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EP - PP&L SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 & 2 EMERGENCY PLAN MANUAL

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CATEGORY: PROCEDURES TYPE: EP
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SUSQUEHANNA STEAM ELECTRIC STATION

EMERGENCY PLAN, REVISION 44

REMOVE AND INSERT INSTRUCTIONS

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SUSQUEHANNA STEAM ELECTRIC STATION

EMERGENCY PLAN

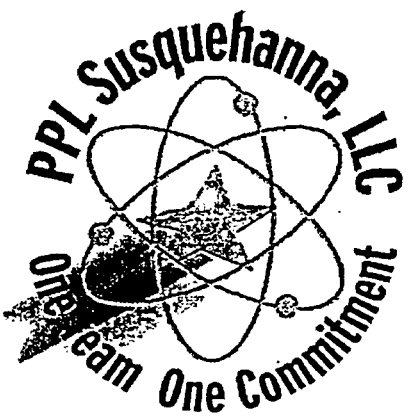
REVISION 44

December 2003

PORC MEETING 03-12-18

PPL SUSQUEHANNA LLC

SUSQUEHANNA STEAM ELECTRIC STATION



EMERGENCY PLAN

THIS DOCUMENT HAS BEEN UPDATED TO INCLUDE REVISIONS THROUGH 44

DATED: 12/03.

SUSQUEHANNA STEAM ELECTRIC STATION

EMERGENCY PLAN

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1.0 DEFINITIONS

1.1 ACCIDENT - an unforeseen and unintentional event which may result in an emergency.

1.2 ACTIVATE – an emergency response facility has sufficient staffing to perform required functions and the facility has taken over command and control of the emergency. The positions required to activate the TSC and EOF are specified with an * in Figures 6.2 and 6.3. The terms "activated", "activation" "activation time" and "take over management of the emergency" have the same definition.

1.3 ALERT - an Emergency Condition.

1.4 ANNUAL – occurring within calendar year starting January 1 and ending December 31.

1.5 ASSESSMENT ACTIONS - those actions taken during or after an incident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

1.6 BIENNIAL EXERCISE – NRC/FEMA exercise performed on alternate years, to be completed within the calendar year scheduled.

1.7 BIWEEKLY – occurring on alternate weeks, with the 7-day week.

1.8 CDE - the Committed Dose Equivalent; dose to an organ due to an intake of radioactive material during the 50 year period following the intake.

1.9 COLUMBIA COUNTY DEPARTMENT OF PUBLIC SAFETY (CCDPS) - emergency response coordinating agency for Columbia County, responsible for implementing off-site action upon direct notification from Susquehanna SES or PEMA.

1.10 CONTROL ROOM - the location of the Control Panels from which the reactor and its auxiliary systems are controlled.

1.11 CORPORATE LEADERSHIP COUNCIL (CLC) - the PPL Management group which determines major policy commitments for the company. The CLC membership includes the President of the company and other senior executives.

1.12 CORRECTIVE ACTIONS - those emergency measures taken to ameliorate or terminate an emergency situation.

1.13 DEPARTMENT OF ENVIRONMENTAL PROTECTION/BUREAU OF RADIATION PROTECTION (DEP/BRP) - the State agency responsible to provide guidance and recommendations for specific off-site protective measures.

1.14 DOSE PROJECTION - a calculated estimate of the potential radiation dose to individuals at a given location, normally off-site, (determined from the quantity of radioactive material released and the appropriate meteorological transport and dispersion parameters).

1.15 DOSE RATE - the amount of radiation an individual can potentially receive per unit of time.

1.16 EFFECTIVE DOSE EQUIVALENT (EDE) - the sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated.

1.17 EMERGENCY ACTION LEVELS (EAL) - operational or radiological parameters which, when exceeded, require the implementation of portions of this plan. EALs for various emergency conditions are specified in Table 5.1.

1.18 EMERGENCY ACTIONS - those steps taken, as a result of exceeding an Emergency Action Level in the Emergency Plan, to ensure that the situation is assessed and that the proper corrective and/or protective actions are taken.

1.19 EMERGENCY ALERT SYSTEM (EAS) – radio and television broadcast system used by public emergency management officials to notify the public concerning protective actions to be taken in the event of natural disasters, radiological protective actions, and other information of immediate impact to the public. Formerly referred to as the Civil Defense Emergency Broadcast System.

1.20 EMERGENCY CONDITION - the characterization of several classes of emergency situations consisting of exclusive groupings including the entire spectrum of possible radiological emergency situations. The four classes of emergencies, listed in increasing severity, which PPL has incorporated into this Emergency Plan, are outlined in Section 5.0 of this plan.

1.21 EMERGENCY COORDINATORS - designated Susquehanna SES staff members responsible for coordinating specific emergency organization functions.

1.22 EMERGENCY DIRECTOR (ED) - the PPL individual responsible for direction of on-site activities during an emergency at the Susquehanna SES.

1.23 EMERGENCY MANAGERS - designated Susquehanna SES and General Office Personnel who are responsible for managing specific emergency organization functions.

1.24 EMERGENCY OPERATIONS CENTERS - designated State and county emergency management agency headquarters facilities, designed and equipped for the

purpose of exercising effective coordination and control over disaster operations carried out within their jurisdiction.

1.25 EMERGENCY OPERATIONS FACILITY - PPL Emergency Response Facility co-located with the Media Operation Center in Plains Township, Pennsylvania, to provide continuous coordination and evaluation of PPL activities during an emergency having or potentially having environmental consequences (Reference REFERENCES, Section 3.18).

1.26 EMERGENCY PLAN BOUNDARY - same as the Exclusion Area, i.e., that area around Susquehanna SES within a radius of 1800 feet determined in accordance with 10CFR100.11. (See Figure 8.1.).

1.27 EMERGENCY PLAN IMPLEMENTING PROCEDURES - specific procedures defining in detail the action to be taken in the event of an emergency condition. The Emergency Plan Implementing Procedures will be separate from, but may incorporate and refer to, normal plant operating procedures and instructions and Emergency Plan Position Specific Procedures.

1.28 EMERGENCY PLANNING ZONE - there are two.Emergency Planning Zones. The first is an area, approximately ten (l0) miles in radius around the Susquehanna SES, for which emergency planning consideration of the plume exposure pathway has been given in order to ensure that prompt and effective actions can be taken to protect the public in the event of an accident. The second is an area approximately 50 miles in radius around the Susquehanna SES, for which emergency planning consideration of the ingestion exposure pathway has been given.

1.29 EMERGENCY PLAN POSITION SPECIFIC PROCEDURES - instructions describing how to perform tasks assigned to emergency positions. Each instruction includes an overview of the position's tasks, detailed instructions, and relevant material. Used together, these instructions are designed to implement the Emergency Plan during a declared emergency.

1.30 EXCLUSION AREA - that area around Susquehanna SES within a radius of 1,800 feet (see Figure 8.1) determined in accordance with 10CFR100.11.

1.31 FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - within the context of this plan, serves as the primary contact for requests for Federal assistance; lead coordinator all non-technical federal response.

1.32 FULLY FUNCTIONAL- all minimum required staff as defined in Table 6.1 and the "shaded" positions in Figures 6.2 and 6.3 are present.

1.33 GENERAL EMERGENCY - an Emergency Condition.

1.34 LDE - Lens Dose Equivalent; the external exposure to the lens of the eye.

1.35 LUZERNE COUNTY EMERGENCY MANAGEMENT AGENCY (LCEMA) - the host county emergency response coordinating agency, responsible for implementing off-site action upon either direct notification from the Susquehanna SES or from PEMA.

1.36 MEDIA OPERATIONS CENTER - the designated location from which news releases, press conferences and other media interfacing can be provided.

1.37 MONTHLY – occurring within the calendar month.

1.38 NUCLEAR REGULATORY COMMISSION (NRC) - within the context of this plan, the Federal agency responsible for verifying that appropriate emergency plans have been implemented and for conducting investigative activities associated with a radiological emergency.

1.39 OFF-SITE - any area outside the PPL Emergency Plan Boundary surrounding the Susquehanna SES.

1.40 OFF-SITE RADIOLOGICAL INCIDENT - any radiation incident affecting areas beyond the Emergency Plan boundary and posing a significant threat to public health and safety.

1.41 ON-SITE - the area within the PPL Emergency Plan Boundary surrounding Susquehanna SES.

1.42 OPERATIONAL SUPPORT CENTER (OSC) - the primary on-site assembly area for operations support team personnel during the initial phase of an emergency.

1.43 PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY (PEMA) - within the context of this plan, the lead state-agency for radiological emergency planning, response and recovery and for providing guidance to local government for development of radiological emergency plans and programs.

1.44 PLANT PROCEDURES - those procedures utilized by the plant operations staff to control and manipulate the plant under both normal and abnormal circumstances.

1.45 PPL SUSQUEHANNA LLC – subsidiary company of PPL Corporation that owns and operates Susquehanna Steam Electric Station. The Emergency Plan will refer to this company as PPL.

1.46 PROTECTED AREA - the area within the station inner security fence (Protected Area Barrier) designated to implement the requirements of 10CFR73.

1.47 PROTECTIVE ACTION GUIDES (PAG) - the projected dose to reference personnel, or other defined individual, from an unplanned release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended.

1.48 PROTECTIVE ACTIONS - those emergency measures taken for the purpose of preventing or minimizing radiological exposures.

1.49 PUBLIC NOTIFICATION SYTEM – sirens with ratings ranging from 107 dB to 125 dB within the ten-mile EPZ around the Susquehanna Steam Electric Station. Siren location was determined by a detailed study including field surveys, actual determination of average background noise level, and consideration of population distribution within the 10-mile EPZ.

1.50 QUARTERLY – occurring during the calendar quarter.

1.51 RADIATION DOSE - the quantity of radiation absorbed by the body or any portion of the body.

1.52 RADIATION MONITORING SYSTEM – an in-plant system consisting of ARMs, CAMs, and process monitors that contributes to personal protection, equipment monitoring, and accident assessment by measuring and recording radiation levels and concentrations at selected locations throughout the station. Reference Appendix D.

1.53 RADIOACTIVE MATERIAL - any solid, liquid, or gas which emits radiation spontaneously.

1.54 RADIOLOGICAL EMERGENCY RESPONSE TEAM - the response team from the Division of Radiological Health, State Board of Health, Pennsylvania Emergency Management Agency, and other State agencies, which will be dispatched to the scene of radiological emergencies. The team provides technical guidance and other services to local governments or an affected nuclear facility.

1.55 RADIOLOGICALLY CONTROLLED AREA (RCA) - any temporary or permanent area established by Health Physics, which is controlled for purposes of protection from exposure to radiation or radioactive materials. Typically, the Radiologically Controlled Area is defined by the outer perimeters of the Turbine, Reactor, and Radwaste Buildings, portions of the Control Structure, and portions of LLRWHF.

1.56 RADIOLOGICALLY CONTROLLED AREA EVACUATION - evacuation of nonessential individuals from some or all of the Radiologically Controlled Area.

1.57 RECOVERY ACTIONS - those actions taken after the emergency to restore the plant as nearly as possible to its pre-emergency condition.

1.58 RECOVERY MANAGER - the PPL individual responsible for the management of emergency response activities in the EOF during an emergency at the Susquehanna Steam Electric Station.

1.59 REM (Acronym for roentgen equivalent man) - a unit of measure of radiation dose in biological tissue.

1.60 REMOTE ASSEMBLY AREA - a designated area, outside the exclusion area, for the assembly of evacuated plant personnel, if necessary, during a Site Evacuation. The Primary Remote Assembly Area is the Susquehanna Energy Information Center. The alternate assembly area is the West Building.

1.61 REMOTE MONITORING SYSTEM – fixed radiation detectors located near the site perimeter and mobile monitoring equipment to locate and assess elevated radation levels.

1.62 ROUTE ALERTING TEAMS – a supplement to the siren system that is implemented, as necessary, in the event of siren failure or to alert persons or areas that may not be within the sound of the sirens. Route alerting is a municipal responsibility and is accomplished by municipal route alert teams traveling in vehicles along preplanned routes delivering the following message: "There is an emergency at the Susquehanna Steam Electric Station; please tune to your Emergency Alert Station."

1.63 SDE - Shallow Dose Equivalent; external exposure of the skin or extremity which is measured at 0.007 cm in tissue.

1.64 SHIFT MANAGER – the individual who acts in the capacity of Susquehanna Steam Electric Station emergency manager immediately upon concurrence of an emergency as described in the SSES Emergency Plan. The designation Shift Manager is synonymous with the designation Shift Supervisor and may be used interchangeably in the emergency plan. Both terms designate the same individual.

1.65 SITE AREA EMERGENCY - an Emergency Condition.

1.66 SITE EVACUATION - evacuation of all nonessential personnel from the Exclusion Area.

1.67 STATE - the Commonwealth of Pennsylvania.

1.68 STATION ACCOUNTABILITY AREAS - areas designated for the gathering of individuals for the purpose of personnel accountability. Typically these are large areas with installed card readers to facilitate electronic accounting for personnel. Specific locations are defined in station procedures.

1.69 TECHNICAL SUPPORT CENTER - a designated on-site location where the conditions during and after an accident can be analyzed to provide technical and radiological assessments of the accident to the Emergency Director.

In the event of certain hazards preventing site access or certain security related events, personnel who normally report to the Technical Support Center may report to the Emergency Operations Facility where arrangements will be made to accommodate TSC-specific functions not assumed by the EOF. The alternate TSC will be activated as soon as possible to support the site; however, it is recognized that the activation time for the alternate TSC may exceed 60 minutes.*

1.70 TEDE - Total Effective Dose Equivalent; integrated doses consisting of the sum of external doses from plume shine, 50 year committed effective dose equivalent from inhalation (CEDE), and 4 day ground shine doses.

1.71 THYROID DOSE - radiation exposure to the thyroid through inhalation or ingestion of radioactive materials.

1.72 TRANSMISSION POWER DISPATCHER - individual manning the transmission and distribution system for PPL Corporation.

1.73 NOTIFICATION OF UNUSUAL EVENT (NOUE) - an Emergency Condition.

1.74 WHOLE BODY EXPOSURE - direct radiation exposure to the body from external sources.

* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

5.0 EMERGENCY CONDITIONS

5.1 CLASSIFICATION SYSTEM

Emergency conditions are grouped into four classifications that cover the entire spectrum of probable and postulated accidents. These classifications are Unusual Event, Alert, Site Area Emergency, and General Emergency. Action level criteria are specified for determining and declaring each emergency classification. Planning is coordinated with State and county agencies to ensure that this classification system is compatible with the system used by those agencies. The system provides for notification of appropriate emergency response organizations and for implementation of actions immediately applicable to a specific condition. Provisions are included for upgrading the classification level and the corresponding response in the event of a change in the emergency condition.

Recognition and action level criteria are based on readily available information such as Control Room instrumentation. Immediate actions for response to conditions involving plant operating parameters, such as Technical Specification Limiting Conditions for Operation (LCOs), are detailed in the Plant Procedures.

The emergency classification system, initiating conditions, and bases for each initiating condition are defined in Table 5.1. This table demonstrates how an initiating condition leads directly to the appropriate emergency classification based on the magnitude of the event. In many cases, the proper classification is immediately apparent from in-plant instrumentation. In other cases, more extensive assessment is necessary to determine the applicable emergency classification. Continuing reassessment is required to ensure that the classification is consistent with the conditions. The emergency actions that will be taken for each of the four emergency classifications are shown in Table 5.2.

5.1.1 Notification of Unusual Event

Events within this classification represent abnormal plant conditions. They do not, by themselves, constitute significant emergency conditions and have no expectation of releases of radioactive material requiring off-site response or monitoring. Some of these events could, however, indicate a potential degradation in the level of plant safety and/or could escalate to a more severe condition if appropriate action is not taken.

Conditions that constitute a Notification of Unusual Event classification are outlined in Table 5.1.

The ED declares a Notification of Unusual Event within 15 minutes of having information necessary to make a declaration.

The emergency actions that will be taken by PPL and offsite agencies for an unusual event are listed in Table 5.2. In general the table states that the plant emergency

management personnel and offsite agencies will be notified by plant staff if an Unusual Event is declared. Plant staff will request assistance as necessary to disseminate information, make critical decisions and resolve the unusual event.

5.1.2 Alert

This classification is characterized by events that indicate an actual degradation of the level of plant safety. It requires response by the plant emergency organization, augmentation of on-site emergency resources, and constitutes the lowest level for which off-site agency emergency response may be anticipated.

Conditions that constitute an Alert classification are outlined in Table 5.1.

The ED or Recovery Manager declares an Alert within 15 minutes of having information necessary to make a declaration.

The emergency actions that will be taken by PPL and offsite agencies for an Alert are listed in Table 5.2. In general the actions will be similar to an Unusual Event but will also include the dispatch of monitoring teams if a radioactive release is involved.

5.1.3 Site Area Emergency

A Site Area Emergency is characterized by events involving actual or probable major failures of plant functions needed for protection of the public. Most events within this classification constitute actual or potential for significant releases of radioactive material to the environment. Although emergency actions involving members of the public may not be necessary, off-site emergency response organizations should be mobilized and ready to implement protective measures.

Conditions that constitute a Site Area Emergency are outlined in Table 5.1.

The ED or Recovery Manager declares a Site Area Emergency within 15 minutes of having information necessary to make a declaration.

The emergency actions taken by PPL and offsite agencies for a Site Area Emergency are listed in Table 5.2. In general, the actions will be similar to the actions taken for an Alert with increased emphasis on information dissemination, more senior technical and management staff in the emergency response facilities, and additional field radiological monitoring.

5.1.4 General Emergency

This emergency class is characterized by events, occurring or having occurred, which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity and/or release of large quantities of radioactive material to

the environment. Total activation of the on-site and off-site emergency organizations is required for such events. Actions involving off-site populations are probable. Conditions that constitute a General Emergency are outlined in Table 5.1.

The ED or Recovery Manager declares a General Emergency within 15 minutes of having information necessary to make a declaration.

The emergency actions taken by PPL and offsite agencies for a General Emergency are listed in Table 5.2. In general the actions will be similar to the actions taken for a Site Area Emergency with additional resources dedicated to the health and safety of the general public. Additional actions include the initiation of predetermined protective actions for the public.

5.2 SPECTRUM OF POSTULATED ACCIDENTS

The classification and corresponding protective actions relative to significant emergency conditions are based primarily on the resultant or potential radiation doses. Methods are described in this Plan and in EP-PSs for measuring, projecting and evaluating those doses.

The discrete accidents addressed in this section are those which are defined in the SSES FSAR as "design basis accidents" resulting in off-site dose consequences. The following discussion of these postulated accidents and Table 5.1 identify the instrumentation and other mechanisms for prompt detection and continued assessment, and demonstrates how each accident is encompassed within the emergency classification system of this Plan. When an event also involves elevated off-site radiological consequences or other specific conditions, the event classification will be adjusted to reflect actual conditions.

5.2.1 Control Rod Drop Accident

This accident is described in FSAR Section 15.4.9 and is postulated to occur with the reactor in hot startup condition, and very conservative calculations indicate failure of fuel rods. The main steam line radiation monitors detect the significant increase in activity and initiate an alarm to alert operations personnel. Operations personnel would then validate the alarm condition, manually SCRAM the reactor and initiate closure of the main steam isolation valves (MSIV) and isolation of the main condenser. During the MSIV closing time period, noble gases and radioiodines are transported with the steam to the condenser. Release of radioactivity to the environment is by way of leakage from the turbine building.

Initial assessment of this accident, performed by the Control Room Personnel under the direction of the ED includes evaluation of radiation levels. Data are direct radiation levels at the locations of various turbine building ARMs, and an indication of the airborne radioactivity concentration from the turbine building vent exhaust monitor. EP-PSs provide guidance for dose projections based on radiation readings. Data from the

Turbine Building vent exhaust monitors is supplemented by information obtained by the radiological monitoring team.

The emergency actions include:

a) Declare an Alert

b) Implement Radiologically Controlled Area Evacuation

5.2.2 Fuel Handling

This accident is described in FSAR Section 15.7.4 and is postulated to occur with the reactor in shutdown condition with the vessel head removed and results in fuel failure. The reactor building ventilation exhaust duct radiation monitoring system alarms, isolates the ventilation system, and starts operation of the Standby Gas Treatment System (SGTS). Noble gases and radioiodines are released to the fuel pool, migrate to the secondary containment, and are released to the environment after filtration through the SGTS.

Initial assessment of this accident includes the performance of dose projections in accordance with EP-PSs. Dose projections utilize data from the reactor building vent monitor, standby gas treatment vent monitor, and meteorological instrumentation.

The emergency actions include:

a) Declare either an Alert or a Site Area Emergency

b) Implement Radiologically Controlled Area Evacuation

5.2.3 Main Steam Line Break

This accident is described in FSAR Section 15.6.4 and is postulated to occur with the reactor in operating status. The steam line break occurs outside the containment and releases steam until complete closure of the MSIVs. Noble gases and radioiodines in the coolant are assumed to be released directly to the environment.

The initial assessment of this event includes the performance of dose projections. An estimate of the resultant doses can be made and compared to those shown in Table 15.6-9 of the FSAR for worst case conditions. Actual doses are proportional to the fission product activity in the steam, as monitored by the off-gas release rate, prior to the accident. The doses in Table 15.6-9 of the FSAR are based on the assumption that the off-gas release rate is at the upper limiting condition for operation. Actual dose estimates, and corresponding emergency actions, may be taken, based on the off-gas release rate prior to the accident. Consideration may also be given to the relative benefit from taking or not taking specific protective action, based on the short-term duration of exposure associated with this accident.

The emergency actions include:

a) Declare either an Alert or a Site Area Emergency

b) Implement Radiologically Controlled Area Evacuation

5.2.4 Instrument Line Break

This accident is described in FSAR Section 15.6.2 and is postulated to occur with the reactor in operating status. A small line connected to the primary coolant system ruptures at a location that is outside the drywell, but inside the secondary containment. Noble gases and radioiodines are released prior to shutdown of normal ventilation and initiation of the SGTS. Operator recognition of the accident is by a combination of alarms or abnormal readings from: area radiation monitors, ventilation and process radiation monitors, temperature monitors, and leak detection systems.

The emergency actions include:

a) Declare an Alert

b) Implement Radiologically Controlled Area Evacuation

5.2.5 Loss of Coolant Accident (LOCA)

This accident is described in FSAR Section 15.6.5 and is postulated to involve a complete circumferential break of a recirculating loop pipe inside the primary containment, with the reactor operating at full power. The accident results in release of a significant quantity of fission products into the primary containment, leakage into the secondary containment, and release to the environment through the SGTS. Containment failure, although not likely, must be considered possible.

The occurrence of a design basis LOCA is uniquely identified by low-low reactor water level and high drywell pressure signals from the reactor protection system sensors and high radiation signal from the containment accident radiation monitor(s). A reactor scram and MSIV closure occur. Operation of the emergency core cooling system is initiated.

The radiological exposures resulting from the activity released to the environment as a consequence of the LOCA have been determined for the realistic and design basis cases. The design basis and realistic LOCA doses are presented in FSAR Table 15.6. The radiological exposure of the Control Room personnel for the design basis case is also given in Table 15.6.

The emergency actions include:

a) Declare a Site Area Emergency

b) Implement Radiologically Controlled Area Evacuation

5.2.6 Off-Gas Treatment System Failure

This accident is described in FSAR Section 15.7.1.1 and is postulated to be initiated by an occurrence such as earthquake (greater than design basis), explosion, or fire. The accident results in release of the stored inventory of radionuclides in the system including that contained in the charcoal adsorption beds. In addition to recognition of the initiating event, the operator is provided with recognition and assessment information from alarmed instrumentation such as ARMs and vent radiation monitors.

The emergency actions include:

a) Declare a Site Area Emergency

b) Implement Radiologically Controlled Area Evacuation

5.2.7 Air Ejector Line Failure

This accident is described in FSAR Section 15.7.1.3 and is postulated to result from a seismic event more serious than the system is designed to withstand. The noble gas and radioiodine activity from the air ejector, which is normally processed by the off-gas treatment system, is discharged to the environment via the turbine building ventilation system. The accident is recognized by the off-gas system loss of flow indication and ARMs. Assessment of the severity includes evaluation of the off-gas activity release rate prior to the accident and results of on-site monitoring.

The emergency actions include:

a) Declare an Alert

b) Implement Radiologically Controlled Area Evacuation

5.2.8 Liquid Radwaste Failure

This accident is described in FSAR Section 15.7.3 and is postulated to be a rupture of the RWCU phase separator in the radwaste enclosure. Airborne radioactivity released during the accident passes directly to the environment via the turbine building vent. A high water level alarm on the radwaste building sump alarms and activates the sump pumps. Radwaste building ARMs and on-site monitoring provides data for assessing the magnitude of the radiological consequences.

The emergency actions include:

a) Declare an Alert

b) Implement Radiologically Controlled Area Evacuation

5.2.9 Recirculation Pump Seizure

This accident is described in FSAR Section 15.3.3 and is postulated to result in the nearly instantaneous stoppage of the pump motor shaft of one of the recirculation pumps to occur with the reactor in operating status. As a result of the very rapid decrease in core flow in response to the large hydraulic resistance produced by the stopped pump impeller, a resulting level swell in the reactor initiates a trip of the main and feedwater turbines, a scram due to stop valve closure, and a trip of the recirculation pumps.

All the rods that experience boiling transition are assumed to fail, causing an Emergency Plan entry per the fuel cladding degradation Emergency Action Level. The radioactivity released from the fuel is transported into the steam line and is released to the environment via leakage from the condenser. The resultant doses for worst-case conditions are presented in FSAR Tables 15C.3.3-7 and 15D.3.3-7.

