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Pennsylvania Power & Light Company

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Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
215/770-7501

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Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
AMENDMENT 55 TO OPERATING LICENSE APPLICATION
ER 100450 FILE 841-1
PLA-1940

Docket Nos. 50-387
50-388

Dear Mr. Schwencer:

Attached are sixty (60) copies of Amendment No. 55 to the operating license application. This amendment contains Revision 7 to the Susquehanna SES Emergency Plan. Revision 7 to the Emergency Plan incorporates changes which reflect our response to Generic Letter 82-33 submitted to you for review in PLA-1621, dated April 15, 1983. It is our understanding that there are no outstanding questions from your staff.

The changes to the Emergency Plan and reasons for them are given below:

Manning of the EOF

PP&L previously committed to having the emergency facility functional, including the stationing of a senior manager at the EOF, within approximately one hour of declaration of a site or general emergency. However, experience during drills has shown that in order to accommodate the requirements imposed by this commitment, multiple transfers of authority have occurred at times critical to the successful management of the emergency. The multiple transfers are necessitated by the combination of the obligation to staff within one hour and our desire to apply the best management resources to the emergency. Consequently, we believe it appropriate to change our approach so that transfers of authority will take place at times which more naturally fit the developing management of the emergency and not at predetermined times established to satisfy an arbitrary requirement. Additionally, the number of transfers of authority will be minimized to avoid a loss of continuity. Past drill experience also indicates that TSC personnel can effectively attend to plant safety and manage the off-site radiological protection function until a logical transition to the Recovery Manager's staff can occur. Because of the unique features of offsite radiological monitoring and assessment activities, we are applying additional dedicated resources to this function as quickly as possible in the EOF.

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Based on the above reasoning, we have made the following changes to Chapter 6.0 of the Emergency Plan:

1. Manning of the EOF by radiological monitoring and assessment personnel will occur within one hour of the declaration of a site or general emergency. This manning will include a senior manager capable of making radiological assessments and protective action recommendations.
2. Manning of the EOF by the Recovery Manager and his staff will occur on a timely basis, within three hours of the declaration of a site or general emergency.

Emergency Response Computer System

The original purpose of the emergency response computer system was to provide a seismically qualified, single failure proof, safety grade system with remote interrogation capability for the acquisition, preparation, and display of Unit 1, Unit 2, and common plant data for the emergency response facilities. The overall design was directed toward providing both a dedicated system for the operation of an SPDS and an integrated system which would tie together the operations of the various emergency response facilities. The system as previously envisioned went far beyond the requirements of Supplement 1 to NUREG 0737.

Currently we have installed plant process computer access terminals in the TSC and EOF. Prior to our next NRC observed emergency drill, we plan to have a functionally independent SPDS utilizing its own data acquisition, preparation, and display systems. Based on our successful utilization of the existing system and the status of present requirements, we believe that these systems satisfy all data requirements in the TSC and EOF. Chapter 7.0 of the Emergency Plan has been revised to reflect our change in commitment.

Backup EOF

PP&L's previous emergency planning philosophy included maintenance of a backup EOF in Hazleton, Pennsylvania. Although this facility is adequate in every respect, recent experience indicates that the technical support function would be better served by the Allentown General Office. Although the General Office is located approximately 50 miles from the site, there are obvious advantages to utilizing it in a technical support role in the event the primary EOF is evacuated. During the course of any emergency, the General Office provides technical support and is manned throughout the emergency. All necessary communication facilities are in place and functional. Because there will be an established data flow to the General Office, the potential for a loss of continuity caused by an evacuation of the primary EOF would be greatly reduced. The backup facility in Hazleton will continue to be utilized to maintain a PP&L presence in the area near the site in the event of primary EOF evacuation and will provide overall emergency management, radiological assessment, and liaison with offsite agencies. Only the technical support function formerly provided at this site has been moved to the General Office.

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Chapter 7.0 of the Emergency Plan has been revised to reflect these changes in our planning.

If you have any questions regarding this amendment please contact Mr. W. W. Williams at (215) 770-7856.

Very truly yours,



N. W. Curtis

Vice President-Engineering & Construction-Nuclear

Attachment

cc: R. L. Perch - USNRC

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5.0 ORGANIZATIONAL CONTROL OF EMERGENCIES

The on-site emergency organization and its augmentation and extension off-site are discussed in this section. Included are the authorities and responsibilities of key individuals and groups, and the communication links for notifying, alerting, and mobilizing emergency personnel.

PP&L's Emergency Plan is based upon a four phase approach to accident response and mitigation.

The first phase involves the immediate response to the emergency condition. This consists of identification of the condition, initiation of prompt corrective action and initiation of prompt notification to local, state and federal agencies as well as appropriate members of PP&L's Emergency Response Organization. This initial phase is implemented by the on-shift organization. The on-shift organization has been staffed and trained to be capable of both safely operating the unit and quickly and effectively responding to an emergency condition. Initially, the Shift Supervisor, the highest ranking management individual on-shift, will assume the role of Emergency Director. He is responsible for initiating both corrective action and emergency management activities. He will designate a communications coordinator and instruct him to initiate call-in of selected personnel. He will have the capability to perform initial dose projections and make resulting recommendations regarding off-site protective actions. At this initial phase, the Operations Support Center is activated with shift personnel. The Shift Supervisor will designate an Operations Support Center Coordinator who will organize and direct in-plant emergency team functions as directed by the Emergency Director. Upon activation of phase two, additional personnel will be available, and control and dissemination of these teams will shift to the technical support center.

The second phase of accident response and mitigation is the activation of the on-site Emergency Organization. Upon notification by the on-shift organization, the Plant Superintendent or his designated alternate, will report to the site to assume the role of Emergency Director. Additionally, support coordinators in areas of technical assessment, radiological assessment and operational coordination will also report to the site along with their support staffs. These individuals form the nucleus of the Emergency Director's Team and will activate the Technical Support Center. The Technical Support Center will be fully functional within a 30 to 60 minute time frame of initial notification. As the Plant Superintendent and his support coordinators arrive, they will be brought up to date by the Shift Supervisor and then will in turn assume responsibility from the Shift Supervisor for their particular areas of expertise. Thus, within 30 to 60 minutes of notification,

the emergency management activities, including communications, will be under the control of the Plant Superintendent or his designated alternate; the dose projection and assessment activities will be directed by the Radiation Support Coordinator; technical expertise in the areas of reactor engineering, thermal hydraulics, plant design, etc., will be directed by the Technical Support Coordinator and the Operation Coordinator will provide a focal point for all operational activities. Thus, the Emergency Director's Organization will take over all emergency management and support activities from the on-shift organization leaving the on-shift organization to devote their entire efforts towards establishing and maintaining the plant in a safe, stable condition.

The third phase is activation of Off-site support. This is the organization which will man the Emergency Operations Facility (EOF) the General Office Nuclear Emergency Support Center (GONESC) and the General Office Engineering Support Center (GOESC) to provide in-depth technical support and off-site radiological assessment. The EOF staff will assume responsibility for overall management of the accident off-site radiological projection and assessment activities, and communications to off-site agencies and personnel. They also provide the interface to the GONESC and GOESC where substantial technical and administrative support is available. The EOF will be functional within 30-60 minutes of notification. It will initially be manned by an interim organization headed by the EOF Support Manager. The interim organization is composed of personnel whose normal work location is SSES; they will assume control of overall management of the accident, off-site radiological activities and coordinate technical support to the TSC. Thus the EOF, GONESC and GOESC relieve the Emergency Director and on-site organization of external responsibilities allowing them to devote their entire efforts to in-plant activities.

The interim EOF staff is supplemented by additional personnel from the General Office. The EOF Support Manager is relieved of the responsibility for overall management of the emergency by the Recovery Manager. In addition Support Managers in the areas of radiological, technical and operations/communications will report to the EOF with their staffs.

The GONESC and GOESC are also activated within 30-60 minutes of notification. These support centers, headed by the General Office Support Manager and Engineering Support Leader respectively, interface with the EOF staff to provide extensive technical and administrative support to the plant. The GONESC is also the primary communications link to PP&L Corporate Management.

The last phase is that of restoration and will be headed by a Restoration Manager. This phase leads ultimately to the

return to service of the unit. The organizational and philosophical concepts that will be utilized during this phase are highly dependent upon the nature of the emergency. The restoration phase would not begin until there was complete assurance that the plant was in a stable shutdown condition and that there would be no inadvertent or unplanned significant release of radioactivity to the environment.

From the above, it can be seen there is a clear succession of responsibility with respect to emergency management activities from the on-shift organization through the On-site Emergency Director to the EOF Support Manager and ultimately to the Recovery Manager. All personnel taking part in these organizations will be properly trained as to their responsibilities under emergency conditions and the authority they have with respect to implementation of same.

5.1 NORMAL OPERATING ORGANIZATION

The Susquehanna SES organization for normal operation is shown in Figure 5.1. This organization is applicable to the operation of Units 1 and 2. The figure shows the levels of responsibility within the station and indicates the typical number of personnel in each job category during normal working hours (8 a.m. - 4 p.m. weekdays, excluding holidays). The minimum shift crew, at all other times consists of:

One (1)	Shift Supervisor (SRO)
One (1)	Unit Supervisor (SRO)
One (1)	Assistant Unit Supervisor (RO)
Two (2)	Licensed Operators (RO)
One (1)	Shift Technical Advisor
Four (4)	Non-Licensed Operators
One (1)	Health Physics Technician
One (1)	Chemistry Technician
One (1)	Security Shift Supervisor
One (1)	Assistant Security Shift Supervisor
Twelve (12)	Security Officers

5.2 ON-SITE EMERGENCY ORGANIZATION

The Susquehanna SES on-site emergency organization is illustrated in Figure 5.3. This organization applies to emergency conditions lasting more than about one hour and up to the implementation of the Restoration Organization outlined in Section 9.0. An on-call emergency organization duty roster is maintained to ensure the following emergency management positions within the emergency organization can be filled within 30 to 60 minutes.

- o Plant Superintendent or designated alternate (Emergency Director)
- o Radiation Protection Coordinator

- o Operations Coordinator
- o Technical Support Coordinator
- o Communications Coordinators
- o Administrative Coordinator

The on-site emergency organization begins with the minimum shift crew as shown on Figure 5.2 and expands to include others as they are needed. Additional available manning is detailed in Table 5.2.

The Emergency Director will have available, via duty rosters and call-in procedures, personnel with collective expertise in radiological measurement and control, damage control, off-site radiological measurement, plant engineering and emergency management. The areas of expertise, numbers of personnel available, reporting location and time availability are delineated in Table 5.2. Required Personnel will be in the TSC or on-call 24 hours a day during the emergency.

This section describes the positions and responsibilities of the on-site emergency organization. Table 5.1 summarizes typical emergency activity assignments for station personnel. Actual assignments will be addressed in the Emergency Plan Implementing Procedures.

5.2.1 Emergency Director

The Shift Supervisor shall assume the role of the Susquehanna SES Emergency Director until such time as he is relieved of that responsibility by the Superintendent of Plant, or his designated alternate. Typical alternates are the Assistant Superintendent of Plant, the Supervisor of Operations, and the Technical Supervisor.

The Shift Supervisor shall ensure that the Superintendent of Plant, or designated alternate, is promptly notified of an emergency condition.

The Susquehanna SES Emergency Director shall assume full responsibility for the implementation and administration of the Emergency Plan and is responsible for assuring continuity of resources until he relinquishes those responsibilities to the EOF Support Manager or Recovery Manager. The responsibility and authority of the Susquehanna SES Emergency Director are set forth in Appendix E.

The Emergency Director cannot relinquish any of the above responsibilities until the arrival of and assumption of responsibilities by the EOF Support Manager or Recovery Manager at the Emergency Operations Facility. At that time, he may relinquish, to the EOF support manager or Recovery

Manager, any of the above responsibilities except those related to the responsibility to maintain the Unit in a safe shutdown condition with adequate core cooling and no uncontrolled radioactive material releases.

