	L	N/A
Marinelli Beaker with A/S Head	L	L	N/A
Charcoal Cartridges for A/S	L	L	E
Silver Zeolite Cartridges for A/S (Sealed)	L	L	E
Particulate Filter Papers for A/S	L	L	E
Envelops for Particulate A/S	L	L	E
Flashlights with Batteries	L	L	E
Spare Batteries (replacement set for each instrument)	L	L	E
Sample Containers or Small Bags	L	L	E
Smears	L	L	E
Rad Info Signs	L	L	A
Barricade Rope or Ribbon and Stanchions	L	L	N/A
Tape	L	L	E

NOTES/LOCATION DESCRIPTIONS

- A = Accessible in general area of the Emergency Response Facility
- E = Located in the EOF or EOF Field Team Kits
- N/A = Not applicable in that specific Emergency Response Facility
- L = Location at PSEG Site Emergency Response Facilities (To Be Determined)
- * = or equivalent

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**TABLE 9-1
EMERGENCY EQUIPMENT SUMMARY
(TYPICAL)
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EQUIPMENT	CR/OSC	PSEG Site CP/TSC Field Team Kit	EOF/Field Team Kit
Large Plastic Bags	L	L	E
Step-off Pads (SOP)	L	L	A
Paper or Cloth Coveralls	L	L	E
Shoe Covers	L	L	E
Rubber Gloves	L	L	E
Hoods and Caps	L	L	E
Respirators and Charcoal/Particulate Cartridges	L	L	A
Emergency Plan Procedures (as applicable)	L	L	E
SCBAs	L	L	N/A
Check Sources (button) *	L	L	E
KI Tablets	L	L	E
Absorbent Material	N/A	L	E
Calculator/Computer	N/A	L	E
Dosimeters of Legal Record	L	L	E
Logs, Paper Supplies, Pens, Clip Boards, etc.	L	L	E
Plastic Sheeting	N/A	L	A
First Aid Kit	L	L	E

NOTES/LOCATION DESCRIPTIONS

A = Accessible in general area of the Emergency Response Facility

E = Located in the EOF or EOF Field Team Kits

N/A = Not applicable in that specific Emergency Response Facility

L = Locations at the PSEG Site Emergency Response Facilities (To Be Determined)

* = or equivalent

1. The Control Room/Operations Support Center (CR/OSC) area comprises adjacent hallways, lockers, and storage areas.
2. Control Point (CP) comprises adjacent and accessible area including lockers, equipment issue areas, and dress out areas.
3. Technical Support Centers (TSC) are dedicated facilities.
4. Emergency Operations Facility (EOF) includes the adjacent meeting rooms and Room 50.
5. The EOF Field Team Kits describes materials reserved for Field Monitoring.