The occurrence of recirculation pump seizure is identified by the indication of recirculation flow loss and pump differential pressure in the control room.

The emergency actions include:

a) Declare an Alert

5.2.10 Feedwater Line Break – Outside Containment

This accident is described in FSAR Section 15.6.6 and is postulated to be an instantaneous, circumferential break of the largest feedwater line outside of containment. The break releases coolant to the turbine building until the feedwater line check valves isolate the reactor from the feedwater system. The reactor will scram on low water level. At low-low water level, RCIC and HPCI initiate and maintain reactor water level above the low-low-low level trip point and eventually restore the reactor water level to its normal elevation.

There is no fuel damage as a result of this accident scenario. Radioactivity will be released from the feedwater piping prior to isolation of the break location. Activity concentrations are the same as those found in the main condenser hotwell. Activity release will occur through flashing and partitioning into the turbine building atmosphere, and then to the environment through the turbine building ventilation system.

The estimated activity released to the environment for the worst case condition is shown in FSAR Table 15.6-25. Actual doses are proportional to the fission product activity in the coolant. Fission product activity can be determined from coolant grab samples or off-gas grab samples. Area Radiation Monitors, Main Steam Line Radiation Monitors, or Off-Gas radiation monitors may also indicate fission product activity.

The emergency actions include:

a) Declare an Alert or Site Area Emergency

b) Implement Radiologically Controlled Area Evacuation.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Aircraft/Train Activity 1.1 Aircraft crash or train derailment on-site.	1.1 Visual observation or notification received by control room operator.	1.1 NUREG 0654, Example 14a and 14b – Notification of Unusual Event.
Control Room Evacuation 2.1 None		
Fuel Cladding Degradation 3.1 Core degradation	3.1 (A or B) A. Valid Off-gas Pre-treatment Monitor high radiation alarm annunciation on Panel 1C651(2C651) or indication on Panel 1C600(2C600). OR B. Reactor coolant activity, as determined by sample analysis greater than or equal to 2 micro Ci/cc of I-131 equivalent.	3.1 NUREG 0654, Examples 3a and 3b – Notification of Unusual Event.
General 4.1 Plant conditions exist that warrant increased awareness on the part of plant operating staff or state and/or local offsite authorities.	4.1 Events that are occurring or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.	4.1 NUREG 0654, Example 15 – Notification of Unusual Event.
Injured/Contaminated Personnel 5.1 Transportation of externally contaminated injured individual from site to off-site medical facility.	5.1 As deemed appropriate by Shift Manager.	5.1 NUREG 0654, Example 16 – Notification of Unusual Event.
In-Plant High Radiation 6.1 Unanticipated or unplanned concentrations of airborne activity exist in normally accessible areas, which are not due to planned maintenance activities.	6.1 Concentrations exceed 500 times the DAC values of 10CFR20 Appendix B, Table 1 values for a single isotope, or full multiple isotopes where $\frac{C_A}{DAC_A}+\frac{C_B}{DAC_B}+\frac{C_C}{DAC_C}\ldots\frac{C_N}{DAC_N}\geq 500$	6.1 No NUREG 0654 Example for Notification of Unusual Event. Precursor to 0654 Example 6 under Alert Section.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of AC Power 7.1 Loss of off-site power or loss of all on-site AC power supplies.	7.1 (A or B) A. Loss of power to Startup Transformer 10 AND 20 annunciation or indication on Panel 0C653. OR B. Failure of all diesel generators to start or synchronize to the emergency buses by indication or annunciation on Panel 0C653.	7.1 NUREG 0654, Example 7 – Notification of Unusual Event.
Loss of CR Alarms and Annunciators 8.1 None		
Loss of DC Power 9.1 None		
Loss of Decay Heat Removal Capability 10.1 None		
Loss of Reactivity Control 11.1 Inadvertent Criticality	11.1 Unexpected increasing neutron flux indication on Panel 1C651(2C651).	11.1 No NUREG 0654 example for Notification of Unusual Event. Precursor to 0654 Example 11 under ALERT section.
Loss of Reactor Vessel Inventory 12.1 Valid initiation of an Emergency Core Cooling System.	12.1 (A or B) A. Initiation of an ECCS System AND low, low, low reactor water level (-129) annunciation or indication on Panel 1C651(2C651). OR B. Initiation of an ECCS System AND High Drywell Pressure annunciation or indication on Panel 1C601(2C601).	12.1 NUREG 0654, Example 1 – Notification of Unusual Event.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Natural Phenomena 13.1 Natural phenomenon occurrence	13.1 (A or B or C) A. Tornado impact on-site. OR B. Hurricane impact on-site. OR C. Earthquake detected by seismic instrumentation systems on Panel 0C696.	13.1 NUREG 0654, Examples 13a, 13c, and 13d – Notification of Unusual Event.
Onsite Fire/Explosion 14.1 • Significant fire within the plant. OR • Explosion inside security protected area, with no significant damage to station facilities.	14.1 (A and B) A. Activation of fire brigade by Shift Manager. AND B. Duration of fire longer than 15 minutes after time of notification. OR • Visual observation or notification received by control room operator and shift manager evaluation.	14.1 NUREG 0654, Example 10 – Notification of Unusual Event. OR NUREG 0654, Example 14c – Notification of Unusual Event.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Radiological Effluent 15.1 Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds 2 times the Technical Requirements Manual limits for 60 minutes or longer.	15.1 (1 or 2 or 3) 1. Valid Noble Gas vent stack monitor reading(s) that exceeds a total site release rate of 2.0E+6 µCi/min and that is sustained for 60 minutes or longer. OR 2. Confirmed sample analyses for airborne releases indicates total site release rates at the site boundary with a release duration of 60 minutes or longer, resulting in dose rates of: a. Noble gases >1000 mrem/year whole body; **or** b. Noble gases >6000 mrem/year skin; **or** c. I-131, I-133, H-3, and particulates with half lives >8 days >3000 mrem/year to any organ (inhalation pathways only) OR 3. Confirmed sample analyses for liquid releases indicates concentrations with a release duration of 60 minutes or longer in excess of two times the Technical Requirements Manual liquid effluent limits.	15.1 NUMARC NESP-007, AU1, Notification of Unusual Event.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Security Event 16.1 Security threat or attempted entry or attempted sabotage or site specific credible security threat notification.*	16.1 (A or B or C) A. A report from Security of a security threat, attempted entry, or attempted sabotage of the owner controlled area adjacent to the site. OR B. Any attempted act of sabotage, which is deemed legitimate in the judgment of the Shift Manager/Emergency Director, and affects plant operation. OR C. A site specific credible security threat notification.*	16.1 NUREG 0654, Example 12 – Notification of Unusual Event. Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.
Spent Fuel Related Incident 17.1 Same as 6.1	17.1 Same as 6.1	17.1 Same as 6.1
Steam Line Break 18.1 None		
Toxic/Flammable Gases 19.1 Nearby or on-site release of potentially harmful quantities of toxic or flammable material.	19.1 Visual observation or notification received by the control room operator.	19.1 NUREG 0654, Example 14d – Notification of Unusual Event.

* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(NOTIFICATION OF UNUSUAL EVENT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Technical Specification Safety Limit 20.1 Abnormal occurrences which results in operator complying with any of the Technical Specification SAFETY LIMIT ACTION statements.	20.1 (A or B or C or D) A. Exceeding THERMAL POWER, low pressure, or low flow safety limit 2.1.1.1. OR B. Exceeding THERMAL POWER, high pressure and high flow safety limit 2.1.1.2. OR C. Exceeding REACTOR VESSEL WATER LEVEL safety limit 2.1.1.3. OR D. Exceeding REACTOR COOLANT SYSTEM PRESSURE safety limit 2.1.2.	20.1 NUREG 0654, Example 4, - Notification of Unusual Event
Dry Fuel Storage 21.1a Situations are occurring or have occurred during the transport of the irradiated spent fuel to the onsite storage facility, which jeopardize the integrity of the spent fuel or its container. OR 21.1b Situations are occurring or have occurred at the irradiated spent fuel storage facility, which jeopardize the integrity of the dry cask storage system.	21.1a or 21.1b (A or B) A. Radiological readings exceed 2 R/hour at the external surface of any transfer cask or horizontal storage module. OR B. Radiological readings exceed 1 R/hour one foot away from the external surface of any transfer cask or horizontal storage module.	21.1 NUMARC EAL AU2, Item 3.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Aircraft/Train Activity 1.2 Aircraft or missile strikes a station structure.	1.2 Direct observation or notification received by control room operator.	1.2 NUREG 0654, Examples 18a and 18b - Alert.
Control Room Evacuation 2.2 Control Room evacuation	2.2 (A and B) A. Initiation of control room evacuation procedures. AND B. Establishment of control of shutdown systems from local stations.	2.2 NUREG 0654, Example 20 - Alert.
Fuel Cladding Degradation 3.2 Severe fuel cladding degradation.	3.2 (A or B or C or D) A. Valid Off-gas Pre-treatment monitor High-High radiation alarm annunciation on Panel 1C651(2C651) or indication on Panel 1C600(2C600). OR B. Valid Reactor coolant activity greater than 300 micro Ci/cc of equivalent I-131, as determined by sample analysis. OR C. Valid Main Steam Line High-High radiation annunciation or indication on Panel 1C651(2C651). OR D. Valid containment post-accident monitor indication on Panel 1C601(2C601) greater than 200 R/hr.	3.2 NUREG 0654, Examples 1a, 1b, and 9 - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
General 4.2 Other plant conditions exist that warrant precautionary activation of PPL, State, County, and local emergency centers.	4.2 Events that are occurring or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guidelines exposure levels.	4.2 NUREG 0654, Example 19 - Alert.
Injured/Contaminated Personnel 5.2 None		
In-Plant High Radiation 6.2 Unexpected in-plant high radiation levels or airborne contamination which indicates a severe degradation in the control of radioactive material.	6.2 Area Radiation Monitor reading 1000 times normal annunciation on Panel 1C601(2C601) or indication on Panel 1C600(2C600).	6.2 NUREG 0654, Example 6 - Alert.
Loss of AC Power 7.2 Loss of all off-site power AND all on-site AC power supplies.	7.2 (A and B) A. Loss of power to Startup Transformer 10 and 20 annunciations or indication on Panel 0C653. AND B. Failure of all diesel generators to start or synchronize to emergency buses by annunciation or indication on Panel 0C653.	7.2 NUREG 0654, Example 7 - Alert.
Loss of CR Alarms and Annunciators 8.2 Loss of all control room annunciators.	8.2 In the opinion of the Shift Manager, all Control Room annunciators and the Plant Process Computer are lost, or insufficient annunciators are available to safely operate the unit(s) without supplemental observation of plant systems.	8.2 NUREG 0654, Example 14 - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of DC Power 9.2 Loss of on-site vital DC power.	9.2 (A and B) A. Less than 210 volts on the 250 VDC main distribution panel buses: 1D652(2D652) AND 1D662(2D662), as indicated by trouble alarms on Panel 1C651(2C651). AND B. Less than 105 volts on the 125 VDC main distribution buses; 1D612(2D612), 1D622(2D622), 1D632(2D632), AND 1D642(2D642) as indicated by trouble alarms on Panel 1C651(2C651)). NOTE: Buses are not tripped on undervoltage condition.	9.2 NUREG 0654, Example 8 -Alert.
Loss of Decay Heat Removal Capability 10.2 Inability to remove decay heat while in plant condition 4, inability to maintain the plant in cold shutdown.	10.2 Inability to maintain reactor coolant temperatures less than 200°F* with the reactor mode switch in shutdown. * Except when testing per Special Test Exception, TS 3.10.1. NOTE: The maximum temperature permitted under Special Test Exception TS 3.10.1 is 212°F.	10.2 NUREG 0654, Example 10 - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of Reactivity Control 11.2 Failure of the Reactor Protection System or the alternate Rod Insertion System to initiate and complete a scram that brings the reactor subcritical.	11.2 (A or B) AND (C and D and E) A. Trip of at least one subchannel in each trip system (RPS A and RPS B) as indicated by annunciators and trip status lights on Panel 1C651(2C651). OR B. Trip of both trip systems (ARI A and ARI B) as indicated by annunciators on Panel 1C601(2C601). AND C. Failure of control rods to insert, confirmed by the full core display indication on Panel 1C651(2C651) or process computer indications. AND D. Failure to bring reactor subcritical confirmed by neutron count rate on the neutron monitoring indication on Panel 1C651(2C651). AND E. Reactor power >5% as indicated on Panel 1C651(2C651).	11.2 NUREG 0654, Example 11 - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of Reactor Vessel Inventory 12.2 Reactor coolant system leak rate greater than 50 gpm.	12.2 (A or B) A. Drywell floor drain sump A or B Hi-Hi alarm on Panel 1C601(2C601) AND 2 or more drywell floor drain pumps continuously running as indicated on Panel 1C601(2C601). OR B. Other estimates of Rx coolant system leakage indicating greater than 50 gpm.	12.2 NUREG 0654, Example 5 - Alert.
Natural Phenomena 13.2 Natural Phenomenon Occurrence	13.2 (A or B or C) A. Tornado with reported wind velocities greater than 200 mph impacting on-site. OR B. Reported hurricane or sustained winds greater than 70 mph. OR C. Earthquake at greater than operating basis earthquake (OBE) levels as indicated on Panel 0C696.	13.2 NUREG 0654, Examples 17a, b, c, and d - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Onsite Fire/Explosion 14.2 On-site Fire/Explosion	14.2 (A or B) A. Fire lasting more than 15 minutes and fire is in the vicinity of equipment required for safe shutdown of the plant and the fire is damaging or threatening to damage the equipment due to heat, smoke, flame, or other hazard. OR B. (1 and 2) Explosion damage to facility affecting plant operation as determined by: 1. Direct observation or notification received by control room operator. AND 2. Shift Manager observation.	14.2 NUREG 0654, Examples 13 and 18 c - Alert.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Radiological Effluent 15.2 Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds 200 times Technical Requirement Manual limits for 15 minutes or longer.	15.2 (1 or 2 or 3) 1. Valid Noble Gas vent stack monitor reading(s) that exceeds a total site release rate of 2E+8 µCi/min and that is sustained for 15 minutes or longer. OR 2. Confirmed sample analyses for airborne releases indicates total site release rates at the site boundary for 15 minutes or longer resulting in dose rates of: a. Noble gases >1.0E+5 mrem/year whole body; **or** b. Noble gases >6.0E+5 mrem/year skin; **or** c. I-131, I-133, H-3, and particulates with half lives >8 days >3.0E+5 mrem/year to any organ (inhalation pathways only) OR 3. Confirmed sample analyses for liquid releases indicates concentrations in excess of 200 times the Technical Requirements Manual liquid effluent limits for 15 minutes or longer.	15.2 NUMARC NESP-007, AA1, Alert.
Security Event 16.2 Ongoing Security Compromise	16.2 (A or B) A. A Report from Security that a security compromise is at the site but no penetration of protected areas has occurred. OR B. Any act of sabotage which results in an actual or potential substantial degradation of the level of safety of the plant as judged by the Shift Manager/Emergency Director.	16.2 NUREG 0654, Example 16 - Alert. (Modified by guidance from NUREG 0818.)

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(ALERT)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Spent Fuel Related Incident 17.2 Unexpected in plant high radiation levels or airborne contamination which indicates a severe fuel handling accident.	17.2 Refuel floor area radiation monitor reading 1000 times normal annunciation on Panel 1C601(2C601) or indication on Panel 1C600(2C600).	17.2 NUREG 0654, Example 12 - Alert.
Steam Line Break 18.2 MSIV malfunction causing leakage.	18.2 (A and B) A. Valid MSIV closure signal or indication on Panel 1C601(2C601). AND B. (1 or 2) 1. Valid Main Steam Line Flow indication on flow indicators on Panel 1C652(2C652). OR 2. Valid Main Steam Line radiation indication on Panel 1C600(2C600).	18.2 NUREG 0654, Example 4 - Alert.
Toxic/Flammable Gases 19.2 Entry of toxic or flammable gases into the facility, with subsequent habitability problems.	19.2 Visual observation, direct measurement, or notification received by the control room operator.	19.2 NUREG 0654, Example 18d - Alert.
Technical Specification Safety Limit 20.2 None		
Dry Fuel Storage 21.2 None		

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Aircraft/Train Activity 1.3 Severe damage to safe shutdown equipment from aircraft crash or missile impact when not in cold shutdown.	NOTE: Same as 14.3 1.3 (A and B and C) A. Direct observation or notification received by control room operator. AND B. Shift Manager evaluation. AND C. Reactor coolant temperature greater than 200°F as indicated on Panel 1C651(2C651).	1.3 Same as 14.3.
Control Room Evacuation 2.3 Delayed Control Room Evacuation	2.3 (A and B) A. Initiation of control room evacuation procedures. AND B. Shutdown systems control at local stations not established within 15 minutes.	2.3 NUREG 0654, Example 18 - Site Area Emergency.
Fuel Cladding Degradation 3.3 Severely degraded core.	3.3 (A or B) A. Reactor coolant activity greater than 1000 micro Ci/cc of equivalent I-131 as determined by sample analysis. OR B. Valid containment post-accident monitor indication on Panel 1C601(2C601) greater than 400 R/hr.	3.3 NUREG 0654, Example 2 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
General 4.3 Other plant conditions exist that warrant activation of emergency centers and monitoring teams or a precautionary notification to the public near the site.	4.3 Events are occurring or have occurred which involve actual or imminent major failures of plant functions needed for protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except inside the emergency planning boundary.	4.3 NUREG 0654, Example 17 - Site Area Emergency.
Injured/Contaminated Personnel 5.3 None		
In-Plant High Radiation 6.3 None		
Loss of AC Power 7.3 Loss of all off-site power and loss of on-site AC power supplies for greater than 15 minutes.	7.3 (A and B and C) A. Loss of offsite power. AND B. Failure of all diesel generators to startup or synchronize to emergency buses by indication or annunciation on panel 0C653. AND C. The above conditions exist for greater than 15 minutes.	7.3 NUREG 0654, Example 6 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of CR Alarms and Annunciators 8.3 All annunciators lost and plant transient initiated while annunciators are lost.	8.3 (A and B) A. In the opinion of the Shift Manager, all Control Room annunciators and the Plant Process Computer are lost, or insufficient overhead annunciators are available to safely operate the unit(s) without supplemental observation of plant systems. AND B. (1 or 2 or 3 or 4) 1. Low-Low reactor water level indication on Panel 1C651(2C651) followed by ECCS initiation on Panel 1C601(2C601). OR 2. Reactor coolant temperature change greater than 100°F per hour indication on recorder TR-1R006 on Panel 1C007(2C007) (Reactor Building Elevation 683'). OR 3. High Rx pressure indication on Panel 1C651(2C651) and followed by scram indication on Panel 1C651(2C651). OR 4. Any indication that transient has occurred or is in progress.	8.3 NUREG 0654, Example 12 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of DC Power 9.3 Loss of all vital on-site DC power sustained for greater than 15 minutes.	9.3 (A and B and C) A. Less than 210 volts on the 250 VDC main distribution panel buses 1D652(2D652) AND 1D662(2D662), as indicated by trouble alarms on Panel 1C651(2C651). AND B. Less than 105 volts on the 125 VDC main distribution buses, 1D612(2D612), 1D622(2D622), 1D632(2D632), AND 1D642(2D642) as indicated by trouble alarms on Panel 1C651(2C651). AND C. The above condition exists for greater than 15 minutes. NOTE: Buses are not tripped on undervoltage condition.	9.3 NUREG 0654, Example 7 - Site Area Emergency.
Loss of Decay Heat Removal Capability 10.3 Inability to remove decay heat while plant is shutdown.	10.3 (A and B and C) A. Reactor mode switch in shutdown. AND B. Reactor coolant system temperature greater than 200°F and rising. AND C. Suppression pool temperature greater than 120°F and rising.	10.3 NUREG 0654, Example 8 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of Reactivity Control 11.3 Loss of functions needed to bring the reactor subcritical and loss of ability to bring the reactor to cold shutdown.	11.3 (A and B and C and D) A. Inability to insert sufficient control rods to bring the reactor subcritical as indicated by count rate on the neutron monitoring instrumentation on Panel 1C651(2C651). AND B. (1 or 2) Failure of both loops of standby liquid control to inject into the vessel indicated by: 1. Low pump discharge pressure indication on Panel 1C601(2C601). OR 2. Low flow indication on Panel 1C601(2C601). AND C. Reactor coolant temperature greater than 200°F as indicated Panel 1C651(2C651). AND D. Reactor power greater than 5% indicated on Panel 1C651(2C651).	11.3 NUREG 654, Example 9 - Site Area Emergency.
Loss of Reactor Vessel Inventory 12.3 Known loss of coolant accident greater than make-up capacity.	12.3 Water level below (and failure to return to) top of active fuel for greater than three minutes as indicated on fuel zone level indicator on Panel 1C601(2C601).	12.3 NUREG 0654, Example 1 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Natural Phenomena 13.3 Severe natural phenomenon occurrence, with plant not in cold shutdown.	13.3 (A and B) A. Reactor Coolant Temperature greater than 200°F as indicated on Panel 1C651(2C651). AND B. (1 or 2 or 3) 1. Reported hurricane or sustained winds greater than 80 mph. OR 2. Earthquake with greater than Safe Shutdown Earthquake (SSE) levels as indicated on Panel 0C696. OR 3. Tornado with reported wind velocities greater than 220 mph impacting on-site.	13.3 NUREG 0654, Examples 15a, b, and c - Site Area Emergency.
Onsite Fire/Explosion 14.3 Damage to safe shutdown equipment due to fire or explosion has occurred when plant is not in cold shutdown and damage is causing or threatens malfunction of equipment required for safe shutdown of the plant.	14.3 (A and B and C) A. Direct observation or notification received by control room operator. AND B. Shift Manager evaluation. AND C. Reactor Coolant temperature greater than 200°F as indicated on Panel 1C651(2C651).	14.3 NUREG 0654, Examples 11, 16a, and 16b - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Radiological Effluent 15.3 Dose at the Emergency Plan Boundary resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mrem whole body TEDE or 500 mrem child thyroid CDE for the actual or projected duration of the release.	15.3 (1 or 2 or 3 or 4 or 5) 1. Valid Noble Gas vent stack monitor readings(s) that exceeds a total release rate of 6.2E8 µCi/min for greater than 15 minutes and Dose Projections are not available. Note: If the required dose projection cannot be completed within the 15 minute period, then the declaration must be made based on a valid sustained monitor reading(s). OR 2. Valid dose assessment using actual meteorology indicates projected doses greater than 100 mrem whole body TEDE or 500 mrem child thyroid CDE at or beyond the EPB. OR 3. A valid reading sustained for 15 minutes or longer on the RMS perimeter radiation monitoring system greater than 100 mR/hr. OR 4. Field survey results indicate Emergency Planning Boundary dose rates exceeding 100 mR/hr expected to continue for more than one hour. OR 5. Analyses of field survey samples indicate child thyroid dose commitment at the Emergency Planning Boundary of 500 mrem for one hour of inhalation.	15.3 NUMARC NESP-007, AS1, Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Security Event 16.3 An on-going adversary event threatens imminent loss of physical control of the plant.	16.3 (A or B) A. Report from Security that the security of the plant vital area is threatened by unauthorized (forcible) entry into the protected area. OR B. Any act of sabotage which results in actual or likely major failures of plant functions needed for protection of the public as judged by the Shift Manager/Emergency Director.	16.3 NUREG 0654, Example 14 - Site Area Emergency. (Modified to reflect guidance in NUREG 0818.)

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Spent Fuel Related Incident		
17.3a Major damage to irradiated fuel with actual or clear potential for significant release of radioactive material to the environment.	17.3a (A and B) A. Dropping, bumping, or otherwise rough handling of a new OR irradiated fuel bundle with irradiated fuel in the pool. AND B. (1 or 2) 1. Refueling floor area radiation monitor reading 1000 times normal annunciation on Panel 1C601(2C601) or indication on Panel 1C600(2C600). OR 2. Reactor Building vent stack monitoring system high radiation annunciation or indication on Panel 0C630 or 0C677.	17.3a NUREG 0654, Example 10 - Site Area Emergency.
OR	OR	
17.3b Damage to irradiated fuel due to uncontrolled decrease in the fuel pool level to below the level of the fuel.	17.3b (A and B) A. (1 or 2) 1. Uncovering of irradiated fuel confirmation by verification of significant leakage from spent fuel pool. OR 2. Visual observation of water level below irradiated fuel in the pool. AND B. (1 or 2) 1. Refueling floor area radiation monitor annunciation on Panel 1C651(2C651) or indication on Panel 1C600(2C600). OR 2. Reactor Building vent stack monitoring system high radiation annunciation or indication on Panel 0C630 or 0C677.	17.3b NUREG 0654, Example 10 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Steam Line Break 18.3 Steam line break occurs outside of containment without isolation.	18.3 (A or B or C or D) A. (1 and 2) 1. Failure of both MSIVs in the line with the leak to close as indicated by position indication on Panel 1C601(2C601). AND 2. (a OR b) a. High Main Steam Line flow annunciation on Panel 1C601(2C601) or indication on Panel 1C652(2C652). OR b. Other indication of main steam leakage outside containment. OR B. (1 and 2) 1. Failure of RCIC steam isolation valves HV-F008 and HV-F007 to close as indicated on Panel 1C601(2C601). AND	18.3 NUREG 0654, Example 4 - Site Area Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Steam Line Break 18.3 (Cont.)	2. (a OR b OR c OR d OR e OR f) a. RCIC steamline pipe routing area high temperature annunciation on Panel 1C601(2C601), or indication on Panel 1C614(2C614). OR b. RCIC equipment area high temperature annunciation on Panel 1C601(2C601) or indication on Panel 1C614(2C614). OR c. RCIC steamline high flow annunciation on Panel 1C601(2C601). OR d. RCIC steamline tunnel ventilation high delta temperature annunciation on Panel 1C601(2C601). OR e. RCIC turbine exhaust diaphragm high pressure annunciation on Panel 1C601(2C601). OR f. Other indication of steam leakage from the RCIC system.	