Functional responsibilities of the Emergency Director include:

- 1) Immediately upon notification of an existing or potential emergency, report to the Control Room and initiate assessment activities, including classification of the emergency and dose projections if appropriate.
- 2) Unilaterally implement the immediate on-site corrective and protective actions to bring the incident under control and mitigate its effects.
- 3) Assure that appropriate notifications and recommendations to off-site organizations are made within 15 minutes.
- 4) Appoint Emergency Coordinators for assistance with current and continuing emergency control, but assume those responsibilities until the positions are filled.
- 5) Augment the on-site emergency organization with duty roster personnel and other available station staff members as dictated by the emergency condition.
- 6) Continue re-assessment of emergency status and make appropriate recommendations including protective actions to off-site organizations.
- 7) Ensure that information released is accurate and released through the proper channels.
- 8) Activate Emergency Facilities described in Section 7.0.
- 9) Assign technical liaison to Emergency Operation Centers, if requested.
- 10) Communicate with and provide information to the Recovery Manager, EOF Support Manager, Public Information Manager, and General Office Support Manager.
- 11) Issuance of Radioprotective Drugs in accordance with prescribed procedures and in consultation with the Radiation Protection Coordinator and medical consultants.
- 12) Taking essential corrective action which may involve the risk of higher-than-normal radiation exposure to emergency response personnel. Table 6.2 and Section

emergency response personnel. Table 6.2 and Section 6.5.1 provide the basic criteria for this decision. Time permitting, consultation shall be made with medical consultants.

5.2.2 Operations Coordinator

This position may apply to both short-term and long-term emergencies, and will be filled by the Supervisor of Operations or a designated alternate. Typical alternates are Shift Supervisor or a Senior Results Engineer. Primary responsibilities of the Operations Coordinator are:

- 1) Direct Control Room and in-plant operational activities through the Shift Supervisor.
- 2) Advise the Emergency Director on matters concerning plant operations.

5.2.3 Communications Coordinator

A Plant Control Operator will be appointed, if plant conditions permit, for short-term responsibilities. For a long-term emergency, the position of Communications Coordinator will be filled by a Simulator Instructor. A typical alternate for this position is a member of the Susquehanna Training Staff.

Responsibilities of the Communications Coordinator include:

- 1) Make proper notification to off-site organizations.
- 2) Initiate call-in procedures as requested by the Emergency Director.
- 3) Function as liaison for emergency-related communications between the Emergency Director and on-site and off-site emergency groups.
- 4) Maintain records concerning the emergency.

5.2.4 Radiation Protection Coordinator

This position will be filled by the Health Physics Supervisor. Typical alternates for the position of Radiation Protection Coordinator are the Radiological Support Supervisor and the Health Physics Foreman. Responsibilities of the Radiation Protection Coordinator include:

- 1) Perform initial dose projection and off-site environmental assessment until these functions are performed by the off-site Radiation Support Manager.

- 2) Provide technical advice to the Emergency Director and the Operations Coordinator on radiological aspects of on-site emergency activities.
- 3) Provide technical advice to the Emergency Director concerning recommendations for off-site protective actions.
- 4) Maintain Communication with and provide information to the off-site Radiation Support Manager.
- 5) Maintain Communication with and provide radiological information to DER/BRP until relieved of this responsibility by the EOF Support Manager or Radiation Support Manager.
- 6) Provide on-site radiation monitoring personnel for effluent release assessment.
- 7) Provide radiation monitoring personnel for emergency team efforts.
- 8) Assist in personnel decontamination efforts.

5.2.5 Technical Support Coordinator

This position will be filled by the Technical Supervisor. Typical alternates are the Plant Engineering Supervisor or the Reactor Engineering Supervisor.

Responsibilities of the Technical Support Coordinator include:

- 1) Analyze mechanical, electrical, and instrument and control problems; determine alternate solutions, design and coordinate the installation of short-term modifications..
- 2) Analyze thermohydraulic and thermodynamic problems and develop solutions.
- 3) Assist in the development of Emergency Procedures, Operating Procedures, etc., as necessary for conducting emergency operations.
- 4) Analyze conditions and develop guidance for the Emergency Director and operations personnel.
- 5) Resolve questions concerning Operating License requirements with NRC representatives.
- 6) Maintain lead technical responsibility, coordinating dissemination of technical work assignments to EOF and General Office Technical groups.

7. Maintain communication with and provide technical information to DER/BRP until relieved of this responsibility by the Assistant Technical Support Manager or Technical Support Manager

5.2.6 Administrative Coordinator

This position will be filled by the Personnel and Administrative Supervisor. Typical alternates are the Administrative Supervisor or the Material Supervisor.

Responsibilities of the Administrative Coordinator include:

- 1) Coordinate provisions for transportation, food and other logistical support for emergency personnel.
- 2) Provide personnel and work schedules for relieving emergency personnel.
- 3) Act as liaison with outside groups in providing additional resources such as manpower, equipment, supplies and transportation.

5.2.7 Security Coordinator

This position will be filled by the Supervisor of Security. Typical alternates are the Security Training Supervisor, an offduty Security Shift Supervisor or an offduty Assistant Security Shift Supervisor.

Responsibilities of the Security Coordinator include:

- 1) Maintain plant security and institute appropriate contingency measures.
- 2) Account for personnel in accordance with Emergency Plan Implementing Procedures.
- 3) Provide access and traffic control for off-site PP&L locations such as the EOF.

5.2.8 Operations Support Center Coordinator

This position will be filled by the Assistant Unit Supervisor. Responsibilities of the Operations Support Center Coordinator are:

- 1) Direct the activities of the in-plant Emergency Teams such as damage control, fire brigade and first aid and rescue until relieved of this responsibility by the TSC.

NOTE

The fire brigade has a fire brigade leader (Assistant Unit Supervisor of the unaffected unit) who actually directs the fire fighting efforts in accordance with the Susquehanna SES FSAR and Fire Protection Review Report. However, the coordination of various team activities will be the responsibility of the Operations Support Center Coordinator, until relieved of this responsibility by the TSC .

- 2) Responsible for coordinating the availability and assignment of personnel supporting activities for the Emergency Director and other emergency organization managers until relieved of this responsibility by the TSC.

5.2.9 Radio Communicator

This position will be typically filled by a Maintenance or an I&C Engineer. Responsibilities of the Radio Communicator are:

- 1) Maintain radio communications with all on-site teams.
- 2) Maintain an up-to-date status of in-plant radiological conditions.
- 3) Track dose levels of on-site team members.

5.2.10 Maintenance and I&C Coordinators

These positions are typically filled by the Maintenance and I&C Supervisors respectively. Typical alternates are the Electrical Maintenance Supervisor, Mechanical Maintenance Supervisor, and I&C engineer. Responsibilities of these positions are:

- 1) Organizing, briefing, dispatching, and directing, as necessary, the on-site damage control teams.
- 2) Providing personnel assistance and support to in-plant teams as necessary.
- 3) Supporting technical group activities and operations as necessary.

5.3 OFF-SITE RESOURCES & ACTIVITIES

Necessary management and technical resources to support the on-site staff in the event of an accident will be provided in a time frame commensurate with the need for such resources. The Emergency Plan Implementing Procedures provide specific plans for contacting and activating these resources which includes call-out rosters and communications capabilities.

5.3.1 Emergency Operations Facility

The Susquehanna Emergency Operations Facility (EOF) is located offsite but near the Susquehanna Site. The Off-Site Emergency Organization manning the EOF is illustrated in Figure 5.4 and 5.5. The following personnel are notified of all levels of emergencies.

- o Recovery Manager
- o Public Information Manager

Manning of the EOF is required for a Site Emergency or General Emergency only. Manning of the EOF for an Unusual Event or Alert is the decision of the Recovery Manager. The personnel who, at the direction of the Recovery Manager, will man the EOF are:

5.3.1.1 EOF Support Manager

The Construction Site Superintendent shall assume the role of EOF Support Manager. A typical alternate for this position is the Project Construction Manager.

The EOF Support Manager and staff report to the EOF within 30 to 60 minutes of notification and manage the EOF functions until relieved by the Recovery Manager. The EOF Support Manager has the authority of the Recovery Manager and assumes overall control of off-site emergency management activities and is responsible for:

- 1) Ensuring the proper set up of the EOF.
- 2) Off-site radiological activities carried out by the Interim Radiological Assessment Team (IRAT), including:
 - o Off-site dose calculations, projections and assessment.
 - o Off-site radiological monitoring team activities and control.
 - o Maintenance of communications and necessary updating of DER/BRP radiological.
- 3) Protective action recommendations to DER/BRP
- 4) Direction of EOF technical support staff.
- 5) Communications with DER/BRP technical personnel.
- 6) Communications with the GENERAL OFFICE SUPPORT MANAGER.

NOTE

Responsibility for communications with off-site agencies and the Public Information Manager does not pass to the EOF

Support Manager, it remains with the Emergency Director until relieved by the Recovery Manager.

5.3.1.2 Recovery Manager

The Vice President-Nuclear Operations shall assume the role of PP&L Recovery Manager. Typical alternates for this position are the Manager-Nuclear Support and Manager-Nuclear Plant Engineering.

The Recovery Manager is responsible for providing continuous coordination and evaluation of PP&L activities during an emergency having or potentially having environmental consequences. He is the individual in charge of the PP&L emergency response and is responsible for assuring continuity of resources.

Other functions of the EOF under the direction of the Recovery Manager are the following:

- o Evaluate the magnitude and effects of actual or potential radioactive releases from the plant
- o Recommend appropriate offsite protective measures to DER/BRP.
- o Manage all PP&L emergency resources including the General Office Support Facilities.
- o Coordinate activities of off-site emergency response organizations, including the NRC and PEMA (interface with government authority)
- o Provide current information on conditions potentially affecting the public to the NRC and to State and local emergency response agencies as well as to the public via the Public Information Manager.

NOTE

The Emergency Director assumes all this responsibility until the EOF is manned and he is relieved by the EOF Support Manager or Recovery Manager.

The Recovery Manager will be on-call and available to report to the EOF as soon as reasonably possible. Under normal circumstances, the Recovery Manager should arrive within two hours.

5.3.1.3 Technical Support Manager

The Manager-Nuclear Plant Engineering shall assume the role of Technical Support Manager. Typical alternates for this position are the Manager-Nuclear Design and Supervisor-Nuclear Plant Engineering Mechanical Group.

Responsibilities of the Technical Support Manager include:

- o Writing emergency and contingency procedures
- o Providing design and analysis information to the onsite Technical Support Center
- o Coordinating tasks with other organizations
- o Providing additional personnel to the Technical Support Center, if required
- o Support for planning and re-entry restoration operations
- o Advising the Recovery Manager on technical activities

The Technical Support Manager will be available to report to the EOF as soon as reasonably possible following notification. The Technical Support Manager shall have a staff that is capable of functioning within 30-60 minutes of notification. They will report through an Assistant Technical Support Manager, to the EOF Support Manager until the arrival of the Technical Support Manager. They will be available until the Recovery Manager determines this level of support is no longer needed.

5.3.1.4 Site Support Manager

The Manager-Nuclear Safety Assessment shall assume the role of Site Support Manager. Typical alternates for this position are Supv. Nuclear Operations Support and Supv. Nuclear Maintenance Support.

Responsibilities of the Site Support Manager include:

- o Provide liaison between the Site Technical Support Center and remainder of the offsite emergency resources
- o Provide personnel to work onsite, if required
- o Communicating with the Technical Support Center
- o Coordinating data and information flow
- o Communicating with the Technical Support Center, Public Information Manager, and General Office Support Manager.

The Site Support Manager will be on-call and available to report to the EOF as soon as reasonably possible following notification.

The Site Support Manager shall have a staff that is capable of functioning as soon as reasonably possible after the

accident and will be available on-call until the Recovery Manager determines this level of support is no longer needed.

5.3.1.5 Administrative Support Manager

A Senior Project Engineer within the project construction organization shall assume the role of Administrative Support Manager. Typical alternates for this position are Senior Project Engineers within the project construction organization.

Responsibilities of the Administrative Support Manager include:

- o Providing personnel and work schedules for relieving emergency personnel.
- o Providing housing, food, office equipment, etc., for offsite support personnel
- o Making necessary contractual arrangements for the emergency response efforts
- o Procuring equipment, supplies, and additional personnel needed to support the emergency response efforts.
- o Providing additional manpower for scheduling activities deemed appropriate by the Recovery Manager

The Administrative Support Manager will be available to report to the EOF 30 to 60 minutes following notification.

