Clinch River Nuclear Site

Early Site Permit Application

Part 5B

Emergency Plan

(2-Mile EPZ)

Revision 1

Table of Contents

1.0 PURPOSE 1
2.0 SCOPE 3
2.1 APPENDICES 3
2.2 IMPLEMENTING PROCEDURES 3
2.3 STATE RADIOLOGICAL EMERGENCY PLAN 4
2.4 NATIONAL RESPONSE FRAMEWORK 5
3.0 PROCESS 6
3.1 ROLES AND RESPONSIBILITIES 6
3.1.1 Emergency Management Organization (Concept of Operations) 6
3.2 ONSITE ORGANIZATION 6
3.3 OFFSITE ORGANIZATION 7
3.3.1 CECC Director 8
3.3.2 Assistant CECC Director 8
3.3.3 Emergency Preparedness Staff Representative 8
3.3.4 State Communicator 8
3.3.5 TVA Operations Duty Specialist 9
3.3.6 Emergency Duty Officer 9
3.3.7 TVA State Liaison 9
3.3.8 CECC Plant Assessment Manager 9
3.3.9 Plant Assessment Coordinator 10
3.3.10 CECC Plant Assessment Team 10
3.3.11 Resource Support Coordinator 10
3.3.12 Engineering Representative 10
3.3.13 Public Information Manager 11
3.3.14 JIC Liaison 11
3.3.15 Public Information Writer 11
3.3.16 Radiological Assessment Manager 11
3.3.17 Radiological Assessment Coordinator 12
3.3.18 Environmental Assessor 12
3.3.19 Dose Assessor 12
3.3.20 Meteorologist 13
3.3.21 Technical Advisors 13
3.3.22 Boardwriter(s) 13

3.3.23 Management Services 13
3.3.24 Local Support 14
3.3.25 Federal Agency Support 14
3.3.26 Vendor Support 14
3.3.27 INPO 14
4.0 EMERGENCY CONDITIONS 16
4.1 CLASSIFICATION SYSTEM 16
4.1.1 NOUE 16
4.1.2 Alert 16
4.1.3 Site Area Emergency 17
4.1.4 General Emergency 17
4.2 IDENTIFICATION OF EMERGENCY CLASSES 18
5.0 EMERGENCY NOTIFICATION AND ACTIVATION OF PLAN 19
5.1 ONSITE 19
5.2 OFFSITE 19
5.2.1 NOUE 19
5.2.2 Alert 20
5.2.3 Site Area Emergency 21
5.2.4 General Emergency 21
6.0 COMMUNICATIONS 23
6.1 EP TELEPHONE SYSTEM 23
6.2 PLANT TELEPHONE SWITCHING EQUIPMENT 23
6.3 PLANT OR BUILDING LOUDSPEAKER PAGING 23
6.4 OFFSITE TELEPHONE COMMUNICATIONS 23
6.5 EP NOTIFICATION SYSTEM 24
6.6 TVA ENTERPRISE EMERGENCY NOTIFICATION SYSTEM 24
6.7 EP RADIO SYSTEM 24
6.8 OTHER RADIO COMMUNICATIONS 24
7.0 PUBLIC INFORMATION AND EDUCATION 25
7.1 PURPOSE 25
7.2 RESPONSIBILITIES 25
7.2.1 CECC Director 25
7.2.2 JIC Spokesperson 25
7.2.3 Director, Public Relations & Corporate Information 25

7.2.4 Operations Communications 25
7.3 PUBLIC INFORMATION FACILITIES 26
7.4 COORDINATION OF INFORMATION 26
7.5 PUBLIC EDUCATION 26
7.6 EMPLOYEE COMMUNICATIONS 26
7.7 RUMOR CONTROL/PUBLIC INFORMATION 26
7.8 TRAINING 26
8.0 EMERGENCY RESPONSE FACILITIES, EQUIPMENT, AND SUPPLIES 27
8.1 NUCLEAR SITE FACILITIES 27
8.1.1 Technical Support Center 27
8.1.2 Operations Support Center 27
8.1.3 Local Recovery Center 27
8.1.4 Site Decontamination Facilities 28
8.1.5 Equipment, Supplies, and Supplemental Data 28
8.2 CENTRAL EMERGENCY CONTROL CENTER 28
8.3 RADIOLOGICAL MONITORING CONTROL CENTER 29
8.4 JOINT INFORMATION CENTER 29
8.5 ALERT AND NOTIFICATION SYSTEM 29
9.0 ACCIDENT ASSESSMENT 31
9.1 ONSITE 31
9.2 OFFSITE 31
9.2.1 General Information 31
9.2.2 Sampling Team 33
9.2.3 Analyzing Environmental Samples 34
9.2.4 Meteorological Information 34
9.2.5 Dose Assessment 35
10.0 PROTECTIVE RESPONSE 36
10.1 ONSITE PROTECTIVE ACTIONS FOR RADIOLOGICAL EVENTS 36
10.2 ONSITE PROTECTIVE ACTIONS FOR HOSTILE ACTION EVENTS 37
10.3 OFFSITE 37
11.0 RADIOLOGICAL PROTECTION 39
12.0 MEDICAL SUPPORT 43
12.1 GENERAL INFORMATION 43