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Steam Line Break 18.3 (Cont.)	OR C. (1 and 2) 1. Failure of HPCI steam isolation valves HV-F002 and HV-F003 to close as indicated by position indicator on Panel 1C601(2C601). AND 2. (a OR b OR c OR d OR e OR f) a. HPCI steamline pipe routing area high temperature annunciation on Panel 1C601(2C601), or indication on Panel 1C614(2C614). OR b. HPCI equipment area high temperature annunciation on Panel 1C601(2C601) or indication on Panel 1C614(2C614). OR c. HPCI steamline high flow annunciation on Panel 1C601(2C601). OR	

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(SITE AREA EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Steam Line Break 18.3 (Cont.)	d. HPCI steamline tunnel ventilation high delta temperature annunciation on Panel 1C601(2C601). OR e. HPCI turbine exhaust diaphragm high pressure annunciation on Panel 1C601(2C601). OR f. Other indication of steam leakage from the HPCI system. OR D. Any other unisolatable steam line breaks.	
Toxic/Flammable Gases 19.3 Toxic or flammable gases enter vital areas, restricting access and restricted access constitutes a safety problem.	19.3 (A and B) A. Shift Manager evaluation. AND B. Visual observation, direct measurement, or notification received by control room operator.	19.3 NUREG 0654, Example 16c - Site Area Emergency.
Technical Specification Safety Limit 20.3 None		
Dry Fuel Storage 21.3 None		

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Aircraft /Train Activity 1.4 None		
Control Room Evacuation 2.4 None		
Fuel Cladding Degradation 3.4a Fuel cladding degradation. Loss of 2 out of 3 fission product barriers (fuel cladding and reactor coolant pressure boundary) with potential loss of the third barrier (primary containment). OR	3.4a (A or B) A. (1 and 2) 1. Valid Containment post-accident monitor indication on Panel 1C601(2C601) greater than 400 R/hr. AND 2. (a OR b OR c) a. Containment pressure greater than 40.4 psig as indicated on Panel 1C601(2C601). OR b. A visual inspection of the containment indicates a potential for loss of containment (e.g., anchorage or penetration failure, a crack in containment concrete at tendon). OR c. Other indication of potential or actual loss of primary containment. OR B. (1 and 2) 1. Reactor coolant activity greater than 1000 micro Ci/cc of equivalent I-131 as determined by sample analysis. AND 2. Actual or potential failure of reactor coolant isolation valves to isolate a coolant leak outside containment as determined by valve position indication on Panel 1C601(2C601) or visual inspection. OR	3.4a NUREG 0654, Example 2 - General Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Fuel Cladding Degradation 3.4b Core melt	3.4b (A and B) A. Valid Containment post-accident monitor indication on Panel 1C601(2C601) greater than 2000 R/hr. AND B. Containment high pressure indication or annunciation on Panel 1C601(2C601).	3.4b NUREG 0654, Example 4 - General Emergency.
General 4.4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible.	4.4 Events that are occurring or have occurred which involve actual or imminent substantial core degradation of melting with potential for loss of containment integrity. Expectation is that releases will exceed EPA Protective Action Guideline exposure levels beyond the emergency planning boundary.	4.4 NUREG 0654, Example 4 - General Emergency.
Injured Contaminated Personnel 5.4 None		
In-Plant High Radiation 6.4 None		
Loss of AC Power 7.4 None		
Loss of CR Alarms and Annunciators 8.4 None		
Loss of DC Power 9.4 None		

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of Decay Heat Removal Capability 10.4 Inability to remove decay heat while plant is shutdown with possible release of large amounts of radioactivity.	10.4 (A and B and C) A. Reactor mode switch in shutdown. AND B. Reactor coolant system temperature greater than 200°F and rising. AND C. Suppression pool temperature greater than 290°F indicated on computer output (MAT 12, 13, 14, 15, or 16).	10.4 NUREG 0654, Example 6a - General Emergency.
Loss of Reactivity Control 11.4 Loss of functions needed to bring the reactor sub-critical and transient in progress that makes release of large amounts of radioactivity in a short period possible.	11.4 (A or B) AND (C and D) A. Trip of at least one subchannel in each trip system (RPS A and RPS B), indicated by annunciation or trip status lights on Panel 1C651(2C651). OR B. Trip of both systems (ARI A and ARI B) as indicated by annunciators on Panel 1C601(2C601). AND C. Loss of SLC system capability to inject, indicated by instrumentation on Panel 1C601(2C601). AND D. Reactor power greater than 25% of rated, indicated on Panel 1C651(2C651).	11.4 NUREG 0654, Example 6a - General Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Loss of Reactor Vessel Inventory		
12.4a Loss of coolant accident with possibility of imminent release of large amounts of radioactivity.	12.4a Water level below (and failure to return to) top of active fuel for greater than 20 minutes as indicated on fuel zone level indicator on Panel 1C601(2C601).	12.4a NUREG 0654, Example 6b - General Emergency.
OR	OR	
12.4b Loss of reactor vessel inventory. Loss of 2 out of 3 fission product barriers (fuel cladding and reactor coolant pressure boundary) with potential loss of the third barrier (primary containment).	12.4b (A or B) A. (1 and 2 and 3) 1. High drywell pressure annunciation or indication on Panel 1C601(2C601). AND 2. (a OR b OR c) a. Containment pressure exceeds 40.4 psig as indicated on Panel 1C601(2C601). OR b. A visual inspection of the containment indicates a potential or actual loss of containment (e.g., anchorage or penetration failure.) OR c. Containment isolation valve(s) fail to close as indicated by valve position indication on Panel 1C601(2C601). AND	12.4b. NUREG 0654, Examples 2 and 6c - General Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
12.4b (Cont.)	3. Reactor Vessel level drops below (and fails to return to) top of active fuel for greater than three minutes as indicated on fuel zone level indicator on Panel 1C601(2C601). OR B. (1 and 2) 1. Failure of reactor pressure vessel isolation valves to isolate coolant break outside containment as indicated by valve position indication on Panel 1C601(2C601) or visual inspection. AND 2. Reactor Vessel level drops below (and fails to return to) top of active fuel for greater than three minutes as indicated on fuel zone level indicator on Panel 1C601(2C601).	
Natural Phenomena 13.4 None		
Onsite Fire/Explosion 14.4 None		

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Radiological Effluent 15.4 Dose at the Emergency Planning Boundary resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mrem whole body TEDE or 5000 mrem child thyroid CDE for the actual or projected duration of the release using actual meteorology.	15.4 (1 or 2 or 3 or 4 or 5) 1. Valid Noble Gas vent stack monitor readings(s) that exceed a total release rate of 6.2E9 µCi/min for greater than 15 minutes and Dose Projections are not available. Note: If the required dose projection cannot be completed within the 15 minute period, then the declaration must be made based on a valid sustained monitor reading(s). OR 2. Valid dose assessment using actual meteorology indicates projected doses greater than 1000 mrem whole body TEDE or 5000 mrem child thyroid CDE at or beyond the EPB. OR 3. A valid reading sustained for 15 minutes or longer on the RMS perimeter radiation monitoring system greater than 1000 mR/hr OR 4. Field survey results indicate Emergency Planning Boundary dose rates exceeding 1000 mR/hr expected to continue for more than one hour. OR 5. Analyses of field survey samples indicate child thyroid dose commitment at the Emergency Planning Boundary of 5000 mrem for one hour of inhalation.	15.4 NUMARC NESP 007, AG1, General Emergency.

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

Table 5.1
CLASSIFICATION OF EMERGENCY CONDITIONS
(GENERAL EMERGENCY)

Initiating Conditions	Emergency Action Levels	Basis for Initiating Conditions[1]
Security Event 16.4 Loss of physical control of facility.	16.4 (A or B) A. Report from Security that a loss of physical control of plant vital areas has occurred. OR B. Any act of sabotage which results in imminent significant cladding failure or fuel melting with a potential for loss of containment integrity or the potential for release of significant amounts of radioactivity in a short time as judged by the Shift Manager/Emergency Director.	16.4 NUREG 0654, Example 3 - General Emergency. (Modified to reflect the guidance in NUREG 0818.)
Spent Fuel Related Incident 17.4 None		
Steam Line Break 18.4 None		
Toxic/Flammable Gases 19.4 None		
Technical Specification Safety Limit 20.4 None		
Dry Fuel Storage 21.4 None		

There are 21 EAL categories. The numbering scheme is X.1 for UE; X.2 for Alert, X.3 for Site Area Emergency; and X.4 for General Emergency.

1. Appendix F lists NUREG 0654 Initiating Conditions not used.

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
1. Notification of Unusual Event **Class Description** Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. **Purpose** Purpose of offsite notification is to (1) assure that the first step in any response later found to be necessary has been carried out, (2) bring the operating staff to a state of readiness, and (3) provide systematic handling of unusual events information and decision-making.	1. Promptly notify plant emergency management personnel of event particulars and an assessment of safety significance of the event. **and** 2. Notify PEMA, LCEMA, CCDPS and NRC of "Unusual Event". Under certain security related events, such as a site specific credible threat, the TSC and EOF will be activated at the Unusual Event level.* **and** 3. Close out event with verbal summary to offsite authorities (PEMA, LCEMA, CCDPS, and NRC) followed by written summary if required by 10 CFR 50.73. **and** 4. Escalate to higher emergency classification if appropriate.	1. Notify key officials and public if deemed necessary by county/state Emergency Director. **and** 2. Provide assistance if requested and able.

* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
2. Alert **Class Description** Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases expected to be limited to small fractions of the EPA Protective Action Guidelines exposure levels. **Purpose** Purpose of offsite alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring if required, and (2) provide offsite authorities current status information.	1. Promptly notify state/local authorities and NRC of Alert status and reason for alert. **and** 2. Promptly notify PPL emergency management personnel of event particulars and an assessment of the safety significance of the event. **and** 3. Activate TSC and OSC, and dispatch monitoring team if radioactive effluent release involved. **and** 4. Provide a dedicated individual for plant status updates to off-site authorities and periodic press briefings. **and** 5. Activate the Emergency Response Data System (ERDS) within one hour. **and**	1. Provide assistance, if requested and able. **and** 2. Augment resources by activating EOC and any other primary response centers. **and** 3. Alert to Standby status key emergency personnel including monitoring teams and associated communications. **and** 4. Prepare to provide confirmatory off-site radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed technical specification limits. **and** 5. Maintain alert status until verbal close-out. **or** 6. Escalate to a more severe class.

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
2. Alert (continued)	6. Close out or recommend reduction in emergency class by verbal summary to offsite authorities followed by written summary if required by 10 CFR 50.73. **or** 7. Escalate to a more severe emergency class.	

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
3. Site Area Emergency **Class Description** Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases not expected to exceed EPA Protective Action Guideline exposure levels except near site boundary. **Purpose** Purpose of the site area emergency declaration is to (1) assure that response centers are manned, (2) assure that monitoring teams are dispatched, (3) assure that personnel required for evacuation of near-site areas are at duty stations if situation becomes more serious, (4) provide consultation with offsite authorities, and (5) provide updates for the public through offsite authorities.	1. Promptly inform off-site authorities of site emergency status and reason for emergency, if known. **and** 2. Augment resources by activating TSC, OSC and EOF and near-site/off-site monitoring teams. **and** 3. Dispatch monitoring teams and associated communications for instances where radiation releases appear imminent or have occurred. **and** 4. Provide a dedicated individual for plant status updates to off-site authorities and periodic press briefings. **and** 5. Make senior technical and management staff in the EOF available for consultation with NRC and state on a periodic basis. **and**	1. Provide, if able, any assistance required. **and** 2. Augment resources by activating primary emergency response centers. **and** 3. Assure that systems for public notification of emergency status is in standby and initiate preparation for subsequent public periodic updates. **and** 4. Alert to standby status other emergency personnel and dispatch personnel to duty stations. **and** 5. Provide off-site monitoring results to licensee and others and jointly assess them. **and**

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
3. Site Area Emergency (Continued)	6. Provide meteorological and dose estimates to off-site authorities for actual releases via a dedicated individual or automated data transmission. **and** 7. Provide release and dose projections based on available plant condition information and foreseeable contingencies. **and** 8. Close out or recommend reduction in emergency class by briefing of off-site authorities at EOF by phone followed by written summary if required by 10 CFR 50.73. **or** 9. Escalate to General Emergency class.	6. Continuously assess information from licensee and off-site monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources. **and** 7. Recommend placing milk animals within affected area radius on stored feed and assess need to extend distance. **and** 8. Provide press briefings. **and** 9. Maintain site emergency status until close out or reduction of emergency class. **or** 10. Escalate to General Emergency class.

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
4. General Emergency **Class Description** Events are in process or have occurred which involve actual or imminent substantial core degradations or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area. **Purpose** Purpose of the general emergency declaration is to (1) initiate predetermined protective actions for the public, (2) provide continuous assessment of information from licensee and offsite organization measurements, (3) initiate additional measures as indicated by actual or potential releases, (4) provide consultation with offsite authorities and (5) provide updates for the public through offsite authorities.	1. Same as for "Site Area Emergency" classification. **and** 2. Make a Protective Action Recommendation to the state based on an assessment of plant conditions and/or dose projections. **Note:** The initial recommendations may be modified on the basis of subsequent plant status assessments or dose projections.	1. Provide requested assistance, if able. **and** 2. Recommend protective actions for 10 mile EPZ population and 50 mile EPZ agricultural products. **and** 3. Dispatch key emergency personnel including monitoring teams and associated communications. **and** 4. Activate other emergency services personnel and dispatch to duty stations. **and** 5. Provide off-site monitoring results to PPL and jointly assess these. **and** 6. Continuously assess information from licensee and field monitoring teams with regard to changes to protective actions already initiated for public and evacuation resources. **and**

TABLE 5.2

EMERGENCY ACTIONS BASED ON CLASSIFICATION

Classification	Licensee Actions	Off-Site Agency Actions
4. General Emergency (Continued)		7. Maintain General Emergency status until close-out or reduction of emergency classification.

6.0 ORGANIZATIONAL CONTROL OF EMERGENCIES

PPL's Emergency Plan is based upon a four-phase approach to accident response and mitigation.

Phase I - Immediate Response (Reference Table 6.1.) Phase I consists of identification of the emergency condition, initiation of prompt corrective action and initiation of prompt notification to local, state and federal agencies as well as appropriate members of PPL's NERO. 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 units and quickly and effectively responding to an emergency condition. Initially, the Shift Manager, the highest ranking management individual on-shift, will assume the role of Emergency Director and retain that role until relieved of that responsibility by the on-call Emergency Director.

The Shift Manager, as Emergency Director:

a) Classifies the condition.

b) Initiates corrective actions and coordinates emergency management activities.

c) Designates a communicator to notify off-site agencies and initiate call-in of selected personnel.

d) Ensures plant personnel are notified via the PA system or direct manual methods for accountability and/or evacuation, if required.

e) Notifies the on-call Emergency Director, informs him of the situation, and requests relief if appropriate. For conditions under a Notification of Unusual Event the Shift Manager may remain as ED through termination of the condition, due to probable short duration or low severity of the event.

f) Ensures that on-site emergency response individuals and groups are notified, using the PA system or direct manual communications. Depending on the nature and severity of the condition, TSC and EOF staffing may be called out. Under certain security-related events, such as a site-specific credible threat, the TSC and EOF will be activated at the Notification of Unusual Event level.*

g) Ensures that initial dose projections are done and makes resulting recommendations regarding off-site protective actions, if required.

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* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

h) Ensures that off-duty station personnel are notified to assist as necessary with emergency activities. These notifications are made, via the activation of NERO response pagers or by telephone backup, to individuals designated for off-duty availability status (i.e. on-call) to fill key emergency response positions. Those key positions are identified in Sections 6.2 and 6.3. Other off-duty personnel are called in as required.

Upon activation of Phase II, additional personnel are available, and control of the emergency and dissemination of in-plant teams shifts from the Control Room to the TSC.

Phase II - Activation of On-Site NERO - (Reference Table 6.1 and Figure 6.2.) Upon notification by the on-shift organization, the on-call Emergency Director reports to the site/Control Room to assume the role of Emergency Director. As specified in Figure 6.2, the minimum number of support coordinators and staffs also report to the site. These individuals form the nucleus of the ED's Team and activate the TSC. The TSC and OSC are fully functional within 60 minutes of event classification. As the on-call Emergency Director and his support coordinators arrive, they are briefed and assume responsibility for their particular areas of expertise. Emergency management activities, including communications, are under the control of the Emergency Director; dose projection and assessment activities are directed by the Radiation Protection Coordinator; technical expertise is directed by the Tech Support Coordinator; the Operations Coordinator oversees Operations activities; and the Damage Control Team Coordinator oversees in-plant damage control actions. The OSC Coordinator supports the operations and damage control coordinators by managing personnel in the OSC. The TSC takes over all emergency management and support activities from the on-shift organization, freeing them to devote their efforts towards establishing and maintaining the plant in a safe, stable condition.

The onsite NERO may be further augmented as shown in Figure 6.2 by personnel filling TSC positions not designated as minimum requirements. Figure 6.2 designates minimum requirements.

In the event of hazards preventing site access or certain security related events, personnel who normally report to the Technical Support Center will report to the Emergency Operations Facility where arrangements will be made to accommodate TSC-specific functions not assumed by the EOF. The alternate TSC will be activated as soon as possible to support the site; however, it is recognized that the activation time for the alternate TSC may exceed 60 minutes.*

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Phase III - Activation of Off-site NERO - (Reference Table 6.1 and Figure 6.3.) This organization staffs the Emergency Operations Facility to provide management of the overall emergency response as well as technical support, off-site radiological assessment, and communications.

Staffing of the EOF occurs following an Alert, a Site Area Emergency, or a General Emergency declaration. The EOF is required to activate following a Site Area Emergency or General Emergency classification and take over management of the emergency from the TSC within 90 minutes of the Site Area Emergency or higher classification. Activation of the Emergency Operations Facility requires the minimum staff as identified in Figure 6.3. When the initial emergency classification is a Site Area Emergency or higher, the EOF will take over the management of the emergency within 90 minutes of the declaration of a Site Area Emergency. At the discretion of the Emergency Director, the EOF can be activated and take over management of the emergency earlier.

Functional operation will include:

- Management of overall emergency response
- Coordination of radiological and environmental assessment
- Determination of recommended protective actions
- Communications
- Coordination of emergency response activities with Federal, State, local county and municipal agencies

The offsite NERO may be further augmented as denoted in Figure 6.3 by personnel filling EOF positions not designated as minimum requirements. Figure 6.3 designates minimum staffing.

Phase IV - Restoration - This phase leads ultimately to the return to service of the unit. The organizational and philosophical concepts that are utilized during this phase are highly dependent upon the nature of the emergency. The restoration phase does not begin until there is complete assurance that the plant is in a stable shutdown condition and that there is no inadvertent or unplanned significant release of radioactivity to the environment.

6.1 NORMAL OPERATING ORGANIZATION

FSAR Section 13.1.2 defines the normal operating organization for SSES as illustrated in FSAR Figure 13.1-3. Minimum shift response during off-hours is as follows:

1	Shift Manager (SRO)
1	Unit Supervisor (SRO)
3	Plant Control Operators (RO)
4	Non-Licensed Operators
1	Shift Technical Advisor
2	Health Physics Technicians
1	Chemistry Technician
1	Emergency Plan Communicator
1	NRC Communicator
	Fire Brigade response personnel per Technical Requirements Manual
	Security Personnel as specified in the SSES Security Plan

NOTE: On-shift staffing may be less than the minimum Emergency Plan requirement for a period of time not to exceed 2 hours in order to accommodate unexpected unavailability of on-duty shift individuals provided immediate action is taken to restore shift complement to within minimum requirements. This note applies to personnel who are on-duty, not oncoming shift relief.

6.2 ON-SITE EMERGENCY ORGANIZATION-(PHASE II)

Technical Specification 5.2, FSAR Section 13.1, and FSAR Section 17.2 define qualification requirements for PPL Susquehanna LLC personnel. Department implementing procedures define specific qualification and training requirements for PPL NERO positions.

6.2.1 Emergency Director

The Shift Manager assumes the role of Emergency Director until he is relieved by a qualified Emergency Director.

The Emergency Director assumes full responsibility for the implementation and administration of the Emergency Plan and is responsible for assuring continuity of resources until those responsibilities are turned over to the Recovery Manager. The responsibility and authority of the ED are set forth in Appendix E of this plan.

The ED cannot relinquish any responsibilities until the arrival of and assumption of responsibilities by the Recovery Manager at the EOF. At that time, the ED may relinquish any responsibilities except those related to maintaining the Unit in a safe shutdown condition with adequate core cooling and no uncontrolled radioactive material releases.

If the Emergency Director cannot perform this function during the emergency, he will be succeeded by the Operations Coordinator until another qualified Emergency Director arrives to assume this responsibility.

Functional responsibilities of the ED include:

a) 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.

b) Manage overall implementation of the immediate on-site corrective and protective actions to bring the incident under control and mitigate its effects.

c) Assure that appropriate notifications of emergency classification and protective action recommendations to state and local agencies are made within 15 minutes of declaration of an EAL.

d) Assure that appropriate notifications and recommendations to the NRC are made immediately after notification to state and local agencies, but not later than one hour after declaration of an emergency classification.

e) Augment the on-site NERO with duty roster personnel and other available station staff members as dictated by the emergency condition.

f) Continue reassessment of emergency status and make appropriate recommendations including protective actions to off-site organizations.

g) Ensure that information released is accurate and released through the proper channels.

h) Activate Emergency Facilities described in Section 8.0, as required.

i) Assign a technical liaison to the state EOC when requested.

j) Communicate with and provide information to the Recovery Manager and the Public Information Manager.

k) Authorize issuance of Radioprotective Drugs in accordance with prescribed procedures. This should include consultation with the Radiation Protection Coordinator and medical consultants.

l) Authorize Emergency dose extensions. This should include consultation with the Radiation Protection Coordinator.

m) Authorize taking essential corrective action that may involve the risk of emergency radiation exposure to NERO personnel. Table 7.2 provides the basic criteria for this decision.

n) Implement RCA and site evacuations as required.

o) Request Federal assistance to augment NERO capabilities as necessary. Such requests should be coordinated with PEMA and/or DEP/BRP and are normally done through the Recovery Manager and the EOF staff.

6.2.2 Operations Coordinator

Responsibilities:

a) Prepare the TSC for activation if the TSC ED has relieved the Control Room ED of responsibility.

b) Advise the Shift manager in directing the Control Room and in-plant operational activities.

c) Direct activities of the Damage Control Team Coordinator, SAM Coordinator, and TSC Communicator.

d) Advise the ED on plant operations and conditions.

e) Establish and set priorities for mitigation with the concurrence of the ED.

6.2.3 TSC Communicator

Responsibilities:

a) Make proper notification to off-site organizations.

b) Initiate call-in procedures as requested by the ED.

c) Function as liaison for emergency-related communications between the ED and on-site and off-site emergency groups.

d) Maintain communications with the NRC.

e) Maintain records during the emergency.

6.2.4 Radiation Protection Coordinator

Responsibilities:

a) Ensures dose projections are performed until relieved by the EOF.

b) Provide radiological advice to the ED concerning on-site emergency activities.

c) Provide protective action recommendations to the ED.

d) Maintain communication with and provide information to the EOF Dose Assessment Supervisor.

e) Maintain communication with and provide radiological information to DEP/BRP until relieved by the EOF.

f) Provide on-site radiation monitoring personnel for effluent release assessment.

g) Provide radiation monitoring personnel for emergency team efforts.

h) Direct personnel and area contamination control and decontamination activities.

i) Provide dose projections to the Dose Assessment Supervisor until relieved of that responsibility by the EOF.

j) Perform initial off-site environmental assessment until relieved by the EOF.

k) Ensure radiological data is communicated to the NRC via the Health Physics Network.

l) Advise the Emergency Director and organization on use of KI.

6.2.5 Technical Support Coordinator

Responsibilities:

a) Analyze mechanical, electrical, and instrument and control problems; determine alternate solutions, design and coordinate the installation of short-term modifications.

b) Analyze thermohydraulic and thermodynamic problems and develop solutions.

c) Assist in the development of procedures necessary for conducting emergency operations and damage control.

d) Analyze conditions and develop guidance for the ED and operations personnel.

e) Resolve questions concerning Operating License requirements with NRC representatives.

f) Maintain lead technical responsibility, coordinate technical information with the EOF as appropriate, and request technical support from the EOF or other engineering/technical resources.

g) Maintain communication with and provide technical information to DEP/BRP Technical, as required, until relieved by the EOF.

h) Provide core damage estimates.

i) Until relieved, provide direction to Chemistry Technician to perform emergency plan actions.

6.2.6 Security Coordinator

Responsibilities:

a) Maintain plant security and institute appropriate contingency measures.

b) Account for personnel in accordance with EP-PSs.

c) Act as liaison with outside groups in providing additional resources such as manpower, equipment, supplies, and transportation.

d) Coordinate provisions for transportation, food, and other logistical support for emergency personnel.

e) Provide personnel and work schedules for relieving emergency personnel.