The Administrative Support Manager shall have a staff that is capable of functioning within 30 to 60 minutes after the accident and should be available on-call until the Recovery Manager determines this level of support is no longer needed.

5.3.1.6 Radiation Support Manager

The Radiological and Environmental Services Supervisor shall assume the role of Radiation Support Manager. A typical alternate for this position is the Radiological Group Supervisor.

Responsibilities of the Radiation Support Manager include:

- o Evaluating the magnitude and effects of actual or potential radioactive releases from the plant
- o Recommending appropriate offsite protective measures to the Recovery Manager

- o Communicating with the Radiation Protection Coordinator in the TSC and with DER/BRP radiological personnel.
- o Assigning offsite monitoring teams

The Radiation Support Manager will be available to report to the EOF as soon as reasonably possible following notification.

The Radiation Support Manager shall have a staff that is capable of functioning within 30-60 minutes of notification. They will report to the EOF Support Manager until the arrival of the Radiation Support Manager and will be available until the Recovery Manager determines this level of support is no longer needed.

5.3.2 Public Information Manager

The Special Assistant to the President-Susquehanna shall assume the role of Public Information Manager and shall manage the activities at the Media Operations Center, located at the Special Office of the President, Berwick or the Berwick YMCA. Typical alternates for this position are the Public Information Director-Susquehanna SES or a Public Information Specialist-Susquehanna, additional upper management technical resources will be provided if emergency conditions warrant.

Responsibilities of the Public Information Manager include:

- o Serving as official company spokesman
- o Preparing and disseminating SSES information to the public via the news media
- o Interpreting plant status information for the news media and other agencies
- o Arranging for news media conferences
- o Rumor control

The Public Information Manager will be available to report to the MOC within 30 to 60 minutes of notification.

The Public Information Manager shall have a staff that is capable of functioning within 30 to 60 minutes after the accident and should be available on-call until the Emergency Director or Recovery Manager determines this level of support is no longer needed.

5.3.3 General Office Support Facilities

Emergency Support from the General Office is provided primarily from two locations—the General Office Nuclear Emergency Support Center (GONESC) and the Engineering Support Center (ESC).

The GONESC is located in the Corporate Offices in Allentown and is intended to coordinate information flow within PP&L, particularly to the Company's corporate management. In addition, the GONESC is responsible for certain external communications and for providing logistical support as may be requested by the EMERGENCY DIRECTOR or RECOVERY MANAGER.

Activation of the GONESC is automatic during a SITE or GENERAL EMERGENCY, and may also occur in an UNUSUAL EVENT or ALERT if the RECOVERY MANAGER deems such action appropriate.

Upon notification to activate, the GENERAL OFFICE SUPPORT MANAGER and his staff report to the GONESC and set up for operations.

The ESC is also located in the Corporate Offices in Allentown and is intended to act as an extension of the technical support function directed by the TECHNICAL SUPPORT MANAGER in the EOF. The ESC staff is responsible for technical support to the TSC and/or the EOF as requested, for updating the GONESC staff with current technical data on the plant status, for looking ahead to determine potential trouble spots and developing contingency plans.

Activation of the ESC is automatic in a SITE or GENERAL EMERGENCY, and may also occur in an UNUSUAL EVENT or ALERT if the RECOVERY MANAGER deems such action appropriate.

5.3.3.1 General Office Support Manager (GOSM)

The General Office Support Manager (GOSM) position is assumed by the Vice President-Engineering and Construction Nuclear upon activation of the General Office. Typical alternates for this position are the Assistant Project Director-Susquehanna and the Manager-Nuclear Administration. Responsibilities of the GOSM include:

- 1) Coordination of the flow of technical information internal to PP&L and specifically, to the members of the Corporate Management Committee.
- 2) Coordination of information flow to Allegheny Electric, INPO, and the NOTEPAD system.
- 3) Direction, coordination, and assessment of the adequacy of services provided from the General Office and elsewhere which are requested by the TSC and/or EOF.
- 4) Contacting GE, Bechtel, and INPO, informing them of the EMERGENCY, and requesting them to be available should their assistance be necessary.
- 5) Providing the following (and other) services at the request of the EMERGENCY DIRECTOR or the RECOVERY MANAGER:

- o Coordination of the mobilization of Nuclear Department or other company organizations required to contribute to emergency operations.
- o Arranging for consultants, contractors, or other external services.
- o Assisting in locating equipment or spare parts.
- o Preparing and administering contracts for external services.
- o Assisting in the preparation of procedures for emergency repairs and/or modifications.
- o Obtaining funding authorization for emergency expenditures.

5.3.3.2 Engineering Support Leader

The Engineering Support Leader (ESL) position is assumed by an individual of at least the Nuclear Plant Engineering Group Supervisor level upon activation of the General Office. The responsibilities of the ESL include:

- 1) Prioritizing assigned tasks and allocating available resources based on the time frame necessary to meet the needs of the Technical Support Manager.
- 2) Ensuring the assumptions used in solving technical problems are commensurate with the needs of the Technical Support Manager.

5.3.4 Local Off-Site Support Groups

The nature of an emergency may require augmenting on-site response groups with local services, personnel and equipment. Support from local organizations may be obtained as necessary from the following organizations:

- o The Berwick Hospital
- o Geisinger Medical Center
- o Shickshinny Area Volunteer Ambulance Association
- o Shickshinny Fire Department
- o Pond Hill-Lily Lake Fire Co. (Ambulance Service)
- o Nescopeck Ambulance Association
- o Salem Township Fire Co. No. 1
- o Hobbie Volunteer Fire Co. (Ambulance Service)

- o East Berwick Hose Co. No. 2
- o Pennsylvania State Police

Specific methods for notification of these organizations are contained in Emergency Plan Implementing Procedures.

5.3.5 Off-site Support Services

An emergency at the Susquehanna SES may require additional technical services and equipment. This type of assistance may be obtained from the following organizations.

- | | |
|---|-------------------------------------|
| o Radiation Management Corporation | o Bechtel Power Corp. |
| o General Electric Company | o PJM Nuclear Utility Support Group |
| o Institute of Nuclear Power Operations | |

Notification of these organizations is the responsibility of the General Office Support Manager. A listing of these organizations, their support capabilities and availability is found in Table 5.3.

5.4 COORDINATION WITH PARTICIPATING GOVERNMENT AGENCIES

5.4.1 State and Local Agencies

This section identifies the principal State and local governmental agencies having action responsibilities for radiological emergencies in the vicinity of the Susquehanna SES. The radiological emergency response plans of these agencies describe their respective responsibilities, authorities, capabilities and emergency functions. Initial notification to each responsible agency will include, but not be limited to, the following information:

- o Caller's Name
- o Emergency Classification
- o Brief Description of Emergency Condition
- o Recommended Agency Response

As additional information becomes available, this information will be directed to all responsible agencies. The Emergency Plan Implementing Procedures provide a format for providing initial and follow-on information. Following is a summary of the provisions for preparedness and response to radiological emergencies by each organization, as well as the primary and alternate methods of emergency notification:

Luzerne County Civil Defense (LCCD) is the lead governmental agency for off-site coordination and response in Luzerne

County. The LCCD emergency plan is entitled "Luzerne County Radiological Emergency Response Plan for the Susquehanna Steam Electric Station."

The LCCD plan includes provision for:

- o Planning and coordination with local, State and Federal authorities
- o Initial response to notification by Susquehanna SES.
- o Alert and warning of local populations
- o Evacuation and other protective measures for local populations
- o Emergency services
- o Situation analysis
- o Operation of Emergency Operations Center

The LCCD plan also contains emergency procedures for the local organizations which are assigned action or support responsibilities under that plan.

The primary method of notification to LCCD is a direct telephone "hot line". Secondary methods are radio and regular telephone.

Columbia County Emergency Management Agency (CEMA) is the lead governmental agency for off-site coordination and response in Columbia County. The CEMA emergency plan is entitled "Columbia County Radiological Emergency Response Plan for the Susquehanna Steam Electric Station."

The CEMA plan includes provision for:

- o Planning and coordination with local, State and Federal authorities
- o Initial response to notification by Susquehanna SES
- o Alert and warning of local populations
- o Evacuation and other protective measures for local populations
- o Emergency services
- o Situation analysis

The CEMA plan also contains emergency procedures for the local organizations which are assigned action or support responsibilities under that plan.

The primary method of notification to CEMA is a direct telephone "hot line". Secondary methods are radio and regular telephone.

Pennsylvania Emergency Management Agency (PEMA) is the lead governmental agency for coordination and response of emergency activities at the State level. The PEMA emergency plan is entitled "Annex E to Commonwealth of Pennsylvania Disaster Operations Plan." The PEMA plan includes provision for:

- o Issuance of planning guidance
- o Coordination of State response to nuclear incidents
- o Coordination of multi-county Emergency Response Planning
- o Operation of emergency operations center
- o Provision for emergency public information
- o Coordination of State agencies and departments

The primary method of notification to PEMA is by direct telephone "hot line" during normal working hours. During holidays and off-hours notification is by regular telephone.

Department of Environmental Resources/Bureau of Radiation Protection (DER/BRP) is the lead governmental agency for providing technical advice and consultation to State and local organizations in evaluation of appropriate off-site preventive and protective measures. The DER/BRP emergency plan is entitled "Plan for Nuclear Power Generating Station Incidents." The DER/BRP plan provides for:

- o Technical consultation on Radiological and Plant conditions
- o Accident assessment
- o Recommendations for protective actions
- o Recommendations for protection of potable water and food
- o Recommendations for recovery and re-entry (off-site)
- o Operation of Emergency Operations Center

The initial notification to DER/BRP will be made by PEMA. Direct "hot line" communications are also established between Susquehanna SES and DER/BRP for transmitting technical information and/or recommendations.

5.4.2 Federal Agencies

The principal Federal government agencies having emergency responsibilities relative to the Susquehanna SES, and a summary of those responsibilities are:

US Nuclear Regulatory Commission (NRC), Region I, is responsible for conducting investigative activities associated with a radiological emergency, and verifying that emergency plans have been implemented and the proper agencies notified.

The primary method of notification to NRC is by "hot line" telephone. A secondary method is by regular telephone. Facilities are available at the TSC and EOF for NRC use.

US Department of Energy (DOE), Brookhaven Area Office, will respond to requests from the Susquehanna SES and provide assistance which is limited to advice and emergency action essential for control of the immediate hazards to public health and safety. All requests for assistance from DOE will be made following consultation with the DER/BRP.

The primary method of notification to DOE is by telephone. Notification may also be made through NRC. DOE assistance will arrive at the EOF within eight (8) hours of their notification. Facilities are available at the EOF for DOE use.

Federal Emergency Management Agency (FEMA), FEMA has the primary role in coordinating the Federal response to a commercial nuclear power plant accident by serving as the primary point of contact for requests for Federal assistance from state and local officials and other Federal agencies. FEMA is responsible for coordinating all non-technical response activities of the Federal government.