12.2 CLASSIFICATION AND HANDLING OF MEDICAL EMERGENCY PATIENTS 43
12.2.1 Noncontaminated-Nonirradiated 43
12.2.2 Irradiated-Noncontaminated 43
12.2.3 Contaminated 44
12.3 TRANSPORTATION OF INJURED PERSONNEL 44
12.4 INTERAGENCY ASSISTANCE FROM REAC/TS 44
13.0 TERMINATION AND RECOVERY 45
13.1 TERMINATION 45
13.2 RECOVERY ORGANIZATION 47
13.2.1 Chief Nuclear Officer 47
13.2.2 Senior Vice President Operations 47
13.2.3 Site Vice President 47
13.2.4 Vice President, Operations Support 47
13.2.5 CECC Public Information Manager 48
13.2.6 Vice President, Nuclear Licensing 48
13.2.7 Vice President, Engineering & Support 48
13.2.8 Vice President, Nuclear Oversight 48
13.2.9 Other TVA Resources 48
13.3 ONSITE RECOVERY 48
13.4 LOCAL RECOVERY CENTER 49
13.5 OFFSITE RECOVERY 49
14.0 DRILLS AND EXERCISES 50
14.1 DRILLS 50
14.1.1 Medical Emergency Drills 50
14.1.2 Radiological Monitoring Drills 50
14.1.3 Rad Protection Drills 50
14.1.4 Radio Chemistry Drills 50
14.1.5 Radiological Dose Assessment 50
14.1.6 Fire Drills 50
14.1.7 Communications Drills 51
14.2 EXERCISES 51
14.3 SCENARIOS 51
14.4 CRITIQUES 52

15.0 TRAINING 53
15.1 ONSITE 53
15.2 OFFSITE 53
15.3 PROFESSIONAL DEVELOPMENT TRAINING 53
16.0 PLAN MAINTENANCE 54
16.1 NP-REP 54
16.2 EPIPs 55
16.2.1 Document Identification 55
16.2.2 Periodic Review 57
16.2.3 EPIP Changes 57
16.2.4 Distribution 59
16.3 DOCUMENT RELATIONSHIPS 59
16.4 AUDITS 59
16.5 AGREEMENT LETTERS 60
17.0 DEFINITIONS AND ACRONYMS 61

Attachment 1 Justification for the Central Emergency Control Center 66

Appendix A Emergency Plan (2-Mile EPZ)

SUPPLEMENTAL INFORMATION

Evacuation Time Estimate Report

1.0 PURPOSE

The purpose of Part 5B is to provide sufficient information to ensure the compatibility of the proposed emergency plans (for both onsite areas and the plume exposure and ingestion exposure pathway emergency planning zones) with facility design features, site layout, and site location. Part 5B, in conjunction with the Evacuation Time Estimate Report, addresses considerations such as access routes, population distributions, land use, and local jurisdictional boundaries. In an effort to maintain consistency throughout the fleet, the content of Part 5B is based on the Tennessee Valley Authority's (TVA) "Nuclear Power Radiological Emergency Plan (NP-REP), Generic Part," which has been approved by the U.S. Nuclear Regulatory Commission (NRC) for use at all of the TVA operating nuclear facilities. Site-specific information is included in Appendix A to this Plan to address emergency planning for the Clinch River Nuclear (CRN) Site. This Plan addresses pertinent requirements and associated guidance contained in NUREG-0654, Revision 1, Supplement 2, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants – "Criteria for Planning in an Early Site Permit Application" (NUREG-0654 Supplement 2), to provide major features of the Emergency Plan. Information that was not available to TVA during the development of the CRN Site Early Site Permit Application (ESPA) will be addressed in the Combined License Application (COLA). Information to be addressed at COLA includes analysis normally found in a Design Certification Application and not currently available such as specific accident development details, staffing levels, required safety-related equipment.

In accordance with 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," Part 5B addresses the emergency planning requirements of Appendix E to 10 CFR Part 50, Section III, the "Final Safety Analysis Report; Site Safety Analysis Report." Part 50 Appendix E states, "The final safety analysis report or the site safety analysis report for an early site permit that includes major features of emergency plans under 10 CFR 52.17(b)(2)(i) of this chapter shall contain the plans for coping with emergencies." In addition, these regulations require that the application must contain "the means which the standards of § 50.47(b) will be met."

In the development of this Plan, TVA has considered the applicable guidance provided in the following documents with consideration given to the proposed exemptions contained in Part 6 of the ESPA:

- NUREG-0654, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (NUREG-0654).