6.2.7 OSC Coordinator

Responsibilities:

a) Report to the OSC/TSC.

b) Assist the Damage Control Team Coordinator and the Operations Coordinator to direct in-plant Emergency Team activities.

c) Coordinate the availability and assignment of personnel supporting activities for the ED and other NERO managers.

d) Organize and manage emergency response personnel in the OSC/TSC.

6.2.8 Damage Control Team Coordinator

Responsibilities:

a) Organize, brief, dispatch, and direct, as necessary, the on-site damage control teams.

b) Ensure damage control resources are allocated on the right priorities by assigning tasks to available resources.

c) Direct dispatch of in-plant teams.

d) Communicate with Operations Coordinator, the Technical Support Coordinator, and the OSC Coordinator.

6.2.9 TSC Radio Communicator

Responsibilities:

a) Maintain radio communications with all in-plant teams.

b) Maintain an up-to-date status of in-plant radiological conditions.

6.2.10 Severe Accident Management (SAM) Coordinator

Responsibilities:

a) Make recommendations to the Operations Coordinator for mitigation of the effects of a severe accident at SSES.

6.2.11 HP Specialist

Responsibilities:

a) Determine radiological conditions in the plant.

b) Assess on-site habitability.

c) Provide guidance and brief teams on radiological and ALARA considerations.

d) Monitor in-plant team exposures.

e) Track dose levels of in-plant team members.

6.2.12 Non-Operations Support Personnel

Maintenance Technicians, Chemistry Technicians, and HP trained personnel are called out per Table 6.1 to support damage control, chemistry, and radiological functions. Table 6.1 designates personnel who report in 60 minutes and 90 minutes.

6.2.13 Engineering Staff (Core Thermal Hydraulic Engineer, Electrical Engineer, Mechanical Engineer)

Responsibilities

a) Provide core damage estimates. (Core Thermal Hydraulic Engineer)

b) Analyze mechanical problems and other discipline related issues and determine solutions and provide support for implementation of required mechanical actions. (Mechanical Engineer)

c) Analyze electrical and instrumentation and control problems and other discipline related issues. Determine alternate solutions and provide support for implementation of required electrical/I&C actions. (Electrical Engineer)

All responders are notified to provide for full augmentation of resources at the TSC for the positions in Figure 6.2 The augmented response may be greater than 60 minutes and may occur after the TSC has activated.

6.3 OFF-SITE RESOURCES AND ACTIVITIES (PHASE III)

Technical Specification 5.3, FSAR Section 13.1, and FSAR Section 17.2 define the qualification requirements for PPL Susquehanna LLC personnel. Department implementing procedures define specific qualification and training requirements for PPL NERO positions.

Notification of the Recovery Manager is made via notification of key managers for the Notification of Unusual Event and via NERO activation for higher levels by the Communicators in the Control Room or TSC. An on-call duty roster is available in the CR and TSC.

At the discretion of the Emergency Director, the EOF can be manned or activated at a Notification of Unusual Event level.

Staffing of the EOF occurs following an Alert, a Site Area Emergency, or a General Emergency declaration. The EOF is required to activate following a Site Area Emergency or General Emergency classification and take over management of the emergency from the TSC within 90 minutes of the Site Area Emergency or higher classification. NERO is notified of the need for facility staffing by the on-shift staff activating pagers and a Telenotification System that activates both pagers and cell phones.

When these responders are briefed on the emergency situation and verify that necessary equipment is functioning properly, the Recovery Manager will assume responsibility for overall management of the emergency response. The following functions are provided:

- Management of overall emergency response
- Coordination of radiological and environmental assessment
- Determination of recommended protective actions
- Communications
- Coordination of emergency response activities with Federal, State, local county and municipal agencies.

All responders are notified to provide for full augmentation of resources at the EOF for the positions in Figure 6.3. The augmented response may be greater than ninety minutes and may occur after the EOF has activated.

6.3.1 EOF Organization

6.3.1.1 Recovery Manager

If the Recovery Manager cannot perform this function during the emergency, he will be succeeded by the Engineering Support Supervisor until another qualified Recovery Manager arrives.

Responsibilities:

a) Provide continuous coordination and evaluation of PPL activities during an emergency having or potentially having environmental consequences.

b) Manage overall PPL emergency response and assuring continuity of resources.

c) Act as lead interface with off-site government agency officials.

d) Assure appropriate notifications and recommendations to offsite organizations are timely.

e) Continue reassessment of emergency status and make appropriate recommendations including protective actions to off-site organizations.

f) Ensure that information released is accurate and made through proper channels.

g) Direct the activities of all other EOF managers.

h) Request Federal assistance to augment NERO capabilities as necessary. Such requests should be coordinated with PEMA and/or DEP/BRP.

i) Notify PEMA Emergency Operations Center of Protective Action Recommendations.

j) When requested, send a representative to the State EOC. If conditions result in implementation of the Federal Radiological Emergency Response Plan, assign a representative to the Federal Response Center, to the Federal Radiological Monitoring and Assessment Center, and to the Joint Information Center (most likely the PIM).

6.3.1.2 Engineering Support Supervisor

Responsibilities:

a) Manage engineering support resources in the EOF.

b) Provide technical support to aid in decision making process.

c) Keep BRP informed concerning technical status of the plant and any mitigating actions being considered or in progress.

d) Provide technical information concerning plant status and mitigating actions to the off-site agencies.

6.3.1.3 EOF Support Supervisor

Responsibilities:

a) Provide support to the Recovery Manager in review of plant data.

b) Oversee formal communications leaving the EOF.

c) Oversee proper facility set up.

d) Provide administrative support.

e) Support the Recovery Manager with off-site agency interface.

6.3.1.4 Dose Assessment Supervisor

Responsibilities:

a) Ensure dose projections are performed.

b) Evaluate the magnitude and effects of actual or potential radioactive releases from the plant.

c) Recommend appropriate off-site protective measures to the Recovery Manager.

d) Recommend appropriate emergency classifications to the Recovery Manager.

e) Communicate with the Radiation Protection Coordinator in the TSC and with DEP/BRP radiological personnel.

f) Control field monitoring teams.

g) Perform off-site environmental assessment.

6.3.1.5 EOF Communicator

Responsibilities:

a) Assume responsibility from the TSC for off-site notifications (except ENS communications).

b) Transmit information about the emergency to off-site organizations.

c) Function as liaison for questions received from other organizations.

d) Maintain a record of emergency notifications.

6.3.1.6 Radiological Support Staff (Dose Assessment Staffer, Field Team Director, Radiological Monitoring Team)

Responsibilities:

a) Perform dose calculations, as required. (Dose Assessment Staffer)

b) Monitor and control field teams. (Field Team Director)

c) Perform monitoring of areas around the plant as directed. (Radiological Monitoring Team)

6.3.2 Media Operations Center

The ED ensures that the MOC (Figure 6.3) is promptly notified and provided with available details of the emergency. The MOC staff provides information regarding the emergency and items of public interest to municipal groups, initiates appropriate news releases, and responds to questions from the media officials. After the Recovery Manager assumes control of the EOF, the Public Information Manager reports to the Recovery Manager.

6.3.2.1 Public Information Manager

Responsibilities:

a) Serve as official company spokesperson.

b) Prepare and disseminate SSES information to the public via the news media.

c) Interpret plant status information for the news media and other agencies.

d) Arrange for news media conferences.

e) Manage rumor control.

f) Establish interfaces and coordinates news releases with the federal and state agencies in the MOC.

6.3.3 Local Off-Site Support Services

The Emergency Director, and the Recovery Manager as appropriate, ensures that appropriate off-site emergency support groups are contacted to provide the type and level of assistance that may be necessary to deal with the existing emergency condition. Organizations that may be contacted for assistance during an emergency condition at SSES are listed in Appendix A, Letters of Agreement. Methods available for contacting these support groups include direct telephone communications with individual organizations, use of the 911 telephone system for emergency services, and message relay through LCEMA or CCDPS.

6.3.4 Off-Site Support Services

An emergency at SSES may require additional technical services and equipment. This type of assistance may be obtained from the organizations listed in Table 6.2 and Appendix A.

6.4 COORDINATION WITH PARTICIPATING GOVERNMENT AGENCIES

The ED and the RM ensure that off-site authorities are notified and apprised of emergency events at SSES when their respective facilities are managing the emergency.

Notification of a NOUE (Notification of Unusual Event) is primarily to ensure that the authorities are cognizant of the details of events that may arouse public concern and initiate inquiries by news media or members of the public.

6.4.1 County Agencies

LCEMA and CCDPS provide for:

- Planning and coordination with municipal, State, and Federal authorities.
- Initial response to notification by SSES.
- Alert and warning of local populations within the 10 mile EPZ.
- Evacuation and other protective measures for local populations within the 10 mile EPZ.
- Emergency services.
- Situation analysis.
- Operation of county EOC.

LCEMA and CCDPS also provide direction for the local organizations that are assigned action or support responsibilities under their plans.

The primary method of notification to LCEMA and CCDPS is via the Centrex Telephone Network (CTN). Secondary methods are radio and regular telephone.

6.4.2 State Agencies

PEMA provides for:

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

DEP/BRP provides for:

- Technical consultation on Radiological and Plant conditions.
- Accident assessment.
- Recommendations for protective actions.
- Recommendations for protection of potable water and food.
- Recommendations for recovery and re-entry (off-site).
- Operation of DEP/BRP EOC.

Initially, SSES notifies PEMA, who, in turn, notifies DEP/BRP. DEP/BRP calls back to SSES to obtain radiological and plant condition information and establishes a communication link with SSES via CTN. If the emergency warrants, DEP/BRP responds to the EOF.

The primary method of notification to PEMA is via the Centrex Telephone Network (CTN). CTN communications between SSES and DEP/BRP are used for transmitting radiological and technical information/recommendations.

6.4.3 Federal Agencies

As detailed in the Federal Radiological Emergency Response Plan (FRERP), the Federal government maintains extensive capabilities to assist states and licensees in responding to radiological emergencies. The ED and, upon EOF activation, the RM are authorized to request Federal assistance. Such requests should be coordinated with PEMA and/or DEP/BRP.

NRC - designated Lead Federal Agency (LFA) under the FRP.

The primary method of notification to the NRC is via the Emergency Notification System (ENS). Upon notification of an emergency classification, the NRC will enter one of several response modes based on the severity of the event. Response modes include:

- Normal (Increased Regional Monitoring)
  Standby
  Initial Activation
  Expanded Activation

In the Normal and Standby modes, NRC site presence is provided by the Resident Inspectors who typically observe activity in the Control Room and TSC. On Initial Activation, a site team will be dispatched that can arrive at the site within several hours. Response assignments are primarily at the EOF, with a few individuals located at the MOC, TSC, Control Room and OSC. If conditions warrant, the NRC can go to Expanded Activation that has a much larger response to staff shift type operations and additional team support personnel.

DOE - provides radiological monitoring and assessment assistance.

The primary method of notification to DOE is by telephone, although assistance is typically requested through the Lead Federal Agency (NRC) or through the State (DEP/BRP). Initial DOE response is by a Radiological Assistance Program (RAP) team dispatched from the DOE Brookhaven Area Office. This team can arrive within eight hours and would operate primarily out of the EOF.

If the situation necessitates additional technical assistance, DOE can set up and staff a Federal Radiological Monitoring and Assessment Center (FRMAC) in the vicinity of SSES. A FRMAC, which draws DOE resources and personnel from its Nevada Operations Office, can be operational within about 24 hours. The location of such a center would be selected based on actual radiological deposition patterns. The Federal FRMAC team is initially managed by DOE, with personnel also provided by NRC, EPA, USDA, HHS, and other agencies. The State and PPL would assign personnel to the FRMAC to coordinate monitoring activity.

FEMA - responsible for coordinating all Non-technical Federal response.

If the emergency situation has warranted implementation of the Federal I Response Plan (FRRP), FEMA will set up and staff a Federal Response Center (FRC) in the vicinity of SSES. The location of such a center would be selected based on current needs and conditions. Access to all Federal non-technical assistance is through the FRC where representatives of participating agencies are based.

Other Federal Agencies

In addition to NRC, DOE, and FEMA, other Federal agencies are available to provide assistance under the Federal Response Plan (FRP). The extent of participation depends on the nature and magnitude of the event. A full listing of these agencies and description of their missions is found in the Federal Response Plan (FRP).

Additional information on available resources can be found in NUREG-1442/ FEMA-REP-17, "Post-Emergency Response Resources Guide."

Joint Information Center (JIC)

The Federal Response Plan (FRP) provides for each participating agency to be represented at a Joint Information Center, along with the State and the facility licensee. For Susquehanna, it is expected that these parties will agree to utilize PPL's MOC to fulfill this on-scene Joint Information Center role.

Resources Available to Support Federal Response

A. Lodging and Food Service - Lodging and food service for personnel operating from the FRMAC, FRC, and JIC are available from local commercial resources in the Wilkes-Barre, Hazleton, and Bloomsburg areas.

B. Communications - Capability provided by DOE and FEMA, supplemented by standard telephone service to be established when facilities are selected, are adequate for the FRMAC and FRC.

C. Security - Security arrangements for the FRMAC and FRC can be made by the DOE and FEMA, respectively, with local resources.

D. Transportation - Federal response personnel will provide their own transportation by renting commercially available vehicles.

E. Airport - Wilkes-Barre/Scranton International Airport, Avoca, Pennsylvania.

6.5 RESTORATION

The PPL NERO continues to provide appropriate emergency response functions until such time as the emergency has been terminated or the PPL Corporate Leadership Council (CLC) has approved the implementation of a long-range restoration organization. Termination from an emergency condition is through joint evaluation by the organizations involved. In the case of a severe emergency involving off-site consequences, this would include the Recovery Manager, DEP/BRP, and NRC. The Senior Vice President and Chief Nuclear Officer requests that the PPL Corporate Leadership Council establish a restoration organization when the following guidelines have been met:

- In-plant systems are stable, adequate core cooling established and contingency systems and plans available.
- In-plant radiation levels are stable or are decreasing with time.
- Releases of radioactive material to the environment are under control or have ceased.
- Any fire, flooding or similar emergency conditions are under control or have ceased.

Although planning for restoration varies according to the emergency, a long-term restoration organization that is general in nature has been defined. The restoration organization is a project-type organization with their major activities conducted from the EOF. This organization is depicted in Figure 6.6 and major responsibilities are defined below.

- Restoration Manager - A designated officer or senior manager from PPL qualified to manage SSES restoration operations.
- Plant Operations Manager - A designated manager from PPL qualified to control plant operations including security.
- Technical Support Manager - A designated manager from PPL qualified to manage a technical group.
- Radiological Manager - A designated manager qualified to manage the radioactive waste and radiological control aspects.
- Maintenance Manager - A designated manager qualified to coordinate the activities of PPL, NSSS supplier, and construction forces on proposed plant modifications or other construction support.

- Advisory Support Function - Advisory support consists of senior representatives of the NSSS supplier, the NRC, and special consultants.

- Scheduling/Planning Manager - A designated manager to coordinate plans and schedules for the Restoration Manager.

- Administration and Logistics Manager - A designated manager who is responsible for providing administrative, logistic, communications and personnel support.

- Public Information Manager - A designated manager qualified to manage public relations activities.

During restoration operations, the radiation exposure limits of 10CFR20 apply. Compliance with those limits is the responsibility of the Restoration Manager via the applicable Health Physics organization.

At the time of declaring that an emergency has entered the restoration phase, the Restoration Manager is responsible for providing notification to all applicable agencies.

Restoration actions that plan for, or may result in, radioactive release are evaluated by the Restoration Manager as far in advance of the event as is possible. Such events and data are reported to the appropriate off-site emergency response organizations and agencies prior to initiating release.

STATION EMERGENCY PLAN MINIMUM STAFFING REQUIREMENTS

Major Functional Area	Major Tasks	Position Title or Expertise	On Shift	Capability for Additions	
				60 min	90 min
Plant Operations and Assessment of Operational Aspects		Shift Manager (SRO) Unit Supervisor (SRO) Plant Control Operators Non-Licensed Operators	1 1## 3@ 4	-- -- -- --	-- -- -- --
Emergency Direction and Control (Emergency Director)		Emergency Director	1*	1	--
Notification/Communication	Notify licensee, State, Local, and Federal personnel & maintain communication	Communicators EOF Support Supervisor NRC communicator	1 -- 1	2 --	1 1
Radiological Accident Assessment and Support of Operational Accident Assessment	Emergency Operations Facility (EOF) Director	Recovery Manager	--	--	1
	Radiation Protection & Dose Assessment	Radiation Protection Coordinator Dose Assessment Supervisor Rad Assessment Staff	-- -- --	1 -- 1	-- 1 2
	Offsite Surveys (Field Teams)	Survey Team Personnel	--	2#	2
	Onsite [out-of-plant (HP Tech)]	Survey Team Personnel	--	1	1
	Radiation Protection & Dose Assessment: a. Access Control b. HP coverage for repair, corrective actions, search and rescue, first aid, & firefighting c. Personnel Monitoring d. Dosimetry e. Dose Assessment f. In-Plant Surveys	HP Technicians	2	3	3
	Chemistry/Radiochemistry	Chemistry Technicians	1	1	--

Note: The Capability for Additions column refers to reporting times. Reporting location may be the OSC, TSC, or EOF.

\# Rad monitoring team personnel (see Figure 6.3) – 2 are dispatched from the vicinity of the plant at 60 minutes.

* Indicates the minimum number of individuals onshift with the capabilities of performing these functions. These individuals may also fulfill other responsibilities identified in this table.

As a result of having a common control room, the Unit Supervisor is shared between the two units.

@ One PCO will be assigned to each unit.

Major Functional Area	Major Tasks	Position Title or Expertise	On Shift	Capability for Additions 60 min	Capability for Additions 90 min
Plant System Engineering	Technical Support	Shift Technical Advisor	1	--	--
		Operations Coordinator	--	1	--
		Core/Thermal Hydraulics Engr.	--	1	--
		Electrical Engr.	--	1	--
		Mechanical Engr	--	1	--
		Technical Support Coordinator	--	1	--
		Severe Accident Management Coordinator	--	1	--
		Engineering Support Supervisor			1
Repair and Corrective Actions	Management of Damage Control Teams	Damage Control Team Coordinator	--	1	--
		OSC Coordinator	--	1	--
	Communications with In-plant Teams	TSC Radio Communicator	--	1	--
	Repair and Corrective Actions (onshift requirements may be fulfilled by NLOs) **	Mechanical Maintenance/ Rad Waste Operator	1*	1	--
		Electrical Maintenance/ Instrument and Control Technician	1*	1	1
Firefighting	--	--	Fire Brigade per Technical Requirements Manual	Local Support	
Rescue Operations and First Aid	--	--	2*	Local Support	
Site Access Control and Personnel Accountability	Security, firefighting communications, personnel accountability	Security Personnel	All per Security plan		
		Security Coordinator	--	1	--
			15 plus fire brigade and security plan required personnel	24	14

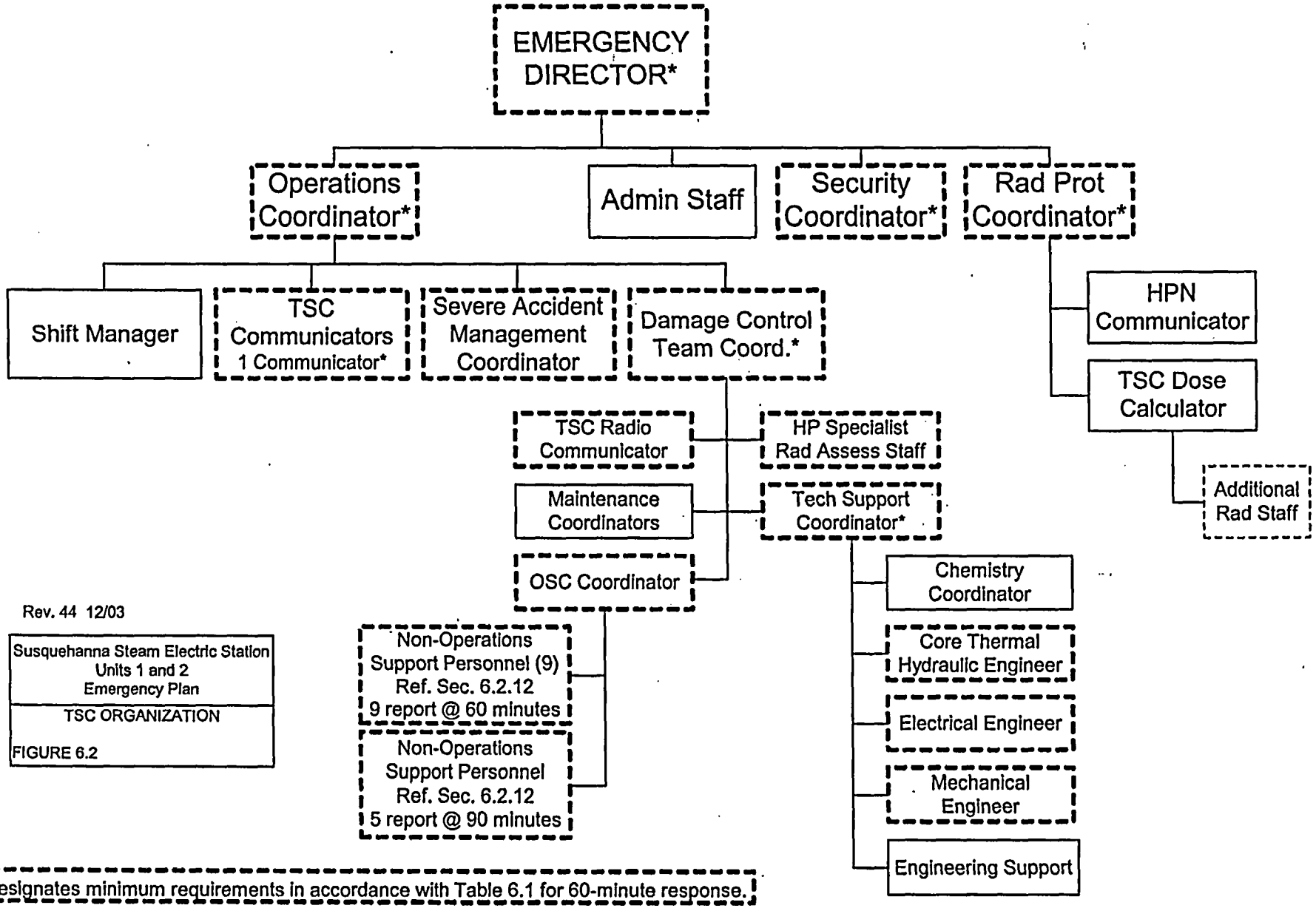
Note: The Capability for Additions column refers to reporting times. Reporting location may be the OSC, TSC, or EOF.

\# Rad monitoring team personnel (see Figure 6.3) – 2 are dispatched from the vicinity of the plant at 60 minutes.

* Indicates the minimum number of individuals onshift with the capabilities of performing these functions. These individuals may also fulfill other responsibilities identified in this table.

** Fulfilled by NLOs on-shift to provide initial damage control repair activities until additional support arrives. Such activities include racking breakers, changing fuses, manipulating valves, moving equipment, and starting equipment locally.

TSC ORGANIZATION



Rev. 44 12/03

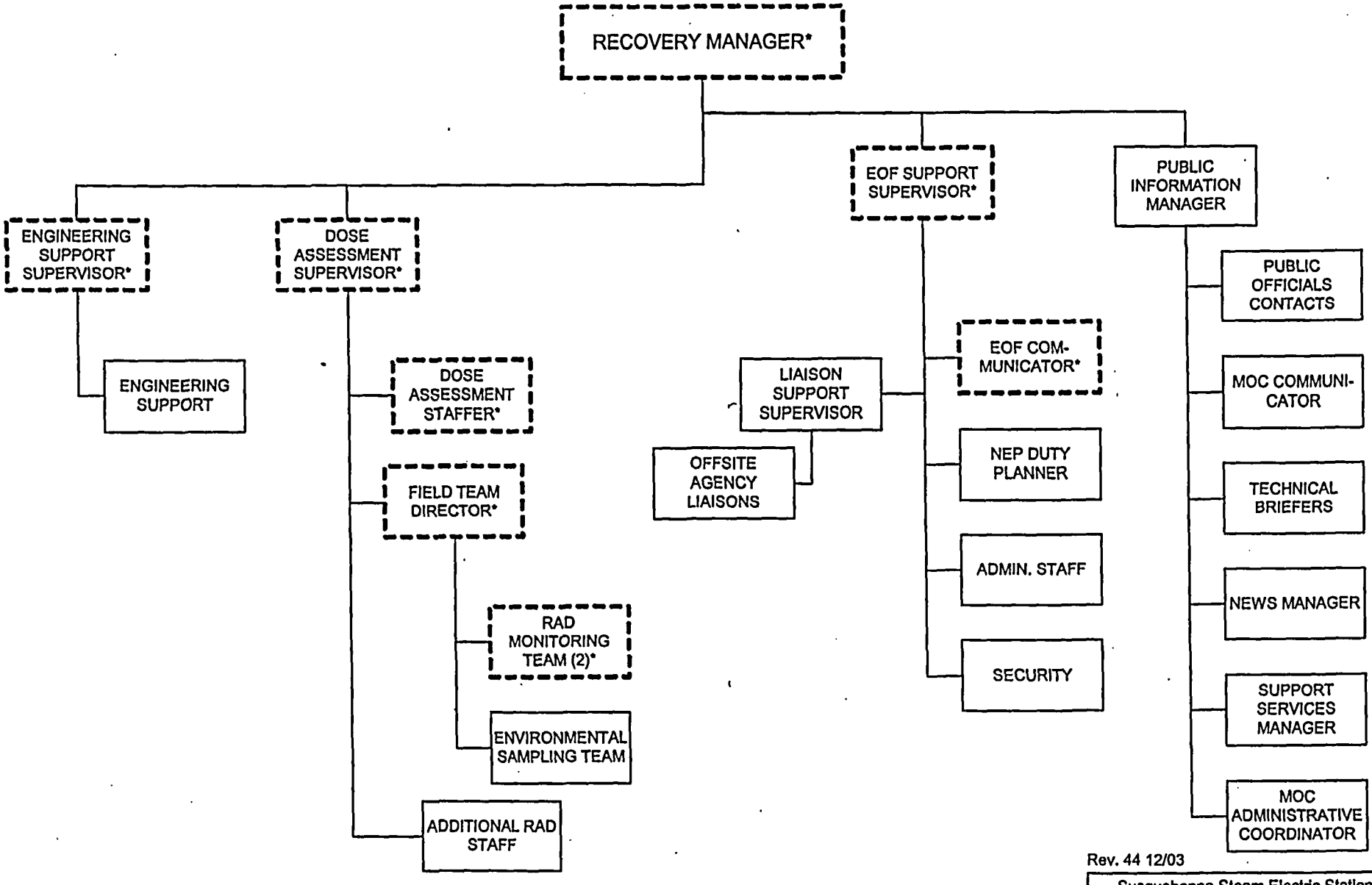
Susquehanna Steam Electric Station Units 1 and 2 Emergency Plan
TSC ORGANIZATION
FIGURE 6.2

Designates minimum requirements in accordance with Table 6.1 for 60-minute response.