TABLE 5.2

MINIMUM ON-SITE AND OFF-SITE EMERGENCY ORGANIZATION CAPABILITIES*

MAJOR FUNCTIONAL AREA	LOCATION	MAJOR TASKS	POSITION TITLE OR EXPERTISE	ON SHIFT	AVAILABILITY 30-60 MIN	AS SOON AS REASONABLY POSSIBLE
Damage Control	OSC/TSC	Overall Coordination	OSC Coordinator	1 ^A		
		Mechanical Repair	Radio Communicator		1	
		Electrical Repair	Mech. Maintenance	1 ^A	1	
		I&C Repair	Elec. Maintenance	1 ^A	1	1
		Radwaste Operations	I&C Tech.	1 ^A	1	
		Rescue & First Aid	Radwaste Operator	1 ^A	1	
				2 ^A	Local Support	
Fire Fighting				5 ^A	Local Support	
Site Access Control & Personnel Accountability	On Station	Security, Communications, Personnel Accountability	Security SS	1		
			Security Ass't SS	1		
			Security Controller	2		
			Security Officers	10		
			Security Coordinator		1	
Technical Assessment and Operations Support	Control Room	Engineering & Eval. Mgmt. of Support Resources	Shift Tech. Adv.	1		
			Tech. Support Coordinator		1	
	EOF	Mgmt. of Support Resources	Operations Coordinator		1	
			Tech. Support Mgr.			1
			Site Support Mgr.			1
			Asst. Technical Support Mgr.		1 ^D	
	TSC	Engineering Eval. & Operations Support	Reactor Engr./Thermal		1	
			Hydraulics			
			I&C Engr.		1	
			Chemistry/Radiochemistry		1	
			Mechanical Engr.		1	
			Overall Plant Design		1	
			Mechanical Systems		1	
	COESC	Engineering Eval. & Operations Support	Plant/Refueling Operations		1	
			Fire Protection		1	
			Chemical Engr./Radiochemistry		1	
			Radwaste Mgmt./Decontamination		1	
			Plant Maintenance		1	
			Vendor/AE Support			1
	EOF	Engineering Eval. & Operations Support	Mechanical Engr.		2	
			Electrical Systems		1	
			I&C Engineer			1
			Overall Plant Design			1

TABLE 5.2

MINIMUM ON-SITE AND OFF-SITE EMERGENCY ORGANIZATION CAPABILITIES*

MAJOR FUNCTIONAL AREA	LOCATION	MAJOR TASKS	POSITION TITLE OR EXPERTISE	ON SHIFT	AVAILABILITY 30-60 MIN	AS SOON AS REASONABLY POSSIBLE.
Plant Operations and Assessment of Operational Aspects	Control Room and/or Plant Proper	Establish and maintain safe shutdown condition	Shift Supv. (SRO)	1		
			Unit Supv. (SRO)	1		
			Control Room Operator (RO)	2		
			Auxiliary Operator	4		
Emergency Direction and Control	Control Room TSC EOF	Overall Emergency Management & Coordination	Shift Supv.	1 ^A		
			Emergency Director		1 ^B	
			Recovery Mgr. EOF Support Mgr.		1 ^C	1 ^C
Notification/Communication	Control Room TSC EOF EOF Power Control Center	Notify PP&L, State, Local & Federal personnel & maintain communication	Comm. Coord.	1 ^A		
			Comm. Coord.		2	
			Comm. Coord.		1	
			Comm. Coord. System Operator	1 ^E		1
Radiological Accident Assessment & Support of Operational Accident Assessment	TSC	Overall Management & Coordination	Rad. Protection Coordinator		1	
	EOF	Overall Management & Coordination	Rad. Support Mgr.			1 ^F
	EOF		EOF Support Manager		1 ^F	
	TSC	Inplant Surveys	HP Technicians	1	2	
	TSC	On-Site Surveys	Survey Team Personnel		2	2
	EOF	Off-Site Surveys	Survey Team Personnel		2	4
	OSC	Radiation Protection	Health Physics	2 ^A	2	2
		o Access Control	Trained Personnel			
		o HP Coverage				
		o Personnel Monitoring				
		o Dosimetry				
	OSC	Radiochemistry/Chemistry Analysis	Chemistry Technician	1	1	
	EOF	Accident Assessment and Characterization	Plant Operations/Refueling Ops			1
			Fire Protection			1
			Chemical Engr./Radiochemistry			1
			Radwaste Mgmt./Decontamination/			1
			Rad Control/HP			
	EOF	Off-Site Dose Calculation and Assessment	Plant Maintenance			1
			Rad Assessment Team		3	2
TOTAL				26	41	24

TABLE 5.2

MINIMUM ON-SITE AND OFF-SITE EMERGENCY ORGANIZATION CAPABILITIES*

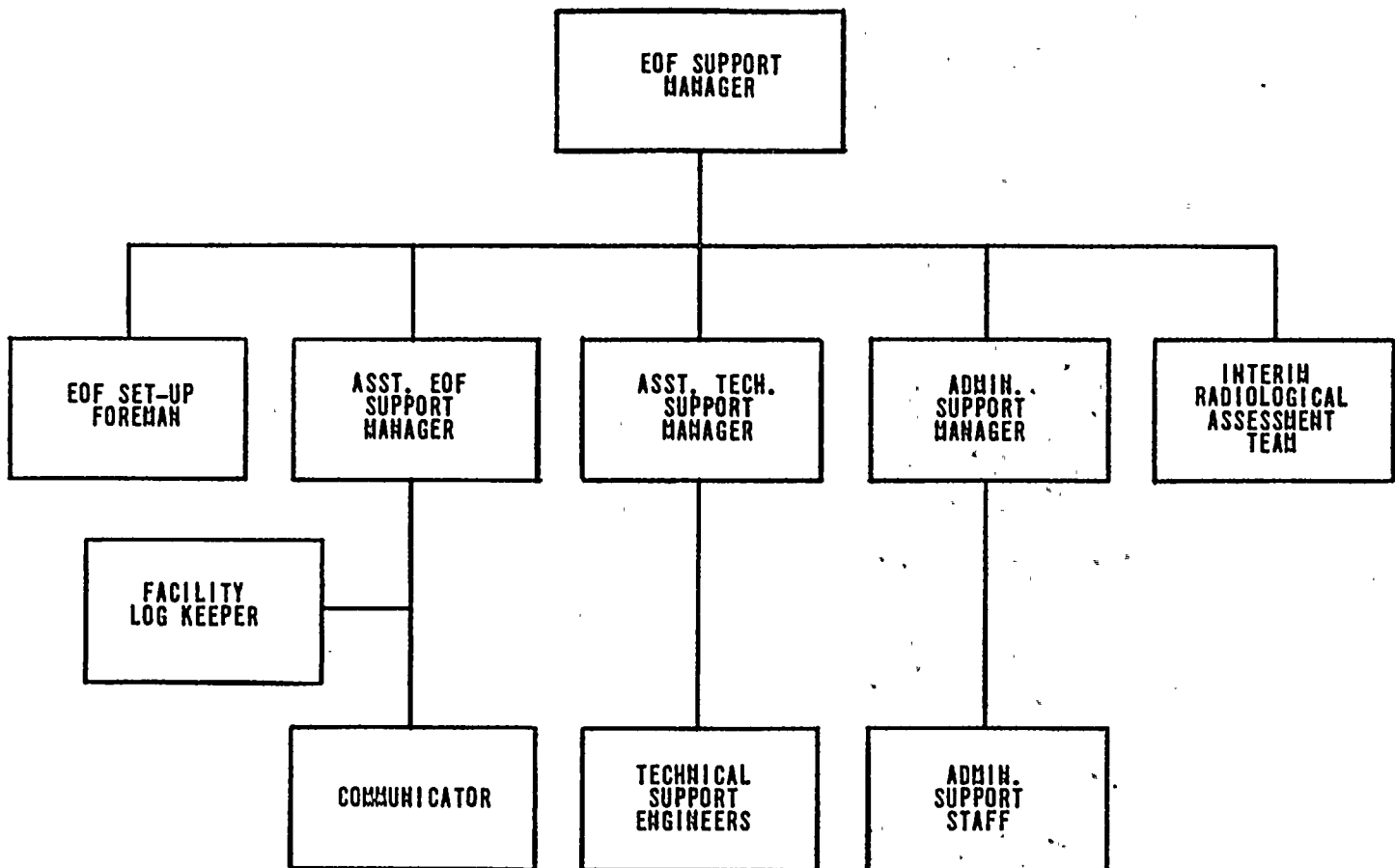
NOTES

- A - Will be provided by Shift Personnel normally assigned other functions, not reflected in availability totals.
- B - Plant Superintendent, or his designated alternate, will assume the role of Emergency Director upon arrival on-site. At that time Emergency Management activities will be carried out from the Technical Support Center.
- C - Overall management of the emergency response will be assumed by the EOF Support Manager upon his arrival at the Emergency Operations Facility. The Recovery Manager will relieve the EOF Support Manager of this function upon arrival at the EOF. However, minute-to-minute in-plant activities remain under the control of the Emergency Director.
- D - The Assistant Technical Support Manager will perform the technical function in the EOF until relieved by the Technical Support Manager.
- E - The System Operator in the Power Control Center (Allentown) is responsible for activation of the off-site emergency organization and corporate notifications.
- F - Overall management of Radiological Accident Assessment will be assumed by the EOF Support Manager upon his arrival at the EOF. However, the Rad. Protection Coordinator will remain in charge of in-plant activities. The Radiation Support Mgr. will relieve the EOF Support Manager of this function upon arrival at the EOF.
- * The personnel listed on this table are the nucleus of the PP&L emergency manpower resources (with one unit operational) that will be available to respond to an emergency in the time frame indicated. Additional personnel will be available to augment this nucleus. Areas of significant support not listed on this table include: Public Information Personnel in the Media Center, Technical Support Personnel located in the General Office in Allentown, and Administrative and Logistics Support Personnel located on-site and off-site.

NOTE:

Activation of the PP&L Emergency on-site and off-site organizations is the responsibility of the Shift Supervisor/Emergency Director. The details are specified in "Emergency Plant - Implementing Procedure - 002 (EP-IP-002), Emergency Management Notifications. Personnel assigned responsibilities in these organizations are listed on duty rosters maintained in the Plant Control Room, TSC, EOF, and the Allentown Power Control Center. All on-call personnel can be paged via the radio paging system.

(HG/P10-05)



Rev. 6, 10/82

SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
EMERGENCY PLAN

PP&L INITIAL
EOF ORGANIZATION

FIGURE 5.4

7.0 EMERGENCY FACILITIES AND EQUIPMENT

Emergency facilities and equipment are provided to ensure the capabilities for prompt, efficient assessment and control of situations over the entire spectrum of probable and postulated emergency conditions. The facilities and associated equipment, and their emergency functions, are described in this section.

7.1 ON-SITE EMERGENCY CENTERS

7.1.1 Station Control Room

The station Control Room is the primary location for the initial assessment and coordination of corrective actions for essentially all emergency conditions. The Control Room is equipped with the readout and controls for all critical plant systems, the readout and assessment aids related to radiological and meteorological monitoring systems, and access to all station communication systems. A typical listing of Control Room emergency equipment is provided in Enclosure 13 of Appendix D.

Off-site emergency coordination functions initially served by the Control Room will be transferred to the Technical Support Center or Emergency Operations Facility for a Site or a General Emergency as deemed appropriate by the Susquehanna SES Emergency Director. The primary consideration is to ensure that the number of personnel involved with the emergency in the Control Room shall not impair the safe and orderly shutdown of the reactor or the operation of plant safety systems.

7.1.2 Technical Support Center

The Technical Support Center (TSC) provides a location for plant management and technical support personnel to assemble to advise plant operations personnel during an emergency. The TSC personnel will provide guidance for management of emergency conditions and accident mitigation.

The technical personnel manning the TSC have access to analytical programs needed to effectively analyze conditions in the plant. The TSC location on the observation gallery overlooking the Control Room permits visual contact and easy access to information in the Control Room which might not be available in the TSC.

The TSC facilities may be used for normal daily activities provided these activities do not degrade the TSC emergency responsiveness or reliability. During normal operating conditions, the TSC will provide office space for the Supervisor of Operations, Operations Staff Engineers and Shift Technical Advisors. The facilities may also be used as a research or

reference area by other station personnel because of the extensive information located here.

The TSC is located in the existing Control Room mezzanine above the Control Room at elevation 741'-1" of the control structure and occupies approximately 2500 square feet. The TSC is within approximately two minutes travel time of the Control Room by elevator or stairs. Reference Figures 7.1 and 7.2.

The TSC is designed to provide working space and facilities for 25 people and is a controlled access area. The Emergency Director (ED) and the on-site emergency response team will be located in the TSC.

The composition of the on-site emergency response team is discussed in Section 5.2. Space is available in the TSC for the Nuclear Regulatory Commission Emergency Response Team.

7.1.2.1 Spatial Layout Description

The TSC includes the following spaces (Reference Figure 7.3):

1) Work Areas:

The work areas adjoin the Monitoring Area. The work areas accommodate modular tables and cubicle-type work spaces. The Plant Technical Specifications, Plant Operating Procedures, Emergency Operating Procedures and Final Safety Analysis Report are located in bookcases in these work areas.

2) Monitoring Area:

The monitoring area is designed to house the Safety Parameter Display Unit, Emergency Response Computer System Display Unit, Unit Monitoring Console, video copier and stack monitoring panel.

3) Conference Room:

The conference room will accommodate 16 people grouped around a conference table composed of several modular reference tables.