- - - - - Individuals may be located in the OSC, TSC, or Field.

* Designates positions required for TSC activation.

EOF ORGANIZATION



Designates minimum requirements in accordance with Table 6.1 for 90 minute response.

* Designates positions required for EOF activation.

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Susquehanna Steam Electric Station
Units 1 and 2
Emergency Plan

EOF ORGANIZATION

FIGURE 6.3

7.0 EMERGENCY MEASURES

7.1 ASSESSMENT ACTIONS FOR ALL EMERGENCY CLASSIFICATIONS

Provisions are made for assessment through the course of an emergency to ensure effective coordination, direction and upgrading of emergency activities in a timely manner. The assessment actions are described in detail in Emergency Plan Position Specific Instructions (EP-PSs).

Continuous assessment of the status of plant systems and radiological conditions is provided by plant instrumentation and is supplemented by routine surveillance functions. The occurrence of an Unusual Event is recognized by instrument alarms or indications, surveillance results, or other observation of an off-normal condition by an individual at the station.

Assessment actions are described below. For a Notification of Unusual Event, one or more of the actions listed below will be initiated; for higher emergency classifications, actions are continued, intensified, and increased in frequency.

- Perform surveillance of in-plant instrumentation.
- Initial and continued observation of off-normal conditions.
- Obtain assistance from off-duty personnel and/or off-site support groups.
- Perform dose calculation activities. Correlate with field team data.
- Deploy field radiological monitoring teams to perform direct radiation measurements and air sampling.
- Perform sampling and analysis of environmental media.
- Deploy on-site damage control teams.
- Perform reactor coolant sampling and analysis.

7.1.1 Off-Site Dose Calculations

The Emergency Director is responsible for initiating off-site dose calculation and assessment activities. These activities are performed by health physics trained personnel who report to the Operations Support Center (OSC) (or the Control Room for a Notification of Unusual Event). Data from the vent effluent monitors and the meteorological towers serve as inputs for the off-site dose calculation methods.

The ED is responsible for calling in personnel to the TSC to perform off-site dose assessment activities. The Radiation Protection Coordinator reports to the TSC within 60 minutes of notification.

Field monitoring teams are directed to selected monitoring location(s) by either the Radiation Protection Coordinator, Dose Assessment Supervisor, Dose Assessment Staffer, or Field Team Director via radio communication. The results of the teams' surveys are used to update projected doses and dose calculational assumptions. In addition, an independent Remote Monitoring System can be used, if desired, to supplement the information obtained by field monitoring teams. This Remote Monitoring System uses fixed radiation detectors which are located near the site perimeter and mobile monitoring equipment to locate and assess elevated radiation levels. This system is not required, but can be used, if desired, to supplement the existing monitoring capabilities. Terminals for this system are located in both the TSC and EOF.

The initial field monitoring team(s) are staffed within 60 minutes. Additional team(s) are dispatched upon activation of the EOF.

Each radiological monitoring team is supplied with a survey meter and low volume air sampler. TLDs are located at 17 sites around the station to provide early information on accumulated off-site doses. Two sets of TLDs are provided at each of these sites; one set for dose accumulation during the period of releases and one set maintained for the normal monitoring period or exchanged early at the Dose Assessment Supervisor's discretion to meet information needs.

The ED and Recovery Manager recommend appropriate protective actions to PEMA Operations Center, Harrisburg, based upon the results of the off-site dose assessment activities.

7.1.1.1 Meteorology

The SSES on-site meteorological measurement system is based upon an on-site primary meteorological tower located to the east southeast of the station. The primary tower provides measurements of wind speed, wind direction, and wind variability at its 10 and 60-meter levels, temperature differential between the 10 and 60-meter levels, and ambient temperature and dew point at the 10-meter level. Precipitation is measured at ground level. In case of primary tower failure, a 10-meter on-site backup meteorological tower will provide measurements of wind speed, wind direction, and wind variability.

A permanent supplemental tower is installed in the river valley near the station to provide additional meteorological data to more accurately model the effects of surrounding terrain on atmospheric dispersion and transport. The tower is located approximately 3.6 miles SW of the station off Route 93 just east of Nescopeck.

The tower measures wind speed, wind direction, and sigma theta at the 33-foot level. The tower also measures temperature and dew point temperature at a height of approximately 6.6 feet. The meteorological data collected from this tower is used only to support assessment and restoration efforts in the event there is an accidental release of radioactive material from SSES.

The meteorological systems are instrumented to provide continuous data to the control room and the Plant Integrated Computer System (PICSY) for utilization in the TSC and EOF. Data that enters PICSY is viewable through various display formats and is also transmitted to the NRC via ERDS. Digital dataloggers are present at all of the SSES meteorological towers. All data is stored locally and is available for acquisition by interrogation across telephone lines. Primary and backup tower strip chart recorders are located in the control room.

Site specific, meteorological information for emergency dose assessment purposes can be obtained by contacting either the SSES Contract Meteorologist or the National Weather Service Station using the phone numbers provided in the SSES Emergency Telephone Directory.

7.1.1.2 Health Physics Considerations

In the event of an unplanned radioactive release from either the reactor building vents, the turbine building vents, or the standby gas treatment vent; continuous gross noble gas readings are available from the vent monitors. Each monitor is also equipped with in-line iodine and particulate sampling capability. These in-line samples are periodically removed and analyzed in order to provide iodine and particulate release rate information. Event declarations are based on Noble Gas readings or iodine and particulate sample results.

The following Health Physics considerations are taken into account: selection of the accident type to closely approximate the isotopic mix and average gamma energies of the release occurring, radioactive decay from time of reactor shutdown, plume decay-in-transit and iodine and particulate depletion due to precipitation.

7.1.1.3 Dose Calculations for Airborne Releases

A dose calculation model is used to make current, site specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release. The purpose of the prediction is to provide an input to the assessment of the consequences of accidental radioactive releases to the atmosphere and to aid in the implementation of emergency response decisions.

The dose calculation model used is a fast running, time-dependent, variable trajectory plume segment "B" model with the following capabilities:

NOTE: A class "B" model is a numerical model that represents the actual spatial and temporal variations of plume distribution.

- Computes atmospheric dispersion at the site based on atmospheric stability as a function of site specific terrain conditions with 15-minute upgrades of source term and meteorological conditions.

- Provides estimates of deposition and relative concentration of radioactivity within the plume exposure and ingestion EPZs for the duration of the release.

- Incorporated in the calculations is wet and dry deposition which enables dose estimates from three pathways - plume, ground shine, and ingestion.

The dose program complies with the "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," (EPA-400), adopting the dose calculation methodology in ICRP #26/30. The accident dose assessments are based on the adult physiology per EPA 400, except for one case-that is, child thyroid dose conversion factors are used in calculating thyroid CDE. Calculations of TEDE are made using the (adult) dose factors provided in EPA-400. The following calculational options are available:

- TEDE (Total Effective Dose Equivalent) integrated doses consisting of the sum of external doses from plume shine, 50 year committed effective dose equivalent from inhalation (CEDE), and 4 day ground shine doses.

- EDE and CDE dose rates for field team management.

- Fifty year thyroid committed dose (CDE), from inhalation of radioactive materials.

- Population dose (person rem) out to 50 miles.

- Summary print of projected doses for each of four projection times.

- Integrated ground dose for projected times specified by the user.

The dose calculation program is a stand alone program running on PCs located in the TSC and EOF.

7.1.1.4 Liquid Release Calculations

Estimates of downstream river water concentrations are made by employing effluent sample analysis or discharge monitor data, discharge flow rates and river elevation readings. The river elevation is used to estimate the travel time to the point of interest.

The calculated degree of mixing, together with the discharge monitor data and the discharge flow rates are used to calculate downstream concentrations.

7.2 CORRECTIVE ACTIONS

Detailed operating procedures and plant procedures are utilized by the plant operating personnel to assist them in recognizing emergency events and taking the corrective actions necessary to place the plant in a safe condition. Table 6.1 shows personnel available to respond to an emergency. Additionally, EP-PSs describe subsequent and supplemental corrective actions for the scope of potential situations within each of the emergency classifications. These procedures are designed to guide the actions of the personnel to correct or mitigate the condition as early and as near to the source of the problem as feasible.

Some essential corrective actions may involve the risk of emergency exposure to NERO personnel. Such actions could involve preventing the release of large quantities of radioactive material, reducing damage to major equipment or life saving actions. Table 7.2 specifies the limits for emergency exposure and other relevant criteria to be considered. The ED is responsible for all corrective actions taken to mitigate the consequences of the accident on-site.

7.3 PROTECTIVE ACTIONS

Protective actions are implemented to prevent or mitigate consequences to individuals during or after a radiological incident. Protective action recommendations within the SSES Exclusion Area are the responsibility of the ED, but may include assistance by the EOF. Protective actions outside the SSES Exclusion Area are primarily the responsibility of State and local emergency organizations, but may include coordination of activities, dissemination of appropriate data, and recommendations by the ED or Recovery Manager. Effective integration of SSES procedures and implementation plans with State and local implementation plans ensure that all members of the public, including those located on PPL property but outside the emergency plan boundary, will be notified of protective actions to be taken and that the actions can be implemented in a timely manner. Protective action recommendations are outlined in Table 7.3.

7.3.1 On-Site Protective Actions

The primary protective measure for on-site personnel in an emergency is prompt evacuation from areas that may be affected by significant radiation, contamination, or airborne radioactivity.

Respiratory protective equipment and clothing are provided at the plant and in the various emergency equipment kits for personnel who may be required to perform emergency activities.

Control of in-plant contamination is in accordance with SSES Health Physics procedures. In the event of radioactive contamination outside fenced security areas, but within the exclusion area, access to such areas is controlled by PPL with assistance from the PSP.

7.3.1.1 Local Area Evacuation

This category refers to evacuation from one area to another area within the same building. The initiation of a Local Area Evacuation results from ARM or CAM alarm(s) sounding in the same area within a building or from observed conditions such as smoke or toxic gas, which may indicate a possible habitability problem. The initial response for individuals is to evacuate to an unaffected area of the building, notify the plant Control Room of the conditions, and await further instruction. The ED assesses the situation, activates appropriate procedures to rectify the condition and informs the personnel when to return to their respective work area via the PA system or direct manual communication.

7.3.1.2 Radiologically Controlled Area Evacuation

The initiation of a Radiologically Controlled Area Evacuation results from ARM, CAM, or other applicable monitor alarms, (i.e., fire alarms). Notification for personnel to proceed with a Radiologically Controlled Area Evacuation is announced over the plant PA system. If all or part of the PA system is unavailable then alternate manual methods may be used to notify personnel of the need for evacuation and/or accountability. The initial mandatory response by individuals is evacuation to an unaffected area. In this case, however, the nearest such area may not be in the same building, and multiple ARM, CAM, or fire alarms are probable.

The decision to implement a Radiologically Controlled Area Evacuation is the responsibility of the ED. Factors to be considered include the apparent levels of radiation and/or airborne radioactivity involved and the exposure to personnel that would result from evacuating to Accountability Areas.

7.3.1.3 Security and Accountability

Accountability of on-site personnel during an emergency is accomplished through the use of the physical security system and station procedures. The physical security system clearly establishes who is within the protected area. Personnel are notified to report to accountability areas during an emergency via an alert signal transmitted over the PA system. If all or part of the PA system is unavailable then alternate manual methods may be used to notify personnel of the need for evacuation and/or accountability. The names of the personnel reporting in are compared to those logged through the security system in order to ensure total accountability.

If not completed earlier, accountability will be initiated upon declaration of a Site Area Emergency and will be completed within 30 minutes of the initiation of the accountability alert signal.

For certain security-related events, an evacuation of non-essential personnel may be conducted prior to performing accountability.*

7.3.1.4 Site Evacuation

A Site Evacuation requires that all individuals within the SSES Exclusion Area, except for Control Room operations personnel and others with specific emergency assignments, leave the site. If the ED requires off-site assembly, personnel will go to the Remote Assembly Area. The Primary Remote Assembly Area is the Susquehanna Energy Information Center (NE Sector), as shown in Figure 8.1. The alternate Remote Assembly Area is the West Building (WSW Sector). Assembly area leaders will coordinate accountability at Remote Assembly Areas.

Implementation of a Site Evacuation is the responsibility of the ED. That decision is based on the severity of the incident, the likelihood of escalation, and the radiation and airborne radioactivity levels throughout the station. Notification is made via the PA system. If all or part of the PA system is unavailable then alternate manual methods may be used to notify personnel of the need for evacuation and/or accountability.

Accountability is accomplished in passage through the security gate. Personnel and vehicle contamination surveys are performed at the Remote Assembly Area, using portable survey instruments.

For certain events such as some security events, on-site personnel may be directed to remain in place due to personal safety concerns until a more appropriate time for accountability and evacuation. Station procedures specify those security contingencies.*

7.3.2 Off-Site Protective Actions

The responsibility for actions to protect off-site individuals rests with the Commonwealth of Pennsylvania.

DEP/BRP is responsible for evaluating information obtained from SSES and other sources and recommending appropriate off-site protective actions to PEMA. Such recommendations include:

- Shelter for affected populations
- Evacuation of affected populations
- Administration of thyroid prophylaxis
- Control of contaminated agricultural products

* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

The principal off-site local coordinating agency is LCEMA. Since the area and population inside the ten-mile EPZ are partially within Columbia County, parallel emergency response functions are provided by CCDPS. Upon notification by PEMA of a situation that may require protective actions for off-site populations, LCEMA and CCDPS initiate appropriate actions. If PEMA has lost communication or is otherwise unavailable, it is possible that the ED or Recovery Manager may contact LCEMA and CCDPS directly with protective action recommendations. If time permits, LCEMA and CCDPS obtain a review and verification by PEMA of recommendations made by the ED or Recovery Manager.

LCEMA and CCDPS protective actions include:

- Prompt alerting of the population within ten miles of the SSES through the use of the Public Notification System (described in Section 8.0) and Route Alerting Teams, a supplement to the siren system that is implemented, as necessary, in the event of siren failure or to alert persons or areas that may not be within the sound of the sirens. Route alerting is a municipal responsibility and is accomplished by municipal route alert teams traveling in vehicles along preplanned routes delivering the following message: "There is an emergency at the Susquehanna Steam Electric Station; please tune to your Emergency Alert Station."
- Transmission of specific instructions to potentially affected populations via the Emergency Alert System.
- Assistance for evacuation of the population within the ten-mile EPZ.

Appendix G includes the estimated times to evacuate all or segments of the population from the 10-mile EPZ, identifies potential problem areas and provides contingencies for dealing with adverse conditions. It was utilized in the development of detailed evacuation plans by PEMA, LCEMA, and CCDPS.

7.4 AID TO AFFECTED PERSONNEL

7.4.1 Emergency Exposure

All reasonable measures are taken to maintain the radiation exposure of emergency personnel who provide rescue, first aid, decontamination, ambulance, or medical treatment services within applicable limits specified in 10CFR20. Table 7.2 summarizes the emergency exposure criteria for entry or re-entry into areas for purposes of undertaking protective or corrective actions. Methods and conditions for permitting volunteers to receive emergency radiation exposures are described in EP-PSs, and provide for expeditious decisions with consideration to known and reasonable balance of associated risks.

7.4.2 Decontamination and First Aid

Personnel contamination in emergency situations is controlled to the extent feasible by the normal methods of using protective clothing and surveying for contamination following the removal of such clothing. Personnel decontamination areas are available in-plant and decontamination efforts involving significant amounts of contamination are performed under the direction of Health Physics personnel.

At least two persons who are qualified in first aid methods are on-site at all times. First aid to injured personnel can be performed in conjunction with any necessary decontamination methods. However, if immediate treatment of the injury is vital, that treatment takes precedence over decontamination. This philosophy also extends to off-site emergency assistance involving radioactive contamination. For that purpose, measures are established to ensure timely off-site medical treatment.

7.4.3 Medical Transportation and Treatment

Arrangements and agreements have been made for the transportation and treatment of patients from SSES, who may have injuries complicated with radioactive contamination or who may have been involved in a radiation incident.

CODE:

Notification of Unusual Event	=	1
Alert	=	2
Site Area Emergency	=	3
General Emergency	=	4

TABLE 7.1

SUMMARY OF IMMEDIATE NOTIFICATION AND RESPONSE FOR ALL CLASSIFICATIONS

ONSITE		OFFSITE	
IMMEDIATE NOTIFICATIONS	**ACTIONS**	**IMMEDIATE NOTIFICATIONS**	**ACTIONS**
Fire Brigade (1-4)	Fight Fire (1-4)	Fire Units (1-4)	Fight Fire (1-4)
Damage Control Team (1-4)	Repairs (1-4)		
First Aid/Rescue Team (1-4)	Rescue (1-4) First Aid (1-4)	Rescue Assistance (1-4) Ambulance (1-4) Hospital (1-4)	Rescue (1-4) Transport (1-4) Treatment (1-4)
Security Force (1-4)	Security Measures (1-4) Personnel Evacuation (1-4)	PSP (1-4)	Assist Security (1-4)
Dose Assessment Personnel (1-4)	Dose Calculations (1-4 Dose Assessment (1-4)	PPL Headquarters (1-4)	Confirmatory Calculations (2-4) Maintain Communications (2-4)
Field Monitoring Teams (1-4)	Field Monitoring (1-4)		Field Monitoring and Continuous Evaluation of Dose Projections (2-4)
All Other Station Personnel (1-4)	Augment Shift Resources/Activate TSC (2,3,4) Augment Resources/Activate Offsite NERO (2,3,4)* Personnel Evacuation (as appropriate) (3,4)	General Office(1-4) Site personnel designated as off-site response (2,3,4)*	Alert Key Personnel (1) Activate and Staff Offsite NERO (2,3,4) Recommend Offsite Action (4)

* TSC and EOF (or alternate TSC) will be activated for certain security events such as a site-specific credible security threat. Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

TABLE 7.1
SUMMARY OF IMMEDIATE NOTIFICATION AND RESPONSE FOR ALL CLASSIFICATIONS

ONSITE		OFFSITE	
IMMEDIATE NOTIFICATIONS	**ACTIONS**	**IMMEDIATE NOTIFICATIONS**	**ACTIONS**
		Special Office of President/ MOC (1-4)	Provide Info to Public via Media (1-4)
		LCEMA, CCDPS, PEMA, NRC (1-4)	Place PNS & Procedures on Standby (2) Activate and Staff Response Centers (2-4) Activate the Emergency Response Data System (2-4) Implement Off-site Protective Measures (4)

NOTES: 1. Notification is required to LCEMA, CCDPS, and PEMA within 15 minutes of indication and verification of the event for Unusual Event, Alert, Site Area, and General Emergency.

2. Initial notification for all levels of emergencies are to LCEMA, CCDPS, PEMA, and NRC.

TABLE 7.2
EMERGENCY EXPOSURE CRITERIA

Planned exposure to the whole body and/or specific organs should not exceed the following recommendations of the National Council on Radiation Protection and Measurements and the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400). Guidance on dose limits for workers performing emergency services is summarized in tabular format below.

NOTE: These limits apply to doses incurred over the duration of an emergency, treated as a once in a lifetime exposure, and not added to occupational exposure accumulated under non-emergency conditions.

Doses to all workers during emergencies should, to the extent practicable, be limited to 5 REM. There are some emergency situations for which higher exposure limits may be justified. Justification of any such exposure must include the presence of conditions that prevent the rotation of workers or other commonly used dose reduction methods.

NOTE: Exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

Persons undertaking any emergency operation in which the dose will exceed 25 REM to the whole body should do so only on a voluntary basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of risk of delayed effects.

Guidance on Dose Limits for Workers Performing Emergency Services

Dose Limit [a] (rem)	Activity	Condition
5 rem	All	
10 rem	Protecting Valuable Property	Lower Doses Not Practicable
25 rem	Life saving or protection of large populations	Lower Doses Not Practicable
>25 rem	Life saving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved (see attached tables)

[a] Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident.

TABLE 7.2
EMERGENCY EXPOSURE CRITERIA

Additional General Criteria

- Only volunteers are given planned emergency exposure.
- Attached tables provide information concerning acute and delayed health effects.
- Whenever practical, consideration is given to dividing exposure among as many personnel as possible.
- Potassium Iodide utilization for iodide prophylaxis requires the approval of the Emergency Director or the Recovery Manager in consultation with the Radiation Protection Coordinator or the Dose Assessment Supervisor and medical consultants, if available. It is recommended that potassium iodide only be administered in situations where potential exposure of the thyroid is anticipated to exceed 10 rem.
- All reasonable measures must be taken to control contamination and internal exposure.
- Persons performing emergency activities should be familiar with exposure consequences.
- Women capable of reproduction should not take part in these actions.
- Retrospective doses are evaluated on an individual case basis.
- To the extent reasonable, persons with high lifetime cumulative radiation exposure should not take part in these actions.
- As in the case of normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

Health Effects Associated with Whole Body Absorbed Doses Received Within a Few Hours[a]

Whole Body Absorbed Dose (rad)	Early Fatalities[b] (percent)	Prodromal Effects[c] (percent affected)
050	--	2
100	--	15
140	5	--
150	--	50
200	15	85
250	--	98
300	50	--
400	85	--
460	95	--

a Risks will be lower for protracted exposure periods.
b Supportive medical treatment may increase the dose at which these frequencies occur by approximately 50 percent.
c Forewarning symptoms of more serious health effects associated with large doses of radiation.

TABLE 7.2
EMERGENCY EXPOSURE CRITERIA

Approximate Cancer Risk to Average Individuals from 25 Rem Effective Dose Equivalent Delivered Promptly

Age at Exposure (years)	Approximate Risk of Premature Death (deaths per 1,000 persons exposed)	Average Years of Life Lost if Premature Death Occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

TABLE 7.3
PROTECTIVE ACTION RECOMMENDATIONS

Emergency Conditions	PPL Actions	PPL Recommendations
A. Airborne Release 1. General Public	Determine the following: 1. Plant status and prognosis. Degree of fuel damage Containment integrity Decay heat removal Ventilation systems Remedial, mitigating actions in progress 2. Status of radioactive releases. Release path, monitored, unmonitored, both Duration of release Trend of release, increasing, decreasing, constant Treatment availability, filtered, unfiltered Type of release, gap, fuel melt Prognosis for changes in above	*1. Upon Declaring an Emergency Consider the Following:* **NOTE:** If a **GENERAL EMERGENCY** is declared, a PROTECTIVE ACTION RECOMMENDATION (PAR) MUST BE MADE WITHIN 15 MINUTES. PAR: Evacuation of people within 2 miles of the plant and sheltering 2 to 10 miles based on General Emergency Classification which is indicative of actual or potential severe core damage+ or loss of control of facility. PAR: Evacuation of people within 2 miles of the plant and sheltering people 2 to 10 miles based on dose projections derived from radiation monitor or field readings indicating doses of 1 Rem TEDE* or 5 Rem Child Thyroid° at distances greater than the EPB but less than 2 miles. PAR: Evacuation of people within 10 miles of the plant based on dose projections derived from radiation monitor or field readings or dose projections indicating doses of 1 Rem TEDE* or 5 Rem Child Thyroid° at distances of greater than 2 miles. a. Continue assessment based on all available plant and field monitoring information. b. Modify protective actions as necessary. Locate and evacuate hotspots. Do not relax protective actions until source of threat is clearly under control.

\+ Severe core damage is indicated by (1) loss of critical functions required for core protection, (e.g., loss of injection combined with a LOCA); (2) partially covered core; (3) very high radiation levels in area or process monitors.

* The sum of the Effective Dose Equivalent resulting from the exposure to external sources and the Committed Effective Dose Equivalent incurred from all significant inhalation pathways during the early phase.

° Committed Dose Equivalent to the thyroid from radioiodine.