4) Document Control Area:

This area houses all the document reproduction facilities such as a copy machine, telecopy machine, and microfilm and microfiche reader printers.

Also located in this area is the vertical stick file for selected as-built drawings. Under-counter cabinets are provided for storage of administrative supplies.

Records (duplicate copies, not originals) will be stored within the TSC in this area. Records stored in the TSC will include design documents as required to diagnose plant problems at the system level. Documents such as as-built drawing in the form of microfilm/microfiche, will be stored in metal cabinets.

5) NRC Conference Room:

This room is provided for NRC consultation.

7.1.2.2. Fire Detection

The halon system shall incorporate a cross-zone ionization detector system. A single detector release shall actuate a predischARGE alarm within the space and at the fire protection panel C-650 in the Control Room. The halon shall be released by the activation of two or more detectors.

7.1.2.3 Fire Protection

A halon system is provided, designed in accordance with NFPA 12A and shall provide a concentration of 5 to 7 percent flooding. The halon system shall provide fire damper releases for all duct openings located in the perimeter of the protected space.

7.1.2.4 Structural Design Criteria

The TSC is located on the mezzanine floor, EL. 741'-1", above the Control Room in the control structure which is a Seismic Category I structure, as defined in NRC Regulatory Guide 1.29, "Seismic Design Classification". This structure is designed in accordance with Chapter 3.0 of the Final Safety Analysis Report.

7.1.2.5 Habitability

7.1.2.5.1 Post-Accident Radiation Doses

7.1.2.5.1.1 Allowable

TSC personnel are protected from radiological hazards, including direct shine and airborne activities for postulated accident conditions to the same degree as control room personnel. Applicable criteria are specified in General Design Criterion 19, Standard Review Plan 6.4, and NUREG-0737, Item II.B.2.

7.1.2.5.1.2 Postulated

The radiation dose to personnel occupying the TSC is the same as the Control Room personnel. The doses from controlling accidents are summarized in Chapter 15.0 of the Final Safety Analysis Report.

7.1.2.5.1.3 Radiation Monitoring

To ensure adequate radiological protection of the TSC personnel, permanent commercial grade monitors are provided to alarm on high gross gamma radiation dose rates. In addition, airborne radioactivity concentrations will be monitored by portable monitors. The monitoring systems shall include local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions. Means to distinguish the presence or absence of iodine will be provided.

7.1.2.5.2 HVAC

The TSC HVAC system is a part of the Control Room HVAC system which is described in FSAR Section 9.4.1.

7.1.2.5.3 Shielding

Shielding requirement for the TSC is the same as for the Control Room for total dose to occupants from direct shine and airborne. Exposure will not exceed 5 Rem whole body for the duration of the accident. This is in accordance with General Design Criterion 19, USNRC Standard Review Plan 6.4, and NUREG-0737, Item II.B.2. Duration of occupancy and method of analysis is the same as that used for the control room.

7.1.2.5.4 Occupant Accommodations

No sleeping accommodations or toilet facilities are provided in the TSC. Use of the plant's existing facilities at grade level of the control structure for washing and toilet accommodations is available. There is a unit kitchen with electric range, under-counter refrigerator and sink in the TSC. Potassium iodide and self-contained breathing apparatus are provided in the TSC.

7.1.2.6 Communication Links

The TSC communication system is comprised of priority access voice links-hotlines, telephone lines tied through the plant switchboard, local outside commercial lines, VHF and UHF radio, and the plant public address system. These facilities provide reliable normal and emergency, primary and backup communication links between the TSC and the Control Room, the EOF, the MOC the NRC and all the communication functions required in the TSC for initial notification and early recommendations to on- and off-site authorities prior to staffing the EOF.

The description of the communication facilities in the TSC is as follows.

7.1.2.6.1 Telephone

Normal telephone service for the TSC will use the plant Private Automatic Branch Exchange (PABX) system and local outside commercial lines. Direct Allentown General Office branch exchange telephone service is also provided.

7.1.2.6.2 Hotlines

Priority access voice communication links with automatic signaling is provided at several locations in the TSC. The hotline facilities have the capability for individual or conference calling between the TSC and the following:

- a. Emergency Operations Facility (EOF)
- b. Control Room (CR)
- c. Pennsylvania Emergency Management Agency (PEMA)
- d. Luzerne County Civil Defense (LCCD)
- e. Columbia County Emergency Management Agency (CEMA)

- f. Nuclear Regulatory Commission, Emergency Notification System (ENS)
- g. Nuclear Regulatory Commission, Health Physics Network (HPN)
- h. Department of Environmental Regulation/Bureau of Radiation Protection (DER/BRP)
- i. Operational Support Center (OSC)
- j. Allentown General Office
- K. Media Operations Center (MOC)

7.1.2.6.3 Radio

The TSC has both a four-channel 450 MHz UHF and a two-channel 150 MHz VHF radio system with digital voice privacy capability.

The two-channel VHF radio is contained in a single desktop control console. This system is used as an emergency backup to the telephone system for communication with LCCD, CEMA, and Allentown General Office, and to communicate with the field monitoring teams.

The four-channel UHF radio is operated from a single desk top control console. The UHF radio will provide primary and backup security, emergency, operational and maintenance communication links.

7.1.2.6.4 Public Address System

The system provides two-way communication facilities for speech input at handset stations. Each station is capable of originating and receiving communication by switching to either a pager channel or to one of five non-interfacing party-line channels.

7.1.2.6.5 Facsimile

A facsimile machine is provided in the TSC.

7.1.2.7 Power Supply

The TSC is an integral part of the existing power block as described in Chapter 8.0 of the FSAR.

7.1.2.8 Instrumentation

The TSC utilizes the same field sensors and signal conditioning equipment which is provided to monitor the nuclear steam supply system and the balance of plant systems. The quality, accuracy, and reliability of the TSC instrumentation is therefore identical to the field instrumentation used to operate the plant. This approach has been taken so that people working in different areas will work with the same data. A detailed description of this instrumentation is provided in Chapter 7.0 of the FSAR.

The data from these instruments shall be collected by three data acquisition systems: the Plant Computer System, the Emergency Response Computer System (ERCS) and the Safety Parameter Display System (SPDS). The Plant Computer System is described in Chapter 7.0 of the Final Safety Analysis Report. SPDS and ERCS are described herein.

7.1.2.9 TSC Data Presentation

The TSC will include human factors engineered man-machine capabilities to allow personnel to determine:

- o plant conditions during normal operation
- o plant steady-state conditions prior to an accident
- o transient conditions producing an initiating event
- o plant system dynamic behavior during an accident

The man-machine interface will be provided by devices tied to the SPDS and ERCS. Prior to availability of SPDS and ERCS, a Unit Monitoring Console tied to the Plant Computer System (PCS) will provide this interface.

7.1.2.9.1 Equipment

The location in the TSC of the equipment described below is shown in the Monitoring Area of Figure 7.3, Technical Support Center Floor Plan.

The ERCS will provide the interface to the following devices:

- (1) Two CRTs housed in the SPDS/ERCS console (both CRTs will be switchable to either Unit 1 or Unit 2); these CRTs are switchable between SPDS and ERCS and will display information related to the Safety Parameter Display System and general plant safety-related data contained in the ERCS for specific TSC functions.
- (2) A printer and/or video copier for the hard copy output of ERCS data.

The plant computer system will provide the interface to the Unit Monitoring Console located on the UMC Table. Graphic and parameter displays, depicting the conditions of the plant systems, which are normally used by plant operators will be accessible at the UMC Table.

7.1.2.9.2 Data

In general, safety-related data will be provided by the SPDS and ERCS. Other plant operational data will be provided by the Plant Computer System.

Data required to support the SPDS and ERCS functions will be available for display in the TSC. The information available in the TSC will be the same as that available in other SPDS/ERCS locations.

SPDS/ERCS data is described herein. The Plant Computer System is described in the FSAR Section 7.7.

7.1.2.10 Records and Documents

7.1.2.10.1 Available Records and Documents

The TSC will contain, as specified in the Susquehanna SES Emergency Plan, up-to-date records for use during emergency conditions. These records include:

- o Emergency Plan Implementing Procedures.
- o Current Plant Technical Specifications
- o Plant Operating Procedures
- o Emergency Operating Procedures
- o Final Safety Analysis Report
- o Drawings, schematics and diagrams showing current conditions of plant structures and systems
- o Dose Calculation Manuals

7.1.2.10.2 Records Management System

The records listed above shall be updated and managed by the Susquehanna SES Document Control Center (DCC) utilizing DCC Administrative Procedures.

7.1.2.11 Security

Although the TSC contains no vital equipment, it is located within a plant vital area and is subject to the vital area access controls as identified in PSAR Section 13.6.

7.1.3 Operations Support Center

The Operational Support Center is the primary on-site assembly area for operations support team personnel during the initial phase of an emergency. This area provides a central location for the assembly, accountability, and dispatching of on-shift emergency team personnel required to perform such functions as: fire fighting, first aid, search and rescue, damage control and on-site radiation monitoring. Equipment required for these teams to perform their functions, as outlined in Appendix D of the Emergency Plan, is stored and maintained in this facility.

During normal plant operations, this area will serve as an operations staff work area for shift changeover purposes as well as shift work assignment area. The Non-Emergency use of the OSC will not degrade its primary purpose as an Operations Support Center.

The OSC is located in the existing Unit #2 Shift Supervisor's Office at the south end of the Control Room on EL. 729'-1" of the control structure. The OSC, approximately 340 square feet in size, is an assembly point for operational support personnel to receive work assignments.

7.1.3.1 Habitability

7.1.3.1.1 Post-Accident Radiation Doses

7.1.3.1.1.1 Allowable

OSC personnel shall be protected from radiological hazards, including direct shine and airborne activities for postulated accident conditions to the same degree as Control Room personnel. Applicable criteria are specified in General Design Criterion 19, Standard Review Plan 6.4, and NUREG-0737, Item II.B.2.

7.1.3.1.1.2 Postulated

The radiation dose to personnel occupying the OSC is the same as the Control Room personnel. The doses from controlling accidents are summarized in Chapter 15.0 of the Final Safety Analysis Report.

7.1.3.1.1.3__Radiation_Monitoring

To ensure adequate radiological protection of the OSC personnel, a permanent commercial grade monitor will alarm on high gross gamma radiation dose rates.

7.1.3.1.2__HVAC

The OSC HVAC system, like the TSC HVAC system, is a part of the Control Room HVAC system which is described in PSAR Section 9.4.1.

7.1.3.1.3__Shielding

Shielding requirement for the OSC is the same as for the Control Room for total dose to occupants from direct shine and airborne. Exposure will not exceed 5 Rem whole body for the duration of the accident. This is in accordance with General Design Criterion 19, USNRC Standard Review Plan 6.4, and NUREG-0737, Item II.B.2. Duration of occupancy and method of analysis is the same as that used for the Control Room.

7.1.3.1.4__Occupant_Accommodations

No toilet facilities are provided in the OSC. Use of the Plant's existing facilities at grade level of the control structure for washing and toilet accommodations is available.

7.1.3.2__Communications

The OSC communication system includes priority access voice links-hotlines, the plant public address system and telephone lines tied through the plant switchboard.

7.1.3.2.1__Telephone

The normal telephone service for the OSC will use the plant Private Automatic Branch Exchange (PABX) system. The PABX has the capability to reach on- and off-site locations.

7.1.3.2.2__Hotlines

Priority access voice communication links with automatic signaling is provided in the OSC. The OSC hotline has the capability of calling the TSC or the Control Room.

7.1.3.2.3__Public_Address_System

The public address (PA) system is an extension of the plant PA system. The system provides two-way communication facilities for

speech input at hand-set stations. Each station is capable of originating and receiving communications by switching to either a page channel or to one of five non-interfering party line channels.

7.2 PP&L OFF-SITE EMERGENCY CENTERS

7.2.1 Media Operations Center

The Media Operations Center (MOC) will be utilized for all news conferences during a site and general emergency or when deemed necessary by the Public Information Manager. The Berwick YMCA, Berwick, PA, is the designated Media Operations Center with dedicated space to accommodate news conferences for 500 people. Appropriate facilities will be provided for news media personnel.

7.2.2 Emergency Operations Facility

The Emergency Operations Facility (EOF) is an emergency response facility located near the site. The EOF will provide continuous coordination and evaluation of PP&L activities during emergencies having or potentially having environmental impact.

In addition to PP&L emergency personnel, the EOF provides space for various governmental agencies such as NRC, FEMA, PEMA and DOE during these emergencies. Upon activation of the EOF, any information on conditions affecting the public will originate from the EOF, however the dissemination of this information will occur at the Media Operations Center.

The non-emergency activities of the EOF are such that its main function, that of an emergency response facility, is not degraded. During normal plant operation the EOF will be used to provide office space for the Nuclear Emergency Planning Group and for personnel to maintain the Emergency Response Computer System. In addition, space is provided for training purposes and other operational support functions.

The site location of the EOF is in North Central Pennsylvania in Luzerne County approximately 5-1/4 miles north of the Town of Berwick in Salem Township, approximately 2,500 feet southwest of the control structure (Reference Figures 7.4 and 7.5). The site fronts on County Road T-438. Direct access to the site will be maintained over a 12' wide stoned roadway from RtT-438 to the 500 kV Switchyard.

7.2.2.1 ARCHITECTURE

The design philosophy developed for this facility incorporates two major facets: functional, efficient space to house the emergency operation and appropriate environment to promote the operating efficiency of the emergency staff.

The 16,500 square feet, one-story building is a rectangular structure, 167' long by 99' wide. The exterior walls are 12" reinforced concrete with a brick facing. The shed roof is a 9-1/2" reinforced concrete slab. The concrete was utilized to provide the required radiological protection.

Fifty (50) parking stalls are provided at the EOF. In addition, parking space for five (5) emergency response monitoring vans is provided at the side and rear of the building. Communication and power hook-ups are available for each van.

7.2.2.1.1 Spacial Layout Description

The EOF is divided into three areas Reference Figure 7.6:

A. Emergency Operations Response

This area is composed of private, semi-private and open office areas to assure the smooth flow and evaluation of data from the plant site. Features are:

1. A receptionist's area near the main entrance.
2. Offices for emergency managers and support personnel.
3. One office for the NRC to house five people.
4. Space for PEMA and/or FEMA. (Pennsylvania Emergency Management Agency/Federal Emergency Management Agency).
5. A work area for 35 people located in a central core area. Also included in this area is a room for maps and documents.
6. One conference room for up to 15 people.

B. Support Areas for Emergency Response

These areas are provided to accommodate the needs of the EOF staff during an emergency condition. The areas provided are mechanical and electrical equipment, toilets, kitchen and eating facilities, storage areas and a multi-purpose meeting room.

C. Computer Room

A computer room is located in the EOF to support the Emergency Response Computer System. The size of the area is approximately 1,500 square feet. Also, a computer work room of approximately 750 square feet in size, is provided to accommodate up to four (4) employees responsible for the operation and maintenance of the computer equipment. This results in a total requirement of approximately 2,250 square feet of floor space. Additional features are:

1. Raised access flooring for computer room and computer work room.
2. Semi-private office for four (4) computer personnel.
3. Inverter back-up power system to carry electrical load for 15 minutes.
4. Independent cooling system for computer equipment.
5. Exterior access to provide for equipment installation.
6. Paper and material storage area.

7.2.2.1.2 Fire Protection

1. Automatic wet pipe sprinklers on an ordinary hazard pipe schedule are provided throughout the building except below the computer room floor and above ceilings where no combustible materials are present.

2. Computer Area

A total flooding, automatic halon 1301 system protects the room volumes and the volume of the spaces beneath the floors of the computer room and computer work room with a 5% concentration.

3. The halon system is actuated by a cross-zoned product of combustion detection system.

7.2.2.2 Structural Design Criteria

7.2.2.2.1 Governing Codes and Regulations

1. BOCA - "Basic Building Code/1978."
2. UBC - "Uniform Building Code/1979."
3. ASTM - American Standard Testing Materials.
4. ACI - American Concrete Institute.

7.2.2.2.2 Structure Classification

Building Classification: D-5, Non-Hazardous Commercial, Industrial Office.

Construction Type: Type III, Incombustible, height limit 4-story, maximum floor area allowed 20,000 square feet unsprinklered. Maximum travel distance to an approved exit is 150 feet.

NRC Classification: The EOF is classified as a structure, the failure of which would not result in release of significant radioactivity, and is not required for reactor shutdown. This structure is classified as Non-Category I.

7.2.2.3 Habitability

Habitability systems are designed to ensure habitability inside the EOF during normal and abnormal station operating conditions including post LOCA radiological protection requirements. Adequate water, sanitary facilities and medical supplies are provided to meet the reasonable requirements of normal staffing levels during and after an accident.

7.2.2.3.1 Post Accident Radiation Shielding

The EOF is designed to provide sufficient shielding to reduce by a factor of more than 5 the gamma radiation shine from external post accident sources, including both direct shine from the reactor building and from airborne radioactivity outside the EOF which is released from the reactor building. The walls and ceiling of the EOF are designed to provide a minimum thickness of nine inches of concrete. Based on the attenuation of 0.7 MeV gamma radiation, this concrete provides a protection factor of greater than 5. In addition, all entrances and exits from the building and all penetrations through walls and ceiling have a labyrinth design which prevents direct shine from outside sources into any part of the building which is normally occupied without passing through at least nine inches of concrete.

7.2.2.3.2 HVAC

7.2.2.3.2.1 Design Basis

This system provides heating, cooling, ventilation and control of environmental conditions in the Emergency Operations Facility (EOF). The system is designed to accomplish the following objectives during normal and emergency plant operation:

- a) Whenever the building is occupied, maintain the space temperature at $75^{\circ}\text{F} \pm 5^{\circ}$ for personnel comfort and to ensure the operability of the equipment and instruments located inside the EOF under normal and emergency plant operating conditions.
- b) Maintain a slightly positive pressure above atmosphere inside the EOF, in order to inhibit air leakage into the building. This is not applicable for operation during isolation mode.
- c) In a post-accident emergency, the HVAC system is designed to provide radiation protection for occupants of the EOF from airborne fission products. During emergency mode of operation, outside air shall be filtered through filter system consisting of High Efficiency Particulate Filters (HEPA). The changeover from the normal operation mode to emergency operation mode shall be manual. Capability for total isolation of HVAC system shall be provided. During this mode a portion of the recirculation air will be filtered through HEPA filters.
- d) Maintain airflow from areas of lesser to areas of greater potential radioactive contamination.

7.2.2.3.2.2 System Description

Figure 7.7 shows schematic representation for this system giving details of the airflow, duct layout, instrumentation and equipment parameters.

The system design includes air handling units, filtration unit (including fan), condensing units, variable air volume boxes, glycol cooling units for computer room air conditioners, exhaust fans, electric heating coils, radiant heating panels, intake and exhaust dampers and louvers, refrigerant piping, ducting instrumentation and controls and other components required for proper operation of the system.

Two identical size air handling units provide conditioned air through the low pressure supply duct work and bypass type variable air volume boxes to supply air outlets located in the various areas of the building. Area thermostats are provided for individual control. Electric duct heaters are provided in the main supply duct from each air handler, for providing heating during cold weather. Perimeter area heating is provided by ceiling mounted radiant heating panels. Building entrance vestibules are heated using wall insert heaters. Electrical space heaters are provided in electrical and mechanical equipment rooms. System air return is provided through the plenum space between the hung ceiling and the roof. System cooling is provided by two air cooled condensing units located outside the building. Each air handling unit is piped to its condensing unit and refrigerant type direct expansion cooling coils accomplish the cooling function. Toilet rooms, janitor's closet and shower

areas are provided with ducted exhaust system using exhaust fans. Separate exhaust is provided for battery room and exhaust hood located in the sample preparation room.

Computer room cooling and humidity requirements are provided by a separate system consisting of remote glycol coolers, humidifiers, air handling units, instrumentation and controls. Ventilation requirements for this area are provided by the central air handling units.

Normal System Operation:

The air handling units provide heating or cooling as required. These units are operated on an economy cycle and maximum outside air is used for cooling when the enthalpy of the outside air is lower than the enthalpy of the return air. Minimum outside air and air cooled condensing units are used to provide ventilation and cooling respectively, when the enthalpy of outside air is higher than the enthalpy of the return air. Electric heating coils, perimeter heating, and other heaters are used as necessary. Area thermometers regulate the air flow and therefore, the cooling to the various areas. Exhaust systems are operated as required.

Emergency Operation Mode:

During this mode of operation, the system will operate with minimum outside air and the building will be slightly pressurized. Outside air is filtered through the filter bank consisting of prefilters, HEPA filters, fan, isolation dampers and controls as required. Outside air flow during this mode shall be limited to 2,000 cfm maximum.

System Isolation Mode of Operation:

The system is also designed to provide total system isolation and partial recirculation through filter units for operation during an emergency requiring total system isolation. This changeover is manual. During this mode, all exhaust fans would be stopped and the building will not be maintained at a positive pressure.

Equipment Requirements:

The equipment and the system components are not designed to meet seismic category I requirements or qualified as Engineered Safety Features. All HVAC equipment except HEPA filters are commercial grade quality. HEPA filters shall be suitable for nuclear application.

7.2.2.3.2.3 Safety Evaluation

The system, as designed, meets the EOF functional requirements as stated in NUREG-0696. The system includes a tie connection between the two supply air system ducts so that partial cooling can be provided in the event one of the units is not functioning.

7.2.2.3.2.4 Instrumentation Requirements

All the control switches for the control of the various system components are located on a control panel in the mechanical equipment room. Local annunciators are provided in the mechanical equipment room of the EOF. The following abnormal conditions are alarmed at the local control panel:

- a) Air handling unit fan failures.
- b) Condenser unit fan failures.
- c) Filtration system failure (combined alarm).
- d) Failure of battery room exhaust fan.
- e) Failure of other exhaust fans.
- f) Failure of computer room cooling system (combined).

Filtration system is provided with a local panel and following alarms:

- 1) High pressure differential across the HEPA filters.
- 2) Filtration system fan failure.

7.2.2.3.3 Radiation Monitoring

To ensure adequate radiological protection of EOF personnel, the following radiation monitoring systems are installed.

1) Outside Air Intake Radiation Monitoring System

This system consists of a radiation detector installed in the outside air intake duct and connected to electronic circuits which activate both audible and visual alarms when radiation levels of outside air exceed a preset trip point. The alarms are placed in an area where they can be heard in normally occupied areas of the EOF. When the alarm sounds, previously designated personnel will be responsible for manually routing the inlet air through the emergency air clean-up trains.

2) Iodine Sampling

The concentration of airborne radioiodine during an emergency will be determined by use of a portable low volume air sampler with silver zeolite cartridges (permanently assigned to the EOF). The cartridge will be analyzed for radioiodines by gamma spectrum analysis.

7.2.2.3.4 Water Supply

No municipal water supply is available near the EOF; therefore, a well system is provided with adequate treatment to make it potable. This well is not within the pathway of groundwater flow from the station and is not anticipated to ever become contaminated. But if an accident occurs with the potential to contaminate the groundwater, the capability exists to sample and analyze the well water at the EOF.

7.2.2.4 Communication

The EOF communication system includes priority access voice links-hotlines, telephone lines tied through the plant switchboard, local outside commercial lines, VHF and UHF radio. The combination of these facilities will be used to manage and coordinate on and offsite emergency response activities and disseminate information to responsible government agencies. The combination of these facilities forms the redundancy and thus the reliable normal and emergency, primary and backup communication network. The TSC and Control Room will provide the initial notification and early recommendations to offsite authorities prior to staffing the EOF.

The description of the communication facilities in the EOF are as follows.

7.2.2.4.1 Telephone

The normal telephone service for the EOF uses the plant Private Automatic Branch Exchange (PABX) system and local outside commercial lines.

Direct Allentown General Office branch exchange telephone service will also be provided:

7.2.2.4.2 Hotlines

Priority access voice communications links with automatic signaling is provided at several locations in the EOF. The hotline facilities have the capability for individual or conference calling between the EOF and the following:

- a. Technical Support Center (TSC)
- b. Control Room (CR)
- c. Pennsylvania Emergency Management Agency (PEMA)
- d. Luzerne County Civil Defense (LCCD)
- e. Columbia County Emergency Management Agency (CEMA)
- f. Nuclear Regulatory Commission, Emergency Notification System

(ENS)

- h. Department of Environmental Resources/Bureau of Radiation Protection
- i. Allentown General Office
- j. Media Operations Center (MOC)

7.2.2.4.3 Radio

The EOF has both a four-channel 450 MHz UHF and a two-channel 150 MHz VHF radio system with digital voice privacy capability.