TABLE 7.3

PROTECTIVE ACTION RECOMMENDATIONS

Emergency Conditions	PPL Actions	PPL Recommendations
A. Airborne Release (Cont'd) 1. General Public (Cont'd)	Determine the following: 3. Weather Conditions, affect on dose projections. 4. Dose projections and avoided dose.	

TABLE 7.3

PROTECTIVE ACTION RECOMMENDATIONS

Emergency Conditions	PPL Action	Results	PPL Recommendations
A. Airborne Release (Cont'd.) 2. Dairy Cows	1. Determine the following: a. Peak activity for I^{131}	a. Forage Concentration .05 micro Ci/kg Milk .015 micro Ci/l 1.5 Rem projected dose to the infant thyroid whichever is first.	
	b. Meteorological Conditions (1) Wind Speed (2) Precipitation (3) Stability Class (4) Wind Direction	b. Known sectors potentially affected	DEP/BRP to recommend appropriate protective active to affected farmers.

TABLE 7.3

PROTECTIVE ACTION RECOMMENDATIONS

Emergency Conditions	PPL Action	Results	PPL Recommendations
B. Liquid Radioactive Release Into Susquehanna River	1. Determine the following: a. Source of release b. Quantity of release c. Anticipated length of time release will continue 2. Notify: a. DEP/BRP b. Danville Water authority c. NRC 3. Initiate sampling of: a. Release point b. Susquehanna River 4. Initiate projections of radionuclide activity concentrations at the Danville Water Authority.	If the equivalent of an EC fraction of 0.85 is exceeded at Danville where an EC (effluent concentration) is the radionuclide specific concentration value from Column 2 of Table 2 of Appendix B to 10CFR20.	1. Recommend to DEP/BRP that consideration be given to termination of user intake of all downstream users. 2. Assess additional results of sampling and analyses of radionuclide activity concentrations of SSES liquid effluent and/or Susquehanna River water upstream of the Danville Water Authority, and provide appropriate updated recommendations to DEP/BRP based on that assessment.
C. Plant in a degraded condition with potential for significant release of radioactive material.	1. Evaluate potential source(s) and quantity of release. 2. Perform dose projection based on potential release.	1. If exceed limits specified for gaseous or liquid release.	1. Evacuation of people within 2 miles of the plant and sheltering 2 to 10 miles based on General Emergency classification that is indicative of actual or potential severe core damage or loss of control of facility.

8.0 EMERGENCY FACILITIES AND EQUIPMENT

8.1 ON-SITE EMERGENCY CENTERS

8.1.1 Station Control Room

The Station Control Room is the primary location for the initial assessment and coordination of corrective actions for all emergency conditions. The Control Room is equipped with the display and controls for all critical plant systems, radiological and meteorological monitoring systems, and all station communication systems. Reference Appendix D.

Off-site emergency functions initially served by the Control Room are transferred to the TSC or EOF for an Alert, a Site Area Emergency, or a General Emergency as deemed appropriate by the ED. If the TSC and/or EOF are staffed, the functions may also be transferred at the Notification of Unusual Event level. 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.

8.1.2 Operations Support Center

The OSC is the primary on-site assembly area for operations support team personnel during an emergency. It occupies 340 square feet adjacent to the Control Room on Elevation 729'-1" of the control structure.

The OSC is utilized initially as the central location for assembly and accountability 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. If and when the TSC is activated, all non-operations support team personnel assemble and are accounted for in the OSC or TSC. TSC personnel assess the need for emergency team personnel and based on this assessment, dispatch available team personnel and call in additional personnel as needed. The OSC and TSC assembly areas will be monitored continuously for habitability. If these areas become uninhabitable, retained personnel will be directed to alternate holding areas. Control and dispatch of these teams is the responsibility of the TSC Radio Communicator. The OSC Coordinator manages operations and other support personnel.

Equipment required for these teams to perform their functions, as outlined in Appendix D is stored and maintained in the Control Room, Technical Support Center and Health Physics access control points.

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

8.1.2.1 Habitability

8.1.2.1.1 Allowable Post-Accident Radiation Doses

OSC 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.

8.1.2.1.2 Postulated Post Accident Radiation Doses

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 FSAR.

8.1.2.1.3 Radiation Monitoring

To ensure adequate radiological protection of the OSC personnel, a commercial grade monitor located in the center of the Control Room alarms on high gross gamma radiation dose rates.

8.1.2.2 HVAC

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

8.1.2.3 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 does not exceed 5 Rem TEDE 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.

8.1.2.4 Occupant Accommodations

No toilet facilities are provided in the OSC. Facilities are available in the Control Room and at grade level of the control structure for washing and toilet accommodations.

8.1.2.5 Communications

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

8.1.2.5.1 Telephone

The normal telephone service for the OSC uses the plant ETN and CTN systems. Both systems have the capability to reach on- and off-site locations.

8.1.2.5.2 Hotlines

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

8.1.2.5.3 Public Address System

The PA system is part of the plant PA system. The system provides two-way communications at handset stations. Each station may originate and receive communications by switching to either a page channel or to one of five non-interfering party line channels.

8.1.3 Technical Support Center

The TSC is a controlled access area that provides working space and facilities for approximately 25 NERO personnel. These personnel provide guidance to plant operations personnel for management of emergency conditions and accident mitigation.

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.

The TSC facilities may be used for normal daily activities that do not degrade TSC emergency preparedness. The TSC provides office space for Operations and Technical personnel. Other station personnel may also use the facilities as a research or reference area.

In the event of hazards preventing site access such as certain security events, personnel who normally report to the Technical Support Center will report to the Emergency Operations Facility where arrangements will be made to accommodate TSC-specific functions not assumed at the EOF. The alternate TSC will be activated as soon as possible to support the site; however, it is recognized that the activation time in the alternate TSC may exceed 60 minutes.*

* Letter dated February 25, 2002 from Samuel J. Collins, Director, Office of Nuclear Reactor Regulations, to Robert G. Byram, Senior Vice President and Chief Nuclear Officer. Subject: Issuance of Order for Interim Safeguards and Security Compensatory Measures for – Susquehanna Steam Electric Station, Units 1 & 2.

8.1.3.1 Spatial Layout Description

The TSC includes areas for work, conferencing (NRC & PPL), document control, and computer monitoring. Housed components are PICSY terminals, associated copiers, and SPING monitor panel. (Reference Figure 8.2.)

8.1.3.2 Fire Protection

Automatic wet pipe sprinklers on an ordinary hazard pipe schedule are provided.

8.1.3.3 Structural Design Criteria

The TSC is part of the control structure that is a Seismic Category I structure, as defined in NRC Regulatory Guide 1.29. It is designed in accordance with Chapter 3.0 of the FSAR.

8.1.3.4 Habitability

8.1.3.4.1 Post-Accident Radiation Doses

8.1.3.4.1.1 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.

8.1.3.4.1.2 Postulated

The radiation dose to personnel is the same as the Control Room personnel. The doses from controlling accidents are summarized in Section 15.6 of the FSAR.

8.1.3.4.1.3 Radiation Monitoring

Commercial grade monitors are provided to alarm on high gross gamma radiation dose rates. In addition, airborne radioactivity concentrations are monitored by portable monitors. Iodine detection capability is provided.

8.1.3.4.2 HVAC

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

8.1.3.4.3 Shielding

Shielding is the same as for the Control Room for total dose to occupants from direct shine and airborne. Exposure will not exceed 5 Rem TEDE 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 for the control room.

8.1.3.4.4 Occupant Accommodations

No sleeping accommodations or toilet facilities are provided. Use of the plant's existing facilities at grade level of the control structure for washing and toilet accommodations is available. Self-contained breathing apparatus are available for personnel who are qualified in their use.

8.1.3.5 Communication Links

The TSC communications system is comprised of three telephone networks (ETN, CTN, and FTS), VHF and UHF radios, and the plant PA system. They provide reliable primary and back-up communication links to emergency response facilities on- and off-site.

8.1.3.5.1 Telephones

The TSC uses the CTN system as primary communications with the ETN system available at various locations and the FTS 2001 reserved for federal government agencies.

8.1.3.5.2 Radio

The TSC has a four-channel 450 MHz UHF and a two-channel 150 MHz VHF radio system with digital voice privacy capability. The VHF radio is an emergency backup for communication with LCEMA and CCDPS, and to communicate with the field monitoring teams. The UHF radio provides primary and backup security, emergency, operational and maintenance communication links.

8.1.3.5.3 Public Address System

The system provides two-way communications at handset stations. Each station may originate and receive communication by switching to either a pager channel or to one of five non-interfacing party-line channels.

8.1.3.6 Power Supply

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

8.1.3.7 Instrumentation

The TSC utilizes the same field sensors and signal conditioning equipment that is provided to monitor plant systems. TSC instrumentation is identical to the field instrumentation used to operate the plant. A detailed description of this instrumentation is provided in Chapter 7.0 of the FSAR.

8.1.3.8 TSC Data Presentation

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

- plant conditions during normal operation
- plant steady-state conditions prior to an accident
- transient conditions producing an initiating event
- plant system dynamic behavior during an accident
- projected behavior and effects of offsite airborne radioactivity releases.

The man-machine interface is provided by the Plant Integrated Computer System (PICSY), located in the TSC. (Reference Figure 8.2.)

8.1.3.9 Records and Documents

The TSC contains up-to-date records and references for use during emergency conditions. (Reference Appendix D.) Records are updated and managed by DCS utilizing Plant Administrative Procedures.

8.1.3.10 Security

The TSC is located within a plant vital area and is subject to the vital area access controls as identified in the Security Plan.

8.2 PPL OFF-SITE EMERGENCY CENTERS

8.2.1 Media Operations Center

For a Notification of Unusual Event, the Susquehanna Energy Information Center, located on U.S. Route 11, is utilized as the Media Operations Center. For other event classifications, the East Mountain Business Center, Plains Township, will be activated as the Media Operations Center.

8.2.2 Emergency Operations Facility

The EOF is an emergency response facility that provides continuous management of PPL activities during radiological emergencies that may have offsite impact.

The EOF is located on East Mountain Boulevard in Plains Township, off PA Route 115 (five miles north of exit 36 of the Northeast Extension of the Pennsylvania Turnpike and one mile south of exit 170A (old exit 47A) of Interstate 81. As the EOF is located beyond 10 miles from the site, the NRC Commission approval was required prior to the relocation. This was granted April 17, 1996 (see REFERENCES, Section 3.18).

The non-emergency activities of the EOF are such that its main function is not degraded.

8.2.2.1 Architecture

The EOF is a one-story, rectangular structure. The building was constructed using standard building codes.

8.2.2.1.1 Spatial Layout Description

Reference Figure 8.3.

8.2.2.1.2 Fire Protection

Automatic wet pipe sprinklers on an ordinary hazard pipe schedule are provided throughout the building.

8.2.2.2 Structural 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.

8.2.2.3 Habitability

The EOF is located outside the EPZ; therefore, no special habitability needs are required.

8.2.2.4 Communications

The EOF communications system is comprised of three telephone networks (ETN, CTN, and FTS), VHF radios, and a PA system. They provide a reliable primary and back-up communications network.

8.2.2.4.1 Telephones

The EOF uses a combination of the CTN and ETN systems with the FTS system available for federal governmental agencies.

8.2.2.4.2 Radio

The EOF has a two-channel 150 MHz VHF radio system that is used as an emergency backup to the telephone system to communicate with the field monitoring teams, the TSC, CCDPS, and LCEMA.

8.2.2.5 Power Reliability

Power is supplied to the EOF via two independent underground power lines that supply the industrial park complex.

8.2.2.6 EOF Data Presentation

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

- access environmental conditions
- coordinate radiological monitoring activities
- recommend implementation of off-site emergency plans
- monitor Emergency Response Data System

8.2.2.7 Records and Documents

The EOF contains up-to-date references and records. Documents are managed by DCS using plant administrative procedures.

8.2.2.8 Security

EOF access during an emergency is limited to authorized personnel. Intrusion detection devices monitor the EOF during unoccupied periods.

8.3 COUNTY AND STATE EMERGENCY CENTERS

8.3.1 County Emergency Centers

Both LCEMA and CCDPS have EOCs that 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 either at their EOC or their "911" Centers, to coordinate emergency planning and evaluation. "CTN" telephone connections exist between SSES and each County EOC.

Location of the county EOCs:

- Luzerne County
  Emergency Management Building
  Wilkes-Barre, Pennsylvania
- Columbia County
  Columbia County Courthouse Annex
  Bloomsburg, Pennsylvania

8.3.2 State Emergency Center

The State EOC is located at the PEMA headquarters, located on Interstate Drive, one mile north of the Progress Avenue exit on Interstate 81. This center is equipped with a reliable communications system that includes "CTN" telephone connections between the EOC and SSES, and ties to all area and county EOCs. During an emergency, representatives from appropriate State agencies will assemble at the State EOC to manage and support the emergency response activities. Facilities are also available at the EOF for PEMA personnel.

8.4 ASSESSMENT CAPABILITIES

8.4.1 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 at selected locations throughout the station. Reference Appendix D.

8.4.2 Fire Detection

Fire protection at SSES 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 throughout the plant. Types of detectors include combustion product, smoke, thermal, and flame. For more detail, reference the SSES FSAR and Fire Protection Review Report.

8.4.3 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. Reference Appendix D.

8.4.4 Environmental Monitoring

This program establishes the pre-operational background levels, detects any gradual buildup of long-lived radionuclides, and verifies that operation of the plant has no

detrimental effect on the health and safety of the public or the environment. Reference Appendix D.

8.4.5 Emergency Monitoring Team Equipment

Reference Appendix D.

8.5 PROTECTIVE FACILITIES

8.5.1 Control Room

Protective features (Reference the SSES FSAR):

a) Adequate shielding by concrete walls.

b) CREOASS.

c) ARM system indications.

d) Emergency and essential lighting and power.

e) Basic protection equipment for emergency teams (Appendix D), and listings/locations of additional emergency supplies/equipment.

f) Communications systems.

8.5.2 Station Accountability Areas

Specific locations are designated for accountability of all station personnel. They are located on the basis of logical access routes and physical separation from likely areas of radiation and/or airborne radioactivity.

8.5.3 Remote Assembly Areas

Upon declaration of a Site Evacuation, the ED may send personnel to their homes or to Remote Assembly Areas. These areas are designated for assembly of personnel who can be used to augment the plant staff. Locations were selected on the basis of:

a) Space availability for all personnel who may be within the exclusion area at the time of an evacuation.
b) Assurance of a controlled area for contamination surveys and for possible establishment of decontamination stations.

8.5.4 Public Notification System

A PNS consisting of sirens with ratings ranging from 107 dB to 125 dB exists within the ten-mile EPZ around SSES. Siren location was determined by a detailed study including field surveys, actual determination of average background noise level, and consideration of population distribution within the 10-mile EPZ.

Activation of the PNS is via radio control from either the LCEMA Emergency Operations Center or the PPL Emergency Operations Facility and by telephone from the CCDPS Emergency Operations Center. The Nuclear Emergency Alert signal is a steady 3-5 minute steady tone. Public response to this signal is to proceed indoors and tune their radio or television to the Emergency Alert System Network serving their local area for additional information.

Testing of the system takes place annually and includes verification of the system's ability to alert the general public.

8.6 ADDITIONAL COMMUNICATIONS SYSTEMS

8.6.1 Commercial Telephone System

Two independent telecommunications networks exist to provide primary and backup telephone communications between ERFs and offsite agencies. These systems are the Centrex Telephone Network (CTN) and Electronic Tandem Network (ETN).

CTN extension locations include: Control Room, TSC, EOF, MOC, SOP, DEP/BRP, PEMA, LCEMA, and CCDPS. This is the primary system for emergency communications.

8.6.2 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.

8.7 ON-SITE FIRST AID AND MEDICAL FACILITIES

A first aid treatment facility, equipped with normal industrial first aid supplies, is located on the first floor of the S&A Building. Standard first aid kits are at designated locations throughout the station. Inventories are performed regularly.

8.8 DAMAGE CONTROL EQUIPMENT

Damage control equipment consists of normal and special purpose tools and devices used for maintenance functions throughout the station. The ED has access to keys for maintenance tool cribs, shops and other locations where damage control equipment is stored. Inventories are performed regularly.

8.9 INFORMATION SYSTEMS

8.9.1 Plant Integrated Computer System

The PICSY is used for emergency data configuration for the following reasons:

- It contains CRT graphic and trending capabilities.
- It provides for historical data recording and retrieval.
- It has flexibility to permit interfacing to additional I/O equipment and other sources of data.
- Its design provides for a high degree of reliability.
- It is capable of scanning and processing all of the data needed in the EOF and TSC.
- It is located in a secure area within the control structure.
- It has a redundant system design.
- The ERDS and SPDS functions are integrated into its design.
- All of the PICSY data and functions are easily made available at locations remote from SSES.

8.9.1.1 Data Acquisition

Data is acquired from I/O hardware in the plant as well as over data interfaces to various other plant equipment. All data is checked for validity and errors before being displayed to the user. Isolation is applied to all safety-related inputs. All data is archived. Both short term and long term data are available for retrieval at any PICSY SDS. Long term data is available for at least the previous fuel cycle.

8.9.1.2 Data Preparation

Display formats needed by the ERF are generated and stored within the PCS using standard proven PICSY software. A configuration management software system is employed to track changes to all formats and the database itself.

Proven system and application software has been developed which performs data display and system security. The database includes raw data, data converted to engineering units, data checked on a real-time basis, and various types of calculated data.

User interaction from the PICSY SDS is independent from each station and controlled by multiple copies of the identical software.

8.9.1.3 Data Presentation

Three SDSs are available in the TSC for display of Unit 1, Unit 2, and Common data. Procedures and methods for call-up and error indications of TSC function are identical to those used in the control room with one exception. Control Room CRTs are usually fitted with touch screens in lieu of track balls and keyboards.

Data is presented in formats that are easy to understand and interpret. Variables not in a normal condition are presented with an indication of that condition. Alarms are represented by using the same color coding techniques as in the control room. Output formats are designed according to human factors engineering criteria, and include pattern and coding techniques.

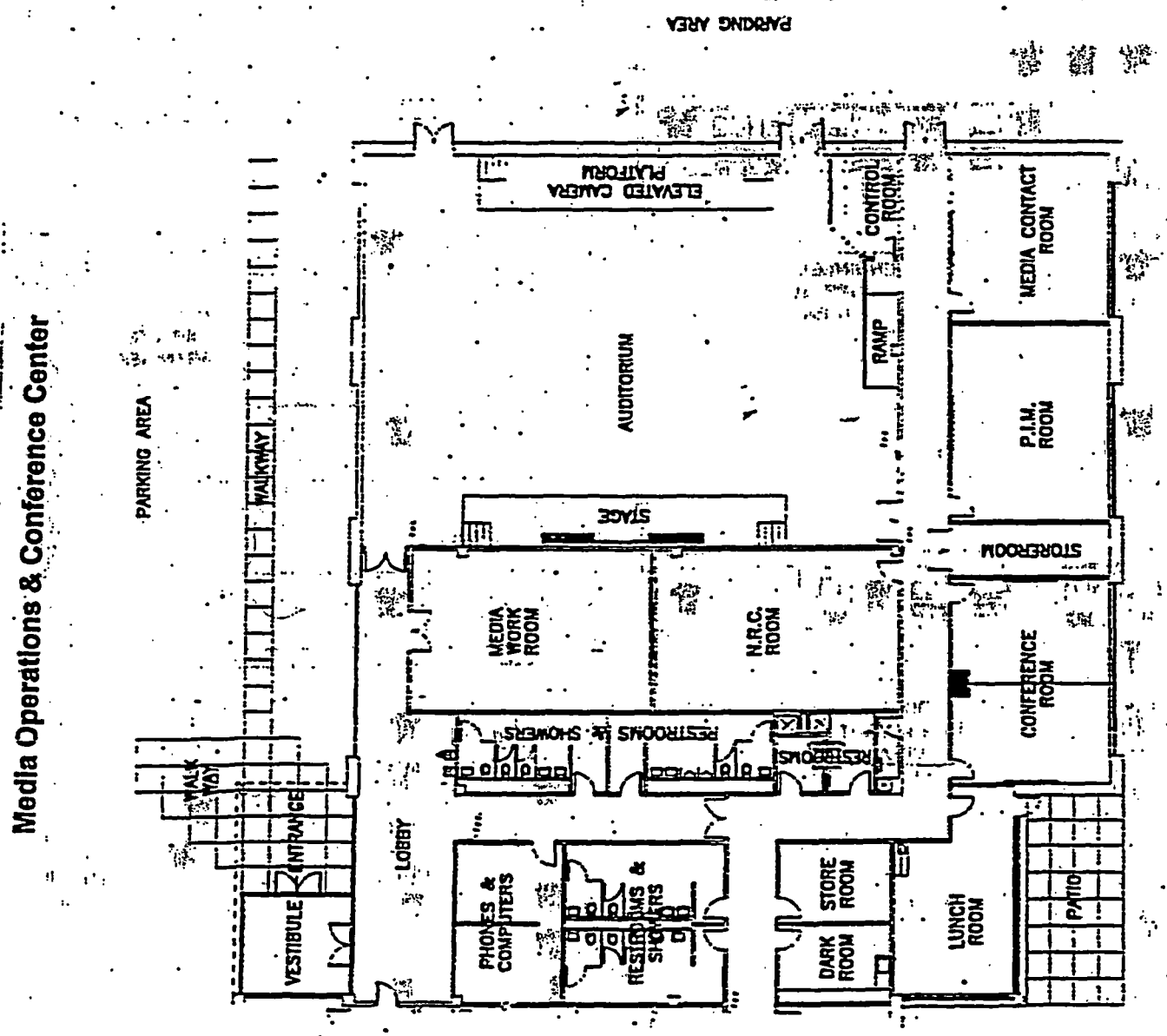
8.9.1.4 Availability

A minimum system availability of 99% or greater can be guaranteed, based on analytical calculations.

SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
EMERGENCY PLAN

EMERGENCY OPERATIONS FACILITY
FLOOR PLAN

Figure 8.3



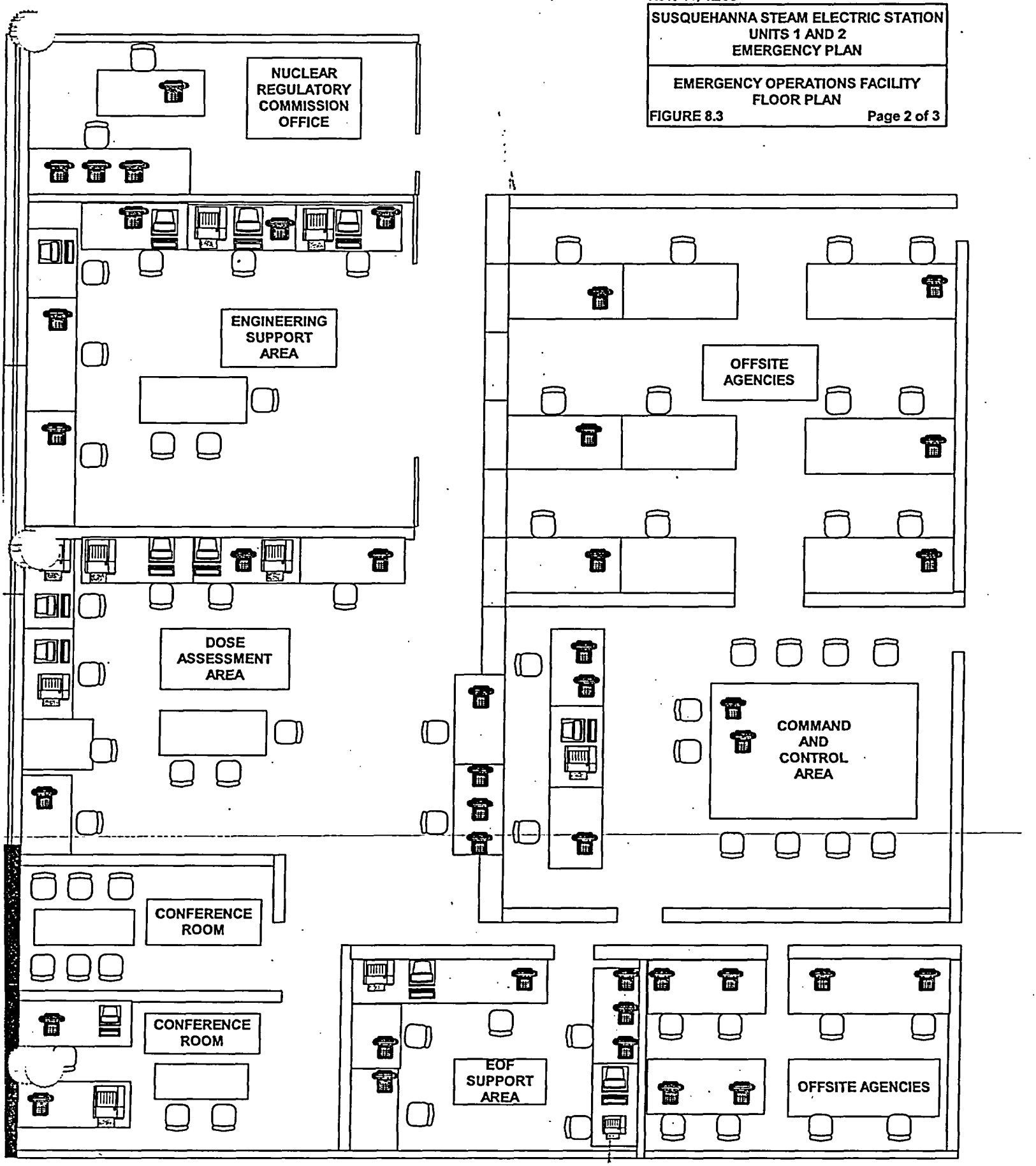
EMERGENCY OPERATIONS FACILITY

Rev. 44, 12/03

SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
EMERGENCY PLAN

EMERGENCY OPERATIONS FACILITY
FLOOR PLAN

FIGURE 8.3



EMERGENCY OPERATIONS FACILITY

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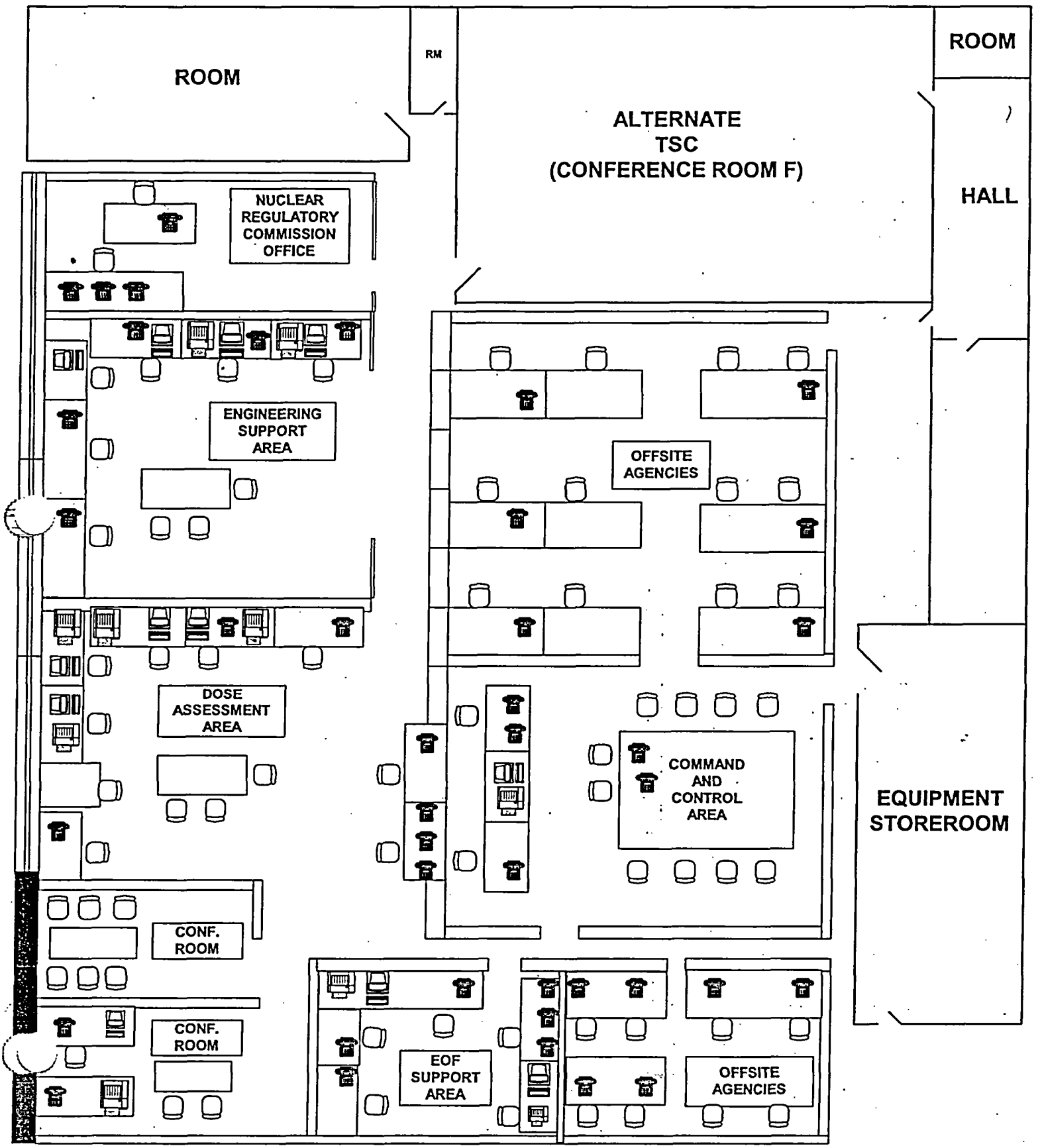
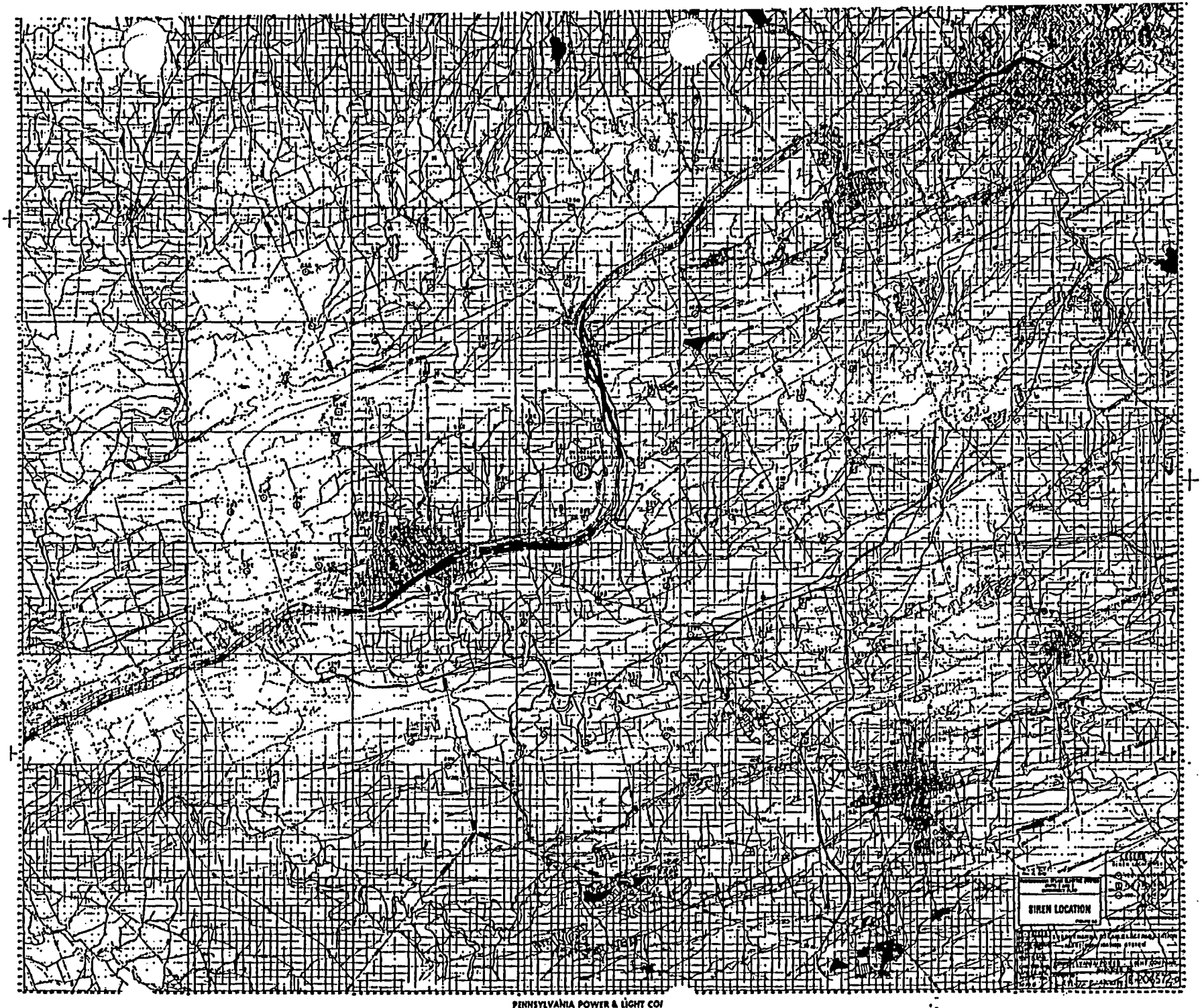
FIGURE 8.3





PENNSYLVANIA POWER & LIGHT CO
SUSQUEHANNA EMERGENCY PLAN MAP

9.0 MAINTAINING EMERGENCY PREPAREDNESS

9.1 ORGANIZATIONAL PREPAREDNESS

9.1.1 Training

a) All unescorted personnel entering or working within the SSES Radiologically Controlled Area receive as a minimum, the following instruction:

- Appropriate portions of the SSES EP.
- Use of emergency facilities and equipment, familiarization with station alarms and personnel response, and station communications systems.
- Personnel accountability, evacuation, and radiation exposure criteria.
- Radiation protection, emphasizing protective clothing, equipment, and personnel dosimetry.

b) Those individuals working on the SSES site, inside the protected area, but outside the Radiologically Controlled Area, are provided with instructions on warning signals, accountability areas, and evacuation routes.

c) Personnel assigned to the PPL NERO receive specialized training for their respective assignments. (Reference Table 9.1)

d) PEMA conducts a training program throughout the State and assists the counties in developing training policy for disaster operational readiness. The county and local EMAs are responsible for planning and conducting disaster preparedness training of respective emergency response personnel. PPL works closely with PEMA and the county EMAs in coordinating training programs. In addition, orientation training for State and county agencies and personnel involved in SSES emergency planning efforts is made available by PPL.

e) Annually, DEP/BRP and state, county, and municipal EMAs are invited to participate in a training program conducted by PPL. The initial training program relates the importance of emergency planning and the interface between the PPL and offsite emergency organizations with an emphasis on classification; EALs; reporting requirements; assessment, protective, and corrective actions; and communications networks. In addition, DEP/BRP is offered a specific review of dose calculations/projections, protective actions guides, and reportable information.

f) The State Police, annually, are invited to participate in a training program on appropriate EP-PSs, with emphasis on the classification of emergencies, communications, and specific areas of responsibility.

g) PPL provides training annually to local off-site support organizations. These local organizations are encouraged to become familiar with the SSES, key station personnel, and are invited to attend training conducted by or for PPL.

Initial core training for local fire companies and ambulance associations includes:

- Interface with the Site Security Force
- Basic health physics indoctrination and training
- SSES facility layout

Fire companies also receive training in the following areas:

- On-site fire protection system equipment
- Differences between on-site fire fighting equipment and fire company supplied equipment
- Communications system
- Review of sections of the SSES EP and EP-PSs
- The on-site NERO with emphasis on the interface between the SSES fire brigade and fire company personnel

h) Personnel assigned to the Emergency Planning Organization receive training as required by EP administrative procedures. Emergency Planning experience may be used in lieu of training.

Each year a fire drill, which includes local fire company support, is held to test these areas.

Annually local ambulance associations are invited to attend specialized training regarding the handling of contaminated/injured victims.

9.1.2 Drills and Exercises

Each drill or exercise is conducted to: (1) ensure that the participants are familiar with their respective duties and responsibilities, (2) verify the adequacy of the SSES EP and the EP-PSs (3) test communications networks and systems, (4) determine availability and operability of emergency supplies and equipment, and (5) every two years verify the adequacy of off-site agency plans.

Drills and exercises are conducted to simulate actual emergency conditions as closely as possible and may be scheduled such that more than one type of the following drills or exercises can be conducted simultaneously to meet the guidance of NUREG-0654 and the requirements of 10CFR50:

- Annual medical drill involving offsite support
- Annual fire drill involving offsite support

- Annual radiological drill to site area or general emergency level with offsite participation biennially
- Annual full-scale PNS test
- Annual environmental monitoring drill
- Semi-annual Health Physics drill testing survey sampling and analysis techniques.
- Annual drill that tests the use of PASS
- Perform augmentation drills every six years.

Additional non-integrated drills and tests are conducted as follows:

- Bi-weekly Silent Tests for sirens
- Quarterly Growl Tests for sirens
- Quarterly fire drills
- Monthly communications drills with state and county agencies
- Monthly communications tests with the NRC.

Drill scenarios for major drills are prepared to involve participation of several emergency teams and all or specific parts of the NERO including varying degrees of participation of State, County, and Federal agencies and local off-site support organizations.

Following the conduct of drills, critiques are held to clearly identify deficiencies and action plans for resolution. Procedures are established to assure the timely implementation of corrective actions.

Ingestion pathway exercises are conducted by the offsite agencies in accordance with PEMA Annex E. Susquehanna Steam Electric Station personnel provide support as required.

9.1.3 Overall Coordination of Nuclear Emergency Planning

The Supervisor-Nuclear Emergency Planning is responsible for the overall coordination of all nuclear emergency planning activities. The Supervisor-Nuclear Emergency Planning is assisted in this effort by: the Vice President Nuclear Operations for activities involving the Susquehanna Site and engineering issues, the Manager-Nuclear Training for on-site and off-site training, the Special Assistant to the President-Susquehanna for communications with the public and news media, and the General Manager-Nuclear Assurance for audits of Emergency Planning procedures.

The Supervisor-Nuclear Emergency Planning is typically responsible for:

- Revising of the SSES Emergency Plan
- Revising of EP-PSs and other Emergency Planning Administrative procedures
- Conducting of integrated drills and exercises and communication drills
- Defining EP training scope for NERO
- Defining EOF and MOC EP Training
- Coordinating EP interface between State and Federal agencies

- Coordinating maintenance and testing of PNS
- Coordinating interface between state, county, municipal, and PPL EPs
- Assuring operational readiness of Emergency Response Facilities.

9.2 REVIEW AND UPDATING

9.2.1 SSES Emergency Plan

The Supervisor-Nuclear Emergency Planning is responsible for the review and revision of the SSES Emergency Plan, ensuring:

- A review of the SSES Emergency Preparedness Program, at least annually, by persons who have no direct responsibility for implementation of the program (10CFR50.54t).. This includes a review of the SSES Emergency Plan.

- Recommendation of Emergency Plan changes to PORC.

- PORC review of Emergency Plan changes and submission of changes to SRC.

- Revisions or a report of change to the Emergency Plan that do not change the effectiveness of the plan are submitted to the NRC within 30 days from the implementation of such change(s).

9.2.2 Emergency Plan Position Specific Instructions

The Supervisor-Nuclear Emergency Planning is responsible for the review and revision(s) of the Emergency Plan Position Specific Instructions, ensuring:

- A review of EP-PS Instructions is conducted every two years.

- Revisions to EP-PS Instructions are done in accordance with established plant procedures.

- Controlled copies of EP-PS Instruction revisions are issued by Nuclear Records-SSES.

- Nuclear Emergency Response Organization (NERO) personnel are briefed on revisions.

9.3 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT/SUPPLIES

The Supervisor-Nuclear Emergency Planning is responsible for periodic inventory and inspection of emergency equipment and supplies, and for periodic surveillance testing of emergency communications systems. This testing includes verification of phone numbers that are contained in Emergency Plan procedures.

These activities are detailed in PPL Emergency Planning Instructions. Equipment, supplies, and parts having limited shelf lives are checked and replaced as necessary. Monthly communications drills and tests are also conducted from PPL ERFs and offsite agencies.

Any deficiencies found during these activities are either cleared immediately or documented for corrective action.

9.4 PUBLIC EDUCATION AND INFORMATION

Under the direction of the Supervisor-Nuclear Emergency Planning, the following methods are utilized to ensure that emergency planning information and education is provided and transmitted to residents and transients in the EPZ annually.

9.4.1 Telephone Directory Inserts

With the cooperation of Pennsylvania Emergency Management Agency, Luzerne County Emergency Management Agency, and Columbia County Department of Public Safety, emergency information is provided in all telephone directories distributed within the ten mile EPZ. This information includes:

- explanation of Emergency Classifications
- what to do when you hear the sirens
- public Protective Actions
- student pick-up points
- evacuation routes to reception centers
- evacuation Plan Map
- callback number for special needs

9.4.2 Programs are Held to Acquaint the News Media With:

- SSES Emergency Plan
- information concerning radiation
- points of contact for the release of public information during an emergency

9.4.3 Educational Training Programs

Educational training programs on emergency planning are made available to the general public through the staffs of the Susquehanna Energy Information Center and Nuclear Emergency Planning.

TABLE 9.1

TRAINING OF SUSQUEHANNA SES EMERGENCY RESPONSE PERSONNEL

Personnel Category	Involved Personnel	Initial Training and Periodic Retraining
1. Emergency Directors	Shift Managers, and currently assigned Duty Managers	Initial training: EP and EP PSs. Retraining: Changes in responsibilities. Frequency: Annual
2. Personnel responsible for accident assessment/management	Emergency Director; Emergency Coordinators	Initial training: EP and EP PSs. Retraining: Applicable EP PSs and changes. Frequency: Annual
3. Radiation Monitoring Teams	Health Physics Supervision; Health Physics Technicians; and Site Personnel	Initial training: Radiation monitoring EP PSs and applicable Health Physics Procedures Retraining: Hands-on instrument usage. Frequency: Annual
4. Fire Brigade	Unit Supervisors, Fire Brigade Leader, Non-Licensed Operators, Security Officers	Training and retraining are outlined in the SSES FSAR.
5. Damage Control Teams	Non-Licensed Operators; Maintenance Supervision; Maintenance Personnel; Health Physics Technicians; I&C Supervision; I&C Personnel	Repair and Damage Control are a normal part of the job functions. Initial training: Availability of damage control equipment, use of communication systems, and interfaces with other emergency teams. Retraining: Review of the above topics. Frequency: Annual

TABLE 9.1

TRAINING OF SUSQUEHANNA SES EMERGENCY RESPONSE PERSONNEL

Personnel Category	Involved Personnel	Initial Training and Periodic Retraining
6. First Aid and Rescue Personnel (Emergency Medical Response Teams)	Security Force Members Work Groups having 24-hour coverage at Susquehanna (supplemental team members directed by Team Leader)	Training and retraining: Communication system and interfaces with local medical support personnel.
	Non-Licensed Operators	Training and retraining: First Aid, CPR Training, and availability of on-site medical treatment supplies and equipment; (see Note)
	Health Physics	Training and retraining: CPR Training and radiological hazards (see Note)
	Chemistry	Training and retraining: CPR Training (see Note) Retraining frequency: Annual
7. Fire Support Personnel	Local Fire Companies	Training and retraining are outlined in Section 9 of the SSES EP.
8. Medical Support Personnel	Berwick Hospital Staff; Ambulance Companies; Geisinger Medical Center Staff	Initial training: Treatment and handling of contaminated/injured personnel, communication systems, radiological hazards and interfaces with SSES personnel. Retraining: Review of the above topics. Retraining frequency: Annual
9. Corporate Support Personnel	Corporate Management Personnel; including Nuclear Fuel and Analysis, Nuclear Design Engineering and Nuclear Technology	Initial training: EP and appropriate EP PS's. Retraining: Applicable EP-PSs and changes. Retraining frequency: Annual
10. Security Personnel	Security Supervision; Security Force Members	Training is outlined in the SSES Training and Qualification Plan.
11. Public Information Personnel	Special Office of the President; Information Services Personnel	Initial training: EP and Public Information EP PS. Retraining: Applicable EP-PSs and changes. Retraining frequency: Annual

TABLE 9.1

TRAINING OF SUSQUEHANNA SES EMERGENCY RESPONSE PERSONNEL

NOTE: Specific training requirements are identified in the Training Matrices for Emergency Planning, Security, Health Physics, Chemistry, Operations, and all NERO members.

APPENDIX C

SSES EMERGENCY PLAN

POSITION SPECIFIC PROCEDURES

(TYPICAL)

APPENDIX C

SSES EMERGENCY PLAN POSITION SPECIFIC PROCEDURES (TYPICAL)

On-Site Personnel

Emergency Director/CR
Emergency Director/TSC
Technical Support Coordinator
Operations Coordinator
Radiation Protection Coordinator
TSC Dose Calculator
HP Specialist
HP Radioman
HP Tech I (Oscar)
TSC Radio Communicator
TSC Lead Engineer
Security Coordinator
Chemistry Coordinator
Chemistry Sampling Team
Administrative Support Coordinator
Control Room E Plan Communicator
TSC E Plan Communicator
HPN Communicator
Data Technician
HP Tech II Dose Calculator
Damage Control Team Coordinator
OSC Coordinator
Severe Accident Management Coordinator
Control Room NRC Communicator
Maintenance Foreman/Field Unit Supervisor
HP Radioman
TSC NRC Communicator
Core Thermal Hydraulics Engineer

Off-Site Personnel

Recovery Manager
County Liaison
NEP Duty Planner
EOF Communicator
Dose Assessment Supervisor

Off-Site Personnel (cont'd)

EOF Dose Calculator
Dose Assessment Staffer
Field Team Director
Environmental Sampling Director
Environmental Sampling Team
Emergency Monitoring Team
Radiological Liaison
Liaison Support Supervisor
EOF Support Supervisor
Administrative Assistant
Engineering Support Supervisor
Fuels Lead Engineer
Systems Lead Engineer
Electrical Support Engineer
Mechanical Support Engineer
Public Information Manager
News Manager
Public Information Tech Briefer
Support Services Manager
MOC Communicator
Media/Public Officials Contact
MOC Writer
MOC Administrative Coordinator
MOC Runner
General Office Operations Manager

APPENDIX D

EQUIPMENT INFORMATION LISTINGS

CONTENTS OF APPENDIX D

Equipment Information Listings

ENCLOSURE 1 TO APPENDIX D

Typical Station Decontamination Area Equipment

Decontamination Procedures
Cotton Gloves
Coveralls (Disposable)
Decontamination Soap
Disposable Bath Towels
Disposable Gloves
Frisker
Hand Brushes
Hand Cream
Lotion Skin Cleaner
Masking Tape
Paper Towels
Shoe Covers, paper
Spare Frisker Cable
Spare Frisker Probe
Sponges

Typical Damage Control Equipment Storage Box Contents

Amprobe
Bars, Pry, Large
Bars, Pry, Rolling Lead
Black Wire, ¼ lb. Rolls, 16 Gauge
Box, Tool, 23"
Bucket, 14 quart, Plastic
Cable Cutters
Clamps, C, Medium
Clamps, C, Large
Clamps, C, Small
Electricians Pouch with Miscellaneous Hand Tools
Enerpac, Rescue Unit
Flashlight, 5 cell
Hammer, Ball Peen, 16 oz.
Hammer, Sledge, 10 lb.
Hammer, Sledge, 8 lb.
Multimeter
Nylon Rope, 100' coils, 3/4"
Nylon Rope, 25' coils, 3/8"
Nylon Rope, 50' coils, 3/8"
Nylon Rope, 50' coils, 3/4"
Plastic Sheet, 20' x 20', Fire Retardant
Pliers, Lineman
Pliers, Water Pump
Plugs, Wood, 1" & 6"
Plugs, Wooden Box, 1", 1¼', 1½', 2", 2½", 3"
Rubber, Roll 1/16" thick, 10' x 3'
Screwdrivers, Large Standard
Screwdrivers, Medium Standard
Screwdrivers, Phillips, Large
Screwdrivers, Phillips, Medium
String, Ball
Twine, Bale
Wedges, Wooden
Wrench, Adjustable, 12"
Wrench, Adjustable, 8"
Wrench, Allen Pac 3/16", 7/32", ¼", 5/16", 3/8"
Wrench, Allen Pac .050", 1/16", 5/64", 3/32", 7/64" 1/8", 9/64", 5/32", 3/16", 7/32"
Wrench, Chain
Wrench, Hex, #110
Wrench, Hex, #17
Wrench, Hex, 24"
Wrench, Pipe, 18"
Wrench, Pipe, 14"

ENCLOSURE 2 TO APPENDIX D

Typical Onsite Search and Rescue/First Aid, Ambulance, and Hospital Radiation Emergency Equipment and Supplies

Onsite Search Rescue/First Aid:

- Adjustable Litter
- Basket Stretcher (Stokes)
- First Aid Team Initial Response Kit with Inventory Sheet
- Folding Litter
- Portable Oxygen-Demand Valve (size D tank with assorted airways, cannulas, and masks)
- Scoop Stretcher
- Trauma Kit
- Assorted Splinting Devices

Ambulance Kit:

- Plastic Sheeting, 8' x 20'
- Tape roll
- Misc. Plastic Bags
- Plastic Gloves
- Plastic Shoe Covers
- Portable Frisker and Probe
- Set of Anti-contamination Clothing

Hospital:

- Dosimeter Charger
- Survey Meter
- Frisker with Probe
- Herculite - white, green and yellow
- Lead Container, high activity samples
- Portable Frisker w/current calibration
- Self Reading Dosimeters, Low Range 0-500 mR
- Set of Radiation Signs and Ribbon Stanchions
- Step-off Pad
- Thermoluminescent Dosimeters, badge type
- Thermoluminescent Dosimeters, ring type

ENCLOSURE 3 TO APPENDIX D

Natural Phenomena Monitors

METEOROLOGICAL MONITORING INSTRUMENTATION

1. Wind Speed Instrument
   a. Elevation 10 meters and 60 meters.
2. Wind Direction Instrument
   a. Elevation 10 meters and 60 meters.
3. Air Temperature Difference Instrument
   a. Elevation 10/60 meters.
4. Ambient Temperature Gauge Instrument
   a. Elevation 10 meters.
5. Dew Point Gauge Instrument
   a. Elevation 10 meters.
6. Rainfall Gauge Instrument
   a. Ground level.