The two-channel VHF radio is contained in a single desktop control console. This system is used as an emergency backup to the telephone system and to communicate with the field monitoring teams.

The four-channel UHF radio is operated from a single desk top control console. The UHF radio provides primary and backup security, emergency, operational, and maintenance communication links.

7.2.2.4.4 Facsimile

A facsimile machine is provided in the EOF.

7.2.2.5 POWER SUPPLY

7.2.2.5.1 PL Distribution - Normal Service

The normal electrical service to the EOF is from the Pennsylvania Power and Light Company distribution network. The main distribution feeder emanates from the Berwick 66-12 kV substation. The service rating to the EOF is 300 KVA, 480/277 volt, three phase (Reference Figure 7.8).

7.2.2.5.2 Emergency Generator

The standby diesel generator is sized for complete operation of the facility. On loss of utility power, automatic transfer is made to the standby diesel generator which will accept load within ten seconds (Reference Figure 7.8).

7.2.2.5.3 Uninterruptable Power Supply (UPS)

The UPS system is completely static design with rectifier, battery and inverter being the main components. The system is sized to carry all critical loads. The critical loads are

defined to include computer equipment, security, emergency lighting and telephone systems (Reference Figure 7.8).

7.2.2.6 EOF Data Presentation

The EOF includes human factors engineered man-machine interface capabilities to allow personnel to:

- o access environmental conditions
- o coordinate radiological monitoring activities
- o recommend implementation of off-site emergency plans

The man-machine interface in the EOF is provided by devices tied to the Emergency Response Computer System (ERCS).

7.2.2.6.1 Equipment

Data Display equipment will be located within the Central Office Area and in other locations throughout the EOF as required to support the functions being performed at those locations.

The ERCS is designed to provide the interface to the following devices:

- (1) CRTs for the display of general plant safety-related data contained in the ERCS for specific EOF functions.
- (2) CRTs to provide information sent directly from the plant Computer System.
- (3) A video copier to provide hard copy output of the Plant Computer System data.
- (4) Printers and/or printer/plotters for the hard copy output of ERCS data.
- (5) Interim ERCS equipment will be active to obtain plant safety related data until the ERCS equipment is active.

7.2.2.7 Records and Documents

7.2.2.7.1 Available Records and Documents

The EOF contains up-to-date records for use during emergency conditions. These records include:

- o Up-to-date drawings, schematics and diagrams showing current conditions of plant structures and systems.
- o Emergency Plan Implementing Procedures.

- o Current plant technical specifications.
- o Plant Operating Procedures.
- o Emergency Operating Procedures.
- o Current Emergency Plans for:
 - Pennsylvania Power & Light Co.
 - Commonwealth of Pennsylvania
 - Luzerne County Civil Defense
 - Columbia County Emergency Management Agency
- o Radiological Records
- o Off-site population distribution and evacuation planning.
- o Off-site Dose Calculation Manual

7.2.2.7.2__Records_Management_System

The records listed above are updated and managed by the Susquehanna SES Document Control Center (DCC) utilizing DCC Administrative Procedures.

7.2.2.8__Security

During an emergency, access to the entire EOF will be limited to only those personnel with proper authorization. Intrusion detection devices will be located in and around the EOF to monitor the facility during unoccupied periods.

7.2.2.9__Backup_Emergency_Operations_Facility

7.2.2.9.1__Function

The Backup EOF provides space and facilities for maintaining the continuity of primary EOF functions, dose projection and senior management decision making capability, during emergency conditions that would require EOF personnel to evacuate the primary EOF or the primary EOF was inaccessible.

7.2.2.9.2__Location

The designated location for the Backup EOF is at the PP&L Central Division Service Center auditorium at 344 South Poplar Street, Hazleton, PA. This location is 13 air miles from Susquehanna SES (Reference Figure 7.9).

7.2.2.9.3 Staffing

The minimum staffing requirements are those personnel designated as the off-site emergency organization in Section 5.3. In order to perform the functional requirements mentioned above, this minimum staffing consists of: Recovery Manager, Technical Support Manager, and the Radiation Support Manager. Other management positions within the off-site emergency organization can perform their functions out of the Allentown Corporate Emergency Control Center at the discretion of the Recovery Manager.

The task functions of the minimum staff personnel required to ensure continuity of functions at the Backup EOF are as described in Section 5.3.

7.2.2.9.4 Spacial Layout Description

The available space at the Backup EOF can easily be set up in a configuration allowing easy access and coordination of information necessary to carry on the function of the EOF. Being located in a main PP&L Service Center provides for ease of access to support facilities that may be needed in an emergency situation; this would include office equipment and support personnel. Space is available for the minimum PP&L emergency organization staff as well as the NRC and other agency staff that would normally support the activities at the primary EOF.

7.2.2.9.5 Communication

The Backup EOF communication system consists of normal telephone lines capable of reaching outside numbers via the Bell Telephone System and also tied into the PP&L Centrex Allentown Exchange System for toll-free calls to all locations within the PP&L Service Area.

Radio communication with the field monitoring teams will be maintained with portable two-channel 150 mhz VHF radio units. These portable units would also provide a backup means of communication with the Plant Control Room and TSC.

7.2.2.9.6 Backup EOF Data Display

A communication link will be established between the EOF building located nearsite and the backup EOF when it is determined that the backup EOF should be activated.

A display console will be provided in the backup EOF that will be tied to the Emergency Response Computer System. The Backup EOF will therefore have access to all ERCS CRT displays utilized in the EOF.

7.2.2.9.7 Records and Documents

The following up-to-date records are maintained at the Central Division Service Center:

- o Current Emergency Plans for:
 - Pennsylvania Power and Light Company
 - Commonwealth of Pennsylvania
 - Luzerne County Civil Defense
 - Columbia County Emergency Management Agency

The following records will be transported from the primary EOF or the Allentown Emergency Control Center to the Backup EOF upon activation of this facility:

- o Susquehanna SES Off-Site Dose Calculation Manual
- o Emergency Plan Implementing Procedures
- o Radiological Records
- o Off-Site population distribution and evacuation planning

7.3 COUNTY AND STATE EMERGENCY CENTERS

7.3.1 County Emergency Centers

The ten-mile emergency planning zone for the Susquehanna SES includes areas and populations in Luzerne and Columbia Counties. Each of these county jurisdictions has Emergency Operations Centers which meet or exceed the minimum Federal criteria for sufficient space, communications, warning systems, self-sufficiency in supplies and accommodations and radiological protection factor. Both counties maintain full-time employees, providing 24-hour per day coverage at their EOC, to coordinate emergency planning and evaluation. "Hotline" telephone connections between Susquehanna SES and each County EOC ensures prompt notification capability during all Emergency Classifications.

Location of the county Emergency Operations Centers are:

- o Luzerne County Emergency Operations Center
Luzerne County Office of Civil Defense
Luzerne County Court House
Wilkes-Barre, Pennsylvania
- o Columbia County Emergency Operations Center
Columbia County Emergency Management Agency
Columbia County Court House
Bloomsburg, Pennsylvania

7.3.2 State Emergency Center

The State Emergency Operations Center is located at the PEMA headquarters, in the Transportation Building, in Harrisburg. This center is equipped with a reliable communications system which ties all area and county emergency operations centers with PEMA headquarters. During an emergency, representatives from appropriate State agencies will assemble at the State Emergency Operations Center to manage and support the emergency response activities. Facilities are available at the near-site EOC for PEMA personnel. Twenty-four hour per day coverage at their EOC and maintenance of the PEMA call-out duty roster is described in Annex E of the PEMA Disaster Operations Plan.

7.4 ASSESSMENT FACILITIES

The primary emergency assessment facility is the station Control Room. Supplementary and complimentary assessment functions are performed in the EOC and the TSC.

In addition to the systems, equipment and instrumentation for assessing plant status, the following provide for both initial and continuing assessment of emergency conditions.

7.4.1 Radiation Monitoring System

This on-site system, consisting of ARMs, CAMs and process monitors, contributes to personnel protection, equipment monitoring and accident assessment by measuring and recording radiation levels and concentrations of radioactive material at strategically selected locations throughout the station. A listing of these radiological monitors is contained in Enclosure 6 to Appendix D.

7.4.2 Fire Detection Systems

Fire protection at the Susquehanna SES is provided by a complete network of fire suppression and extinguishing systems. These systems and associated fire alarms are activated by a variety of fire and smoke detection devices which are located throughout the plant. These fire detection systems are identified in the Susquehanna SES PSAR and Fire Protection Review Report.

7.4.3 Natural Phenomena Monitors

Monitors are provided for detecting and recording natural phenomena events that could result in plant damage due to ground motion or structural vibration. These monitoring systems are identified in Enclosure 5 to Appendix D.

7.4.4 Environmental Monitoring

The primary functions of the environmental radiological monitoring program are to establish the pre-operational background levels, detect any gradual buildup of long-lived radionuclides, and verify that operation of the plant has no detrimental effect on the health and safety of the public or the environment. Sampling media from the environmental monitoring locations may, however, be utilized to obtain valuable assessment data in the event of an accident involving the release of a significant amount of radioactive material. Enclosure 8 to Appendix D identifies the environmental monitoring systems.

7.4.5 Emergency Monitoring Team Equipment

A listing of equipment provided for use by on-site and off-site radiological monitoring teams to aid in emergency assessment is contained in Appendix D.

7.5 PROTECTIVE FACILITIES

Facilities and designated assembly locations are provided which ensure adequate radiological protection for personnel assigned to emergency duties in the plant, and for the accommodation of other personnel evacuated from areas that may be affected by radiation and/or airborne radioactivity.

7.5.1 Control Room

In addition to serving as the first-line control for emergency situations, the Control Room has the following features which provide protection for personnel who may have emergency or operational duties throughout the course of any emergency:

- 1) Adequate shielding by concrete walls to permit continuous occupancy under severe accident conditions.
- 2) An emergency air supply system, equipped with HEPA and activated charcoal filters.
- 3) Continuous monitoring of radiation levels in the Control Room and throughout the plant by the ARM system, with readout in the Control Room.
- 4) Emergency and essential lighting and power.
- 5) Basic protection equipment for emergency teams (Appendix D), and listings of emergency supplies/equipment, and their locations within the station.
- 6) Communications systems, as described in Section 7.6.

Additional details regarding the design and inherent protective capabilities of the station Control Room are discussed in the Susquehanna SES Units 1 and 2 PSAR.

7.5.2 Station Assembly Areas

Specific locations are designated for assembly and accountability of personnel at the station in the event of an emergency condition classified as an Alert or higher. These areas provide space to accommodate all personnel who may be at the station. They are located on the basis of logical access routes and physical separation from likely areas of radiation and/or airborne radioactivity. The specific locations and the individuals assigned can be found in the Emergency Plan Implementing Procedure for Personnel Assembly and Accountability.

7.5.3 Remote Assembly Areas

Upon declaration of a Site Evacuation, the Emergency Director has the option to send personnel to their homes or to Remote Assembly Areas. These areas are designated for assembly of personnel which can be used to augment the plant staff. The location of these Remote Assembly Areas were selected on the basis of:

- 1) Space availability for all personnel who may be within the exclusion area at the time of an evacuation.
- 2) Assurance of a controlled area, for control of ingress/egress, for contamination surveys and for possible establishment of decontamination stations.

If, based on radiological measurements at the Remote Assembly Areas and/or data from the Control Room, these locations are deemed by the Susquehanna SES Emergency Director to be appropriate, provisions can be made for the movement of evacuees to an unaffected area.

7.6 COMMUNICATIONS SYSTEMS

Communications systems are described in each facility discussion except for the following:

1) Commonwealth/Bell Telephone System

Locations of Extensions include:

- o Control Room
- o Operations Support Center/Technical Support Center
- o Emergency Operations Facility
- o Station Assembly Areas
- o Remote Shutdown Panel
- o Media Operations Center
- o General Office Nuclear Emergency Support Center
- o General Office Engineering Support Center

2) Plant Emergency Alarm System

A plant emergency alarm system provides audible warning of emergency conditions to plant personnel. The system consists of a multi-tone generator, tone selector switch, area selector switch, and message tape recorder. The Emergency Alarm System is integral to the PA System and is powered via the Vital AC UPS. The Plant Emergency Alarm System is tested at least weekly.

7.7 ON-SITE FIRST AID AND MEDICAL FACILITIES

First aid treatment facilities, equipped with normal industrial first aid supplies, are located near the Access Control Area and near the machine shop.

Standard first aid kits are at designated locations throughout the station, including:

- o Control Room
- o Access Control Area
- o Machine Shop
- o Instrument Shop
- o Chemistry Laboratory
- o Health Physics Office
- o North and South Security Gates
- o Technical Support Center
- o Operations Support Center

The first aid kits are checked periodically, in accordance with station procedures, and replenished as necessary.

Stretchers are stored at designated locations including the following areas:

- o Turbine Operating Floor
- o Reactor Building (2 locations)
- o Access Control Area
- o Radwaste Building

7.8 DAMAGE CONTROL EQUIPMENT

Damage control equipment consists of normal and special purpose tools and devices used for maintenance functions throughout the station. Personnel assigned to damage control teams are cognizant of the locations of specific equipment which may be required in an emergency. The Susquehanna SES Emergency Director has access to keys for maintenance tool cribs, shops and other locations where appropriate damage control equipment may be stored.

Heavy duty and specialized equipment, and trained equipment operators, will be provided, if necessary, through the PP&L Recovery Manager.

7.9 INFORMATION SYSTEMS

This section provides conceptual design descriptions for emergency facilities information systems.

7.9.1. Safety Parameter Display System

The purpose of the SPDS is to provide a continuous indication of the safety status of the plant. SPDS data will be presented as described in this section. Its function is to aid the control room and TSC staff operator in rapidly detecting abnormal operating conditions, by enabling the staff to achieve a timely status assessment without surveying the entire Control Room.

As indicated in Figure 7-10, the Safety Parameter Display System functions independently of the Integrated Computer System. It will include sensors and signals, data acquisition equipment, data preparation equipment, and a data display device. Separate SPDS systems will be provided for Unit 1 and Unit 2.

The SPDS will focus on the plant symptom based emergency procedures. The system will track and display the parameters which serve as symptoms for entry to the emergency procedures. This provides an integrated approach to emergency response improvements.

All equipment for the SPDS will be located within the control structure.

7.9.1.1 Data Acquisition

Data acquired for the SPDS will consist of safety related parameters and, therefore, isolation will be provided for that data.

Because the SPDS will contain a small computer dedicated to performing data acquisition, data processing, and data display functions solely for the SPDS, data scan and monitoring of the safety parameters will be independently achieved.

Because of the importance of the display of SPDS safety parameters, the data acquisition hardware will be designed to achieve maximum scanning communication availability. Expandability criteria will also be factored into the data acquisition design.

7.9.1.2 Data Preparation

Once the data has been acquired, it is prepared and then output to the SPDS display. Data from the data acquisition system will be stored in memory and processed before it is presented to

personnel. The type of data to be stored is described in Section 7.9.4.

Software will be developed to provide for data acquisition, preparation, and presentation. The data base will include raw data converted to engineering units, validated data, and calculated data, which will be used for trends or time derivatives.

7.9.1.3 Data Presentation

The SPDS display will be responsive to transient conditions and will be sufficient to indicate the plant status. A simple primary display will be designed, using human factors engineering criteria, to give an overall system status, and will include as a minimum the following parameters: Reactivity control, reactor core cooling and heat removal from primary system, reactor coolant system integrity, radioactivity control and containment integrity. The display will be easily accessible and visible. An audible notification will be included in the Control Room to alert personnel of an unsafe operating condition.

7.9.1.4 Availability

A detailed availability determination has not been performed for the SPDS. From previous experience, it is known that systems of this straight forward design should be able to achieve very high availability in the 99% area above cold shutdown, and 80% area during cold shutdown. During the course of the continuing design and implementation, availability will remain one of the primary goals. The design will be tested analytically with availability calculations and modified to improve availability where that is possible.

The availability of the system will also be enhanced by a comprehensive maintenance program and with built-in facilities to aid in that maintenance activity. In addition to achieving high availability through a sound design and through selecting quality equipment, availability will be further enhanced by minimizing the mean time to repair.

7.9.2 Nuclear Data Link

A Nuclear Data Link (NDL) will be available to transmit information to the NRC operations center to aid the NRC in its role of providing advice and support during emergencies.

Data required by the ERCS data acquisition system will be formatted for transmission. Specific data to be transmitted has yet to be defined, but it is assumed that for the most part, needed data will come from Req. Guide 1.97.

The communications protocol, error detection and correction for transmission of data also has yet to be defined, however, data will be transmitted once per minute as specified.

A review of the hardware required for the NDL will be performed when a specification is issued addressing the subject.

7.9.3 Emergency Response Computer System (ERCS)

The Emergency Response Computer System (ERCS) will provide the acquisition, preparation, and display of Unit 1, Unit 2, and common plant data for the Emergency Response Facilities (ERF). These facilities include the Technical Support Center (TSC), the Emergency Operations Facility (EOF), the Backup EOF, the Safety Parameter Display System (SPDS), and the Nuclear Data Link (NDL).

The overall design of the PP&L ERCS is directed toward providing both a dedicated system for the operation of a SPDS, and an integrated system which will tie together the operations of the TSC, EOF, and the NDL.

During the time period required for design, development, and installation of the ERCS, an interim ERCS will be provided utilizing the Plant Computer System. The conceptual design of both the ultimate ERCS and the interim ERCS is described below.

The ERCS description includes diagrams to illustrate the design. Figure 7.11 indicates the basic logic flow of the ERCS, Figure 7.10 indicates the ultimate ERCS configuration, and Figure 7.12 indicates the interim ERCS configuration.

In the design and development phases of the ERCS project, examination of human factors engineering criteria and system integration criteria may necessitate changes and improvements to the original design. Therefore, although the design description contained herein will serve as a guide for continuing project work, the description is not meant to be restrictive. Flexibility must be maintained to ensure a system responsive to the needs of the people using it.

7.9.3.1 ULTIMATE ERCS

The ultimate Emergency Response Computer System will consist of independent computer systems, referred to in this section as, (1) Integrated Computer System and, (2) Safety Parameter Display System. As indicated in Figure 7.10, ERCS Configuration, the SPDS will have a dedicated computer which will perform processing specifically for the SPDS in the Control Room and TSC.

TABLE 7-1

TYPICAL

ERCS DATA (NON-SPDS)

PARAMETER

Main Feedwater Flow
Condensate Storage Tank Level
Suppression Chamber Spray Flow
Drywell Spray Flow
Main Steamline Flow
Main Steamline Isolation Valves' Leakage Control System Pressure
RCIC Flow
HPCI Flow
Core Spray Flow
LPCI Steam Flow
SLCS Storage Tank Level
RHR System Flow
RHR Heat Exchanger Outlet Temperature
RHR Service Water Temperature
RHR Service Water Flow
Emergency Service Water Temperature
Emergency Service Flow
RCIC Inlet Pressure
CRD Flow Pump Running
RHR Pump Running
Core Spray Pump Running
RHR Service Water Pump Running
Emergency Service Water Pump Running
Condensate Pump Running
SBLC Pump Running
REPT Pump Running
RCIC Injection Valve Position
HPCI Injection Valve Position
RHR Injection Valve Position
Core Spray Injection Valve Position
Spray Pond Level
Spray Pond Loop Flow
Spray Pond Temperature
High Radioactivity Liquid Tank Level
Emergency Vent Damper Position
Status of Standby Power and Other Energy Sources Important to Safety
(hydraulic, pneumatic)
Primary Containment Area Radiation (inc. High Range)
Reactor Building Area Radiation and Radiation Exposure Rate (Other Areas)
Wind Direction, Wind Speed, and Estimation of Atmospheric Stability
Supplemental Towers (Met. Data.)

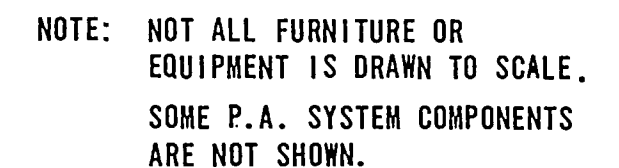
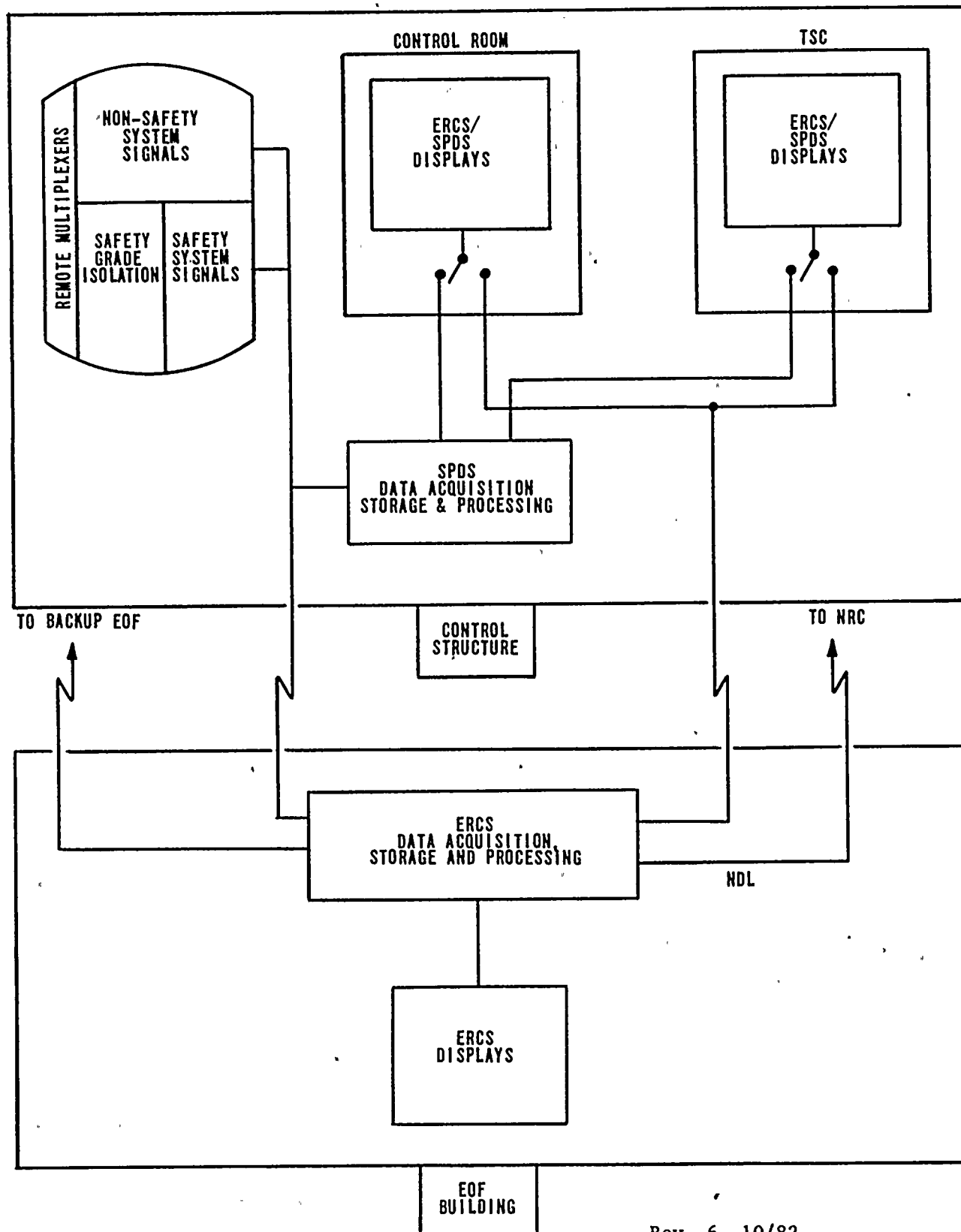


Figure 7.3



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SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
EMERGENCY PLAN

ERCS CONFIGURATION

FIGURE 7.10