SEISMIC MONITORING INSTRUMENTATION

INSTRUMENTS AND SENSOR LOCATIONS

1. Triaxial Accelerometers and Triggers
   a. Reactor Equipment, Unit 1
   b. Reactor Bldg. Floor (RHR), Unit 1
   c. ESSW Pumphouse Floor (a)
   d. Containment Foundation, Unit 1 (a)
   e. Containment Structure, Unit 1
   f. Containment Foundation, Unit 2 (a)

2. Peak Accelerographs

   a. Reactor Equipment, Unit 2
   b. Reactor Piping, Unit 2
   c. RHR Pump Room, Unit 2

3 Response-Spectrum Analyzer/Recorders

(a) The Unit 1 Containment Foundation, Unit 2 Containment Foundation and ESSW Pumphouse Floor Accelerometer Channels have associated triggers. These triggers provide control room indication and annunciation.

Enclosure 4 to Appendix D

RADIOLOGICAL MONITORS

Instrument Type	Individual Detectors	Function & Sensitivity
Air Sampling Equipment	Continuous Air Monitors	Particulate, Iodine Equipment & Gas Monitor
	High volume samplers	Particulate, Iodine
	Low volume samplers	Particulate, Iodine
	Breathing zone samplers	Particulate, Iodine
Personnel Dosimetry	Intermediate range dosimeters High range dosimeters Emergency range Dosimeters TLDs Alarm dosimeters	0 - 500 mrem 0 - 1,000 mrem 0 - 100,000 mrem
Portable Survey Instruments	GM survey instruments Ion chamber survey instruments Ion chamber survey instruments Telescoping GM survey instruments GM count rate meters Survey scintillators BF neutron counter BF neutron detector Portal monitors	0 - 2 R/hr 0 - 5 Rem/hr 0 - 50 Rem/hr 0 - 1,000 R/hr 0 - 50,000 cpm 0 - 2 M cpm 0 - 5 Rem/hr 0 - 500 K cpm
Counting Room	Low background gas	N/A
	proportional counters	
	Liquid scintillation counter	
	scintillation - alpha	
	scintillation - beta	
	High Purity Ge Spectrometer	
	NaI Spectrometer	
	GM End Window Scaler	

Enclosure 4 to Appendix D (Cont'd.)
AREA RADIATION MONITORS (ARMs)

Channel #	Location Building and Area	Elev.	Range (mR/hr)	Local Alarm
1	1R/2R Resid Heat Removal Area	645'	0.1-1000	Yes
2	1R/2R RCIC Pump Turbine Room	645'	0.01-100	Yes
3	1R/2R HPCI Pump Turbine Room	645'	0.01-100	Yes
4	1R/2R Radwaste Sump Area	645'	0.1-1000	Yes
5	1R/2R Control Rod Drive (North)	719'	0.1-1000	Yes
6	1R/2R Control Rod Drive (South)	719'	0.1-1000	Yes
7	1R/2R Offgas By Pass Line	656'	0.1-1000	Yes
8	1R/2R Cleanup Recirc. Pump Access Area	749'	0.01-100	Yes
9	1R/2R CRD Repair Area	719'	0.1-1000	Yes
10	1R/2R Fuel Pool Room	749'	0.1-1000	Yes
11	1R/2R Sample Station Room	749'	0.01-100	Yes
12	1R/2R Recirc. Fan Room	799'	0.01-100	Yes
13	1R/2R New Fuel Storage Vault	817'	0.1-1000	Yes
14	1R/2R Spent Fuel Pool	818'	0.1-1000	Yes
15	1R/2R Refueling Floor Area	818'	0.01-100	Yes
16	1R/2R Access to Remote Shutdown	670'	0.01-100	Yes
17	1T/2T Cond. Pumps Area	656'	0.01-100	Yes
18	1T/2T RFPT Area at Reactor Bldg Access	676'	0.01-100	Yes
19	1T/2T Air Ejector Room	682'	0.1-1000	Yes
20	1T/2T Feedwater Heater Area	699'	0.1-1000	Yes
21	1T/2T Rx Recirc. MG Set Area	729'	0.01-100	Yes
22	1T/2T Generator Bay Area	729'	0.01-100	Yes
23	1T/2T H&V Equip. Room	762'	0.01-100	Yes
24	1T/2T Turbine Front End	729'	0.01-100	Yes
25	1R/2R Resid. Heat Removal Area	645'	0.1-1000	Yes
26	1R/2R TIP Drive Area	719'	0.1-1000	Yes
27	S&A Bldg. Entrance to Turbine Floor	729'	0.01-100	Yes
28	S&A Bldg. 2nd Floor Corridor	691'	0.01-100	Yes
29	RW Corr. Pers. Access Area	646'	0.1-1000	Yes
30	RW Opt. Surveil. Contr. Area	646'	0.1-1000	Yes
31	RW Corr. to Collection Tank	646'	0.1-1000	Yes
32	RW Controlled Zone Shop	676'	0.1-1000	Yes
33	RW Control Room	676'	0.1-1000	Yes
34	RW Storage and Equip. Area	676'	0.1-1000	Yes
35	RB Sampling Cask Storage Area	818'	0.01-100	Yes
36	RB Railroad Access Area	670'	0.01-100	Yes

Enclosure 4 to Appendix D (Cont'd)

AREA RADIATION MONITORS (ARMs)

Channel #	Location Building and Area	Elev.	Range (mR/hr)	Local Alarm
37	Standby Gas Treatment Room	806'	0.01-100	Yes
38	Control Structure Rad Chem Lab.	676'	0.01-100	Yes
39	Control Structure Control Room	729'	0.01-100	Yes
40	S&A Access to Unit 1 Turbine Bldg.	676'	0.01-100	Yes
41	RB Tip Chamber Shield Area	719'	100-1,000,000	Yes
42	RB Refueling Floor Area	818'	.01-100	Yes
43	CTR TWR Observation Desk (TSC)	741'	.01-100	Yes
44	CTR TWR Document Control Area (TSC)	741'	.01-100	Yes
45	CTR TWR Conference Room (TSC)	741'	.01-100	Yes
46	RB New Fuel Storage Vault	817'	0.1-1000	Yes
47	RB Spent Fuel Pool Area	818'	0.1-1000	Yes
48	1R/2R HPCI Pump & Turbine Room	645'	100-1,000,000	No
49	1R/2R Refueling Floor Area	818'	100-1,000,000	No
50	1R/2R Control Rod Drive North	719'	100-1,000,000	No
51	1R/2R Control Rod Drive South	719'	100-1,000,000	No
52	1R/2R RWCU Recirc. Pump Access Area	749'	100-1,000,000	No
53	1R/2R Access to Remote Shutdown Panel	670'	100-1,000,000	No
54	1R/2R Fuel Pool Pump Room	749'	100-1,000,000	No
55	1R/2R RHR Room - Loop A	645'	100-1,000,000	No
56	1R/2R RHR Room - Loop B	645'	100-1,000,000	No
57	1R/2R RCIC Pump Turbine Room	645'	100-1,000,000	No

Enclosure 4 to Appendix D (Cont'd.) PROCESS MONITORS			
System	**Det. Types**	**Range**	**Location**
Main Steam Line	ION Chambers (IC)	1-10^6 mR/hr	Near main steamlines between primary and secondary containment walls, just downstream of MSIVs
Refueling Floor Wall Exhaust Duct	GMs	0.01-100 mR/hr	Exhaust ducting upstream of inboard isolation damper, prior to discharge through reactor building vent
Refueling Floor High Exhaust Duct.	GMs	0.01-100 mR/hr	Exterior to fuel pool ventilation exhaust duct
Railroad Access Exhaust Duct	GMs	0.01-100 mR/hr	Exhaust duct prior to Rx building vent
Emergency Outside Air Intake	GMs	0.01-100 mR/hr	In the outside intake air plenum
Offgas Pretreatment (SJAE)	ICs	1-10^6 mR/hr	Discharge of the delay pipe after SJAE
Liquid Radwaste Effluent	Scintillation (SCIN)	---	Off-line on liquid waste effluent discharge
Service Water (FPC)	SCIN	10^{-1} - 10^6 cps	Downstream of fuel pool HX prior to discharge to cooling towers
RHR Service Water	SCIN	10^{-1} - 10^6 cps	On the downstream piping of each RHR HX
RX Building Closed	SCIN	10^{-1} - 10^6 cpm	Suction piping of the Water RBCCW pumps
Standby Gas Treatment SGTS Vent Exhaust	GM	0.01-100 mR/hr	Inside exhaust ductwork
Containment Monitor	IC	10^7 R/hr	Drywell

Enclosure 4 to Appendix D (Cont'd.) VENT MONITORS		
Type	**Minimum**	**Location**
GM & SCIN	10^{-6} micro Ci/cc gas.	Five locations in turbine building, reactor building, and SGTS vents
Iodine Sampling Cartridge	NA*	
Particulate Filter	NA*	

* Sensitivity dependent on sample size and count time. Sensitivities equal to or better than 10E-11 micro Ci/cc are achievable.

Enclosure 5 to Appendix D ENVIRONMENTAL MONITORING SYSTEMS		
1. Environmental Monitoring Systems		
Instrument System	**Individual Detectors**	**Purpose**
A. Radiological Environmental Monitoring System	off-site fixed air sampling stations	sample particulates sample iodine
	direct radiation monitor stations	measure gamma dose
B. Analytical Facilities	near-site radiation chemistry laboratory	radiochemical analysis of environmental and bioassay samples
	off-site environmental contractor	analysis as above, and also very low-level activity analysis

2. Typical Field Monitoring Team Equipment

Emergency Planning and Grid Coordinate Maps
Stopwatch, tweezers, masking tape
Survey Meter with current calibration
Low Volume Air Sampler and Head
Low and High range Dosimeters and charger
Potassium Iodide Tablets
Radioactive Material Stickers
Particulate Filters, box
Silver Zeolite Cartridges
Disposable Plastic Gloves
Plastic sample bags and labels
Flashlight
Spare Battery and Fuse kit

3. Typical Radiation Emergency Environmental Sample Kit Contents

Assortment of Sampling Bags
Flashlight
Grid Coordinate Map
Low and High Range Dosimeters
Pliers
Rubber Gloves
Sample Containers
Sample Labels
Scale
Scissors
Spare Batteries

ENCLOSURE 6 TO APPENDIX D

Typical Health Physics Van Radiation Emergency Monitoring Equipment

- Survey Meter with current calibration
- Portable Frisker with probe
- Low Volume Air Sampler with head (AC powered)
- Low Volume Air Sampler with DC power plug
- Spare Frisker Cable
- DC to AC Inverter
- VHF mobile radio
- Respirators
- Iodine Canister
- Vial of Potassium Iodide Tablets
- PICs, High Range
- PIC Charger
- Sets of Anti-contamination Clothing
- Protective gloves
- Calculator
- Emergency Planning Map
- Check source
- Silver Zeolite cartridges
- Particulate Filters
- Tweezers
- Stopwatch
- Tape
- Survey Data Labels
- Masslin Cloths
- Smear Papers
- Plastic bags for samples
- Extension cord
- Work light
- Flashlight
- Utility knife
- First Aid Kit
- Spare batteries
- Spare fuses for Air Sampler
- Safety Vests

ENCLOSURE 7 TO APPENDIX D

Emergency Classification Dependent Instrumentation

Off-gas Pre-treatment Rad Monitor
Containment Post Accident Rad Monitor
Main Steam Line Rad Monitors
Containment Pressure Indicator
Reactor Coolant Isolation Valve Position Indicator
ECCS System Indicator
Rx Water Level Indicator
Drywell Floor Drain Pump A&B Monitors
Reactor Vessel Isolation Valve Position Indicator
Neutron Monitoring Instrumentation
Core Display Indicators
Reactor Protection System Trip Indicator
SBLC Pump Pressure Indicator
Valve C31-F008 Position Indicator
1F004 A&B Explosive Valve Position Indicators
Rx Coolant Temp Indicators
Rx Rated Power Indicators
Vent Stack Monitoring System Indications
Seismic Instrumentation Indicators
River Level Indicators
Safety Relief Valve Position Indicator
ADS Indicators
S/U Transformer 10 and 20 Indicators
Diesel Generator Indicators
250 VDC Main Distribution Panel Buses
125 VDC Main Distribution Panel Buses
ARMs
High Seal Leak Flow Alarm
RHR Flow Indicator
Turbine Stop and Turbine Bypass Valve Position
Suppression Pool Temp Indicator
Rx Pressure Indicator
MSIV Position Indicator
MSL Flow Indicator
MSL Tunnel Temp Indicator
MSL Rad Monitor
HPCI or RCIC Steamline Temp Indicator
HPCI or RCIC Equip Temp Indicator
HPCI or RCIC Turbine Exhaust Diaphragm Pressure Indicator
Steam Isolation Valve HV-F002, HV-F003 Position Indicators
Fire Detection System Instrumentation

ENCLOSURE 8 TO APPENDIX D

Typical Emergency Equipment for Initial Incident Response

Portable frisker with probe
Low volume Air Sample with Head
High Volume Air Sampler with Head
Survey Meter
Spare frisker cable and probe
Particulate filter paper
Silver Zeolite Cartridges
Spare Batteries and fuses
Portable Worklight
Extension Cord
Low and High Range Self-reading Dosimeters and Charger
Potassium Iodine Tablets
Anti-contamination Clothing
Full face Respirator
Iodine Filter Canisters
SCBA Equipment
Emergency Plan
Emergency Plan Position Specific Instructions
Emergency Planning Map with offsite sampling locations
Onsite Monitoring Locations Map
First Aid Kit
Keys to Health Physics Van
Emergency Plan Keys
Food and potable water adequate to support 10 people for 5 days.

Typical Technical Support Center Equipment

Plant Technical Specifications
Operating Procedures Manual
Emergency Operating Procedure Manual
Final Safety Analysis Report
EP and EP-PSs
Safety Procedure Manual
Offsite Dose Calculation Manual
Plant as built drawings
Emergency Phone Directory
Microfilm/fiche Reader/Printers
Microfilm/fiche Storage Cabinet
Copy Machine and Telecopier

ENCLOSURE 9 TO APPENDIX D

Typical Emergency Operations Facility Equipment

Plant Technical Specifications
Operating Procedures Manual
Emergency Operating Procedures Manual
Final Safety Analysis Report
Emergency Plan
Emergency Plan Position Specific Instructions
Current Emergency Plans for PEMA, LCEMA, CCDPS
Rad Health Handbook
Offsite Dose Calculation Manual
Emergency Phone Directory
Emergency Planning Map with Offsite Monitoring Locations
Calculators
Flashlight
First Aid Kit

APPENDIX J

NUREG-0654 PLANNING STANDARD AND EVALUATION CRITERIA CROSS REFERENCE TO SSES EMERGENCY PLAN

NUREG-0654 PLANNING STANDARDS AND EVALUATION CRITERIA CROSS REFERENCE TO SSES EMERGENCY PLAN	
APPLICABLE NUREG-0654 SECTION	**SSES EMERGENCY PLAN**
A. Assignment of Responsibility	
1.a.	Chapter 6, Section 6.0
1.b.	Chapter 4 Chapter 6
1.c.	Chapter 6, Figures 6.2, 6.3, 6.6, 6.7 FSAR Figure 13.1-3
1.d.	Chapter 6, Sections 6.2, 6.2.1, 6.3, 6.3.1, 6.3.1.1
1.e.	Chapter 6, Sections 6.0, 6.1, 6.2, 6.2.3, 6.2.4, 6.2.5, 6.3, 6.3.1.2, 6.3.1.4, 6.3.1.5
3.	Appendix A
4.	Chapter 6, Sections 6.2.6, 6.3.1.3
B. Onsite Emergency Organization	
1.	Chapter 6, Sections 6.0 Phase I, II, III, 6.1, Tables 6.1, Figure 6.2
2.	Chapter 6, Sections 6.0, 6.1 Appendix E
3.	Chapter 6, Section 6.2.1
4.	Chapter 6, Section 6.2.1
5.	Chapter 6, Tables 6.1
6.	Chapter 6, Figure 6.7
7.a.	Chapter 6, Section 6.2.6
7.b.	Chapter 6, Section 6.2.5, 6.5
7.c.	Chapter 6, Section 6.2.1
7.d.	Chapter 6, Section 6.3.2.1
8.	Chapter 6, Table 6.2 Appendix A
9.	Chapter 6, Table 6.2 Appendix A

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APPLICABLE NUREG-0654 SECTION	**SSES EMERGENCY PLAN**
C. Emergency Response Support Resources	
1.a.	Chapter 6, Sections 6.2.1, 6.3.1.1, 6.4.3
1.b.	Chapter 6, Section 6.4.3
1.c.	Chapter 6, Section 6.4.3
2.b.	Chapter 6, Sections 6.2.1, 6.3.1.1
3.	Chapter 6, Section 6.4.3
4.	Appendix A, Table 6.2
D. Emergency Classifications	
1.	Chapter 5, Sections 5.1, 5.2, Table 5.1, Appendix D, Appendix F
2.	Chapter 5, Table 5.1
E. Notification Methods and Procedures	
1.	Chapter 6, Figure 6.7 Appendix C, Position Specific Instructions for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator • Radiation Protection Coordinator • Technical Support Coordinator • Recovery Manager • Dose Assessment Supervisor
2.	Appendix C, Position Specific Instructions for: • Emergency Director • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • Security Coordinator
3.	Appendix C, Position Specific Instructions for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator
4.a., b., c., k., n.	Appendix C, Position Specific Instructions for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator

NUREG-0654 PLANNING STANDARDS AND EVALUATION CRITERIA CROSS REFERENCE TO SSES EMERGENCY PLAN	
APPLICABLE NUREG-0654 SECTION	**SSES EMERGENCY PLAN**
4.d., e., f., g., h., i., j., l.	Appendix C, Position Specific Instructions for: • Radiation Protection Coordinator • Dose Assessment Supervisor
4.m.	Appendix C, Position Specific Instructions for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator
6.	Chapter 6, Sections 6.2.1, 6.3.1.1 Chapter 7, Sections 7.1.1, 7.3.2 Chapter 8, Section 8.5.4
7.	Chapter 6, Sections 6.2, 6.2.1, 6.2.3, 6.3.1.1, 6.3.1.5 Chapter 7, Section 7.3.2, Table 7.3
F. Emergency Communications	
1.	Chapter 6, Figure 6.7 Chapter 8, Sections 8.1.3.5, 8.2.2.4
1.a.	Chapter 6, Sections Phase Ic), 6.2.3, 6.2.4e), 6.2.5g), 6.3.1.1i), 6.3.1.4e), 6.3.1.5 Appendix C, Position Specific Instruction for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator • Radiation Protection Coordinator • Tech Support Coordinator • Recovery Manager • Dose Assessment Supervisor
1.b.	Chapter 8, Sections 8.3.1, 8.3.2
1.c.	Chapter 6, Sections Phase Ic), 6.2.3, 6.2.4, 6.3.1.5 Chapter 8, Sections 8.1.3.5, 8.2.2.4, 8.2.2.4.1, 8.2.2.4.2 Appendix C, Position Specific Instructions for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • EOF Communicator
1.d.	Chapter 6, Sections 6.2.1j), 6.2.3c), 6.2.4d), 6.2.5g) Chapter 8, Sections 8.1.3.5, 8.1.3.5.1, 8.1.3.5.2, 8.2.2.4, 8.2.2.4.1, 8.2.2.4.2

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1.f.	Chapter 8, Sections 6.2.1d, 6.3.1.1c, 6.3.1.1j, Figure 6.7
2.	Chapter 7, Sections 7.4.2, 7.4.3 Chapter 8, Sections 8.1.3.5.1, 8.2.2.4 Appendix C, Position Specific Instruction for: • Security Coordinator
3.	Chapter 9, Sections 9.1.2, 9.3
G. Public Education and Information	
1.a., b., c., d.	Chapter 9, Sections 9.4, 9.4.1, 9.4.2, 9.4.3
2.	Chapter 9, Sections 9.4, 9.4.1, 9.4.2, 9.4.3
3.a.	Chapter 6, Section 6.3.2 Chapter 8, Section 8.2.1
3.b.	Chapter 8, Section 8.2.1
4.a.	Chapter 6, Section 6.3.2.1
4.b.	Chapter 6, Sections 6.3.2, 6.3.2.1
4.c.	Chapter 6, Section 6.3.2.1e)
5.	Chapter 9, Section 9.4.2
H. Emergency Facilities and Equipment	
1.	Chapter 8, Sections 8.1.2, 8.1.3
2.	Chapter 8, Section 8.2.2
4.	Chapter 6, Sections Phase I, Phase II, Phase III
5.	Appendix D, Enclosures 3, 4, 5, 7
5.a.	Appendix D, Enclosure 3
5.b.	Appendix D, Enclosure 4
5.c.	Appendix D, Enclosures 4, 7
5.d.	Appendix D, Enclosure 7
6.a., b.	Chapter 7, Section 7.1, 7.1.1

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APPLICABLE NUREG-0654 SECTION	**SSES EMERGENCY PLAN**
6.c.	Appendix C, Position Specific Instructions for: • Chemistry Coordinator • Field Team Director Table 6.2
7.	Appendix D, Enclosures 4, 5
8.	Chapter 7, Section 7.1.1.1, Appendix D, Enclosure 3
9.	Chapter 8, Section 8.1.2
10.	Chapter 9, Section 9.3
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12.	Chapter 6, Sections 6.2.4f), 6.3.1.4f)
I. Accident Assessment	
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2.	Chapter 7, Section 7.1
3.a., b.	Chapter 7, Section 7.1, 7.1.1.3
4.	Chapter 7, Section 7.1, 7.1.1, 7.1.1.3
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6.	Chapter 7, Sections 7.1.1.3, 7.1.1.4
7.	Chapter 7, Section 7.1, 7.1.1
8.	Chapter 7, Section 7.1, 7.1.1.3
9.	Chapter 7, Section 7.1.1.3 Appendix D, Enclosures 4, 5, 6
10.	Chapter 7, Section 7.1.1, Table 7.3, 7.1.1.3
J. Protective Response	
1.a., b., c., d.	Chapter 7, Section 7.3, 7.3.1, 7.3.2 Appendix C, Position Specific Instruction for: • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • Radiation Protection Coordinator
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APPLICABLE NUREG-0654 SECTION	**SSES EMERGENCY PLAN**
3.	Chapter 7, Section 7.3.1.4
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5.	Chapter 7, Sections 7.3.1, 7.3.1.3, 7.3.1.4 Appendix C, Position Specific Instructions for: • Emergency Director • Security Controller
6.a.	Chapter 7, Section 7.3.1
6.b.	Chapter 7, Section 7.3.1
6.c.	Chapter 6, Section 6.2.1k, 6.2.4l Chapter 7, Table 7.2
7.	Chapter 6, Sections, 6.0, 6.2.1, 6.3.1.1 Chapter 7, Tables 7.1, 7.3 Appendix C, Position Specific Instructions for: • Emergency Director • Radiation Protection Coordinator • Control Room Emergency Plan Communicator • TSC Emergency Plan Communicator • Recovery Manager • Dose Assessment Supervisor • Radiological Liaison • EOF Communicator
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10.a.	Appendix C, Position Specific Instructions for: • HP Tech I (OSCAR) • Field Team Director • Monitoring Team • Environmental Sampling Team Appendix G Appendix H
10.b.	Appendix G Appendix I
10.c.	Chapter 7, Section 7.3.2 Chapter 8, Section 8.5.4
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1.a., b., c., d., e., f., g.	Chapter 7, Section 7.4.3, Table 7.2 Appendix C, Position Specific Instructions for: • Security Coordinator • Radiation Protection Coordinator • HP Specialist
2.	Chapter 6, Section 6.2.11, 6.2.1k, 6.2.4l Chapter 7, Section 7.2, Table 7.2 Appendix C, Position Specific Instructions for: • Radiation Protection Coordinator
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3.b.	Appendix C, Position Specific Instructions for: • Health Physics Specialist • Radiation Protection Coordinator • Field Team Director • Monitoring Team • Environmental Sampling Team
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6.a., b., c.	Chapter 7, Section 7.3.1, 7.4.2
7.	Chapter 7, Section 7.3.1.4, 7.4.2
L. Medical and Public Health Support	
1.	Appendix A
2.	Table 6.1
4.	Chapter 7, Section 7.4.3 Appendix A Appendix C, Position Specific Instructions for: • Security Coordinator

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M. Recovery and Reentry Planning and Postaccident Operations	
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2.	Chapter 6, Section 6.5, Figure 6.6 Appendix C, Position Specific Instructions for: • Emergency Director • Recovery Manager
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4.	Section 6.2.4, 6.3.1.4 Appendix C, Position Specific Instructions for: • Radiation Protection Coordinator • Dose Assessment Supervisor
N. Exercises and Drills	
1.a., b.	Chapter 9, Section 9.1.2
2.a., b., c., d., e.	Chapter 9, Section 9.1.2
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5.	Chapter 9, Section 9.1.2
O. Radiological Emergency Response Training	
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1.b.	Chapter 9, Sections 9.1.1, 9.1.2
2.	Chapter 9, Section 9.1.2, Table 9.1
3.	Chapter 9, Section 9.1
4.a., b., c., d., e., f.	Chapter 9, Table 9.1
4.g.	Chapter 9, Section 9.1.1
4.h., i., j.	Chapter 9, Table 9.1
5.	Chapter 9, Table 9.1

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P. Responsibility for the Planning Effort : Development, Periodic Review and Distribution of Emergency Plans	
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2.	Chapter 9, Section 9.1.3
3.	Chapter 9, Section 9.1.3
4.	Chapter 9, Section 9.2.1
5.	Chapter 9, Section 9.2.1
6.	Chapter 3, Appendix A
7.	Appendix C
8.	Table of Contents
9.	Chapter 9, Section 9.2
10.	Chapter 9, Section 9.3
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Appendix 2	Appendix B
Appendix 3	Section 6 – Phase I Section 6.2.3, 6.3.1.5, 6.4.2, 7.3.2