- NUREG-0654, Revision 1, Supplement 2.

- NUREG-0654, Revision 1, Supplement 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants – "Guidance for Protective Action Strategies" (NUREG-0654).

- Regulatory Guide 1.101, Revision 3, "Emergency Planning and Preparedness for Nuclear Power Reactors" (RG 1.101).

- Section 13.3 of Regulatory Guide 1.70, “Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)” (RG 1.70).

- Section 13.3 of NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” (NUREG-0800).

As specified in NUREG-0654 and RG 1.101, this Plan provides for the following:

- Adequate measures are taken to protect employees and the public.

- Individuals having responsibilities during an emergency are properly trained.

- Procedures exist to provide the capability to cope with a spectrum of emergencies ranging from those of little consequence to major core melt.

- Equipment is available to detect, assess, and mitigate the consequences of such occurrences.

- Emergency action levels and procedures are established to assist in making decisions.

This Plan has been developed to respond to potential radiological emergencies at the CRN Site as they may apply to small modular reactors (SMRs). As discussed in Site Safety Analysis Report (SSAR) Section 13.3 of this EPSA, the SMR technologies under consideration do not have postulated design basis accidents that would result in dose consequences that are large enough to require offsite emergency planning, the overall scope of this plan delineates the actions necessary to safeguard onsite personnel (within the site boundary) and minimize damage to property. As discussed in Part 3 of this ESPA, for postulated beyond design basis accidents, analysis has concluded that, because of the slow progression rate, sufficient time is available to initiate appropriate mitigating actions to protect the health and safety of the public beyond the Site Boundary.

The NRC requires a level of emergency preparedness commensurate with the potential consequences to public health, safety, common defense, and security at the CRN Site. This Plan considers the proposed exemptions contained in Part 6 of the ESPA. Implementation of this Plan is not dependent on the comprehensive emergency management plan (CEMP) nor would TVA impose a requirement on offsite agencies to implement this Plan.

The CRN Site ESPA (Part 5B, Emergency Plan) consists of this Generic Part and the site specific Appendix A. Appendix A is complementary with the State plan referenced in Appendix A, Attachment 1.

2.0 SCOPE

This Plan provides information regarding emergency preparedness and response planning for the CRN Site and addresses organizational responsibilities, capabilities, actions, and guidelines for TVA during a radiological emergency. It also describes the centralized emergency management concept which was approved by the NRC Commissioners via COMJA-80-37 (January 21, 1981). Additional guidance regarding the centralized emergency management concept can also be found in NRC SECY-96-170 (August 5, 1996) and NRC SECY-10-0078 (June 16, 2010).

2.1 APPENDICES

Additional Radiological Emergency Plan information specific to the CRN Site is included as the CRN Site ESPA (Part 5B, Emergency Plan / Appendix A); referred to in the remainder of this document as “Appendix A.”

Appendix A details facility features, capabilities, equipment, and responsibilities. The Generic Part together with Appendix A, describes the methods TVA will use to:

1. Detect an emergency condition.

2. Evaluate the severity of the problems.

3. Notify federal, State, and local agencies of the condition.

4. Activate emergency organizations.

5. Evaluate the possible offsite consequences.

6. Recommend protective actions for the public.

7. Mitigate the consequences of the emergency.

Since TVA’s authority is limited to TVA-owned and controlled property, the State of Tennessee (State) and local agencies are responsible for ordering and implementing actions offsite to protect the health and safety of the public. Appendix A, Attachment 1 references the State Plan which supplements this Plan.

2.2 IMPLEMENTING PROCEDURES

TVA develops specific procedures to ensure that the Plan is implemented as designed. These implementing procedures are designed to ensure that emergencies are properly evaluated, rapid notifications made, and assessment and protective actions performed. These procedures are compiled in the Emergency Plan Implementing Procedures (EPIPs). Site specific procedures for abnormal and emergency operation and control exist but are not included in the EPIPs. These plant operating procedures are designed to ensure the implementation of the EPIPs.

2.3 STATE RADIOLOGICAL EMERGENCY PLAN

The State Radiological Emergency Plan is referenced in Appendix A, Attachment 1. This Plan provides for the coordinated response of the State and affected local governments as well as the States and local governments within the CRN Site ingestion exposure pathway Emergency Planning Zone (EPZ) and defines roles and responsibilities.

The responsibilities of these major organizations are summarized in Table 2-1.

Table 2-1

PRINCIPAL ORGANIZATIONAL RESPONSIBILITIES

	Local	State	TVA
Command and Control	X	X	X
Warning	X	X	X
Notification Communications	X	X	X
Public Information	X	X	X
Emergency Assessment	--	X	X
Public Health and Sanitation	X	X	--
Social Services	X	--	--
Fire and Rescue	X	--	X
Traffic Control	X	--	--
Emergency Medical Services	X	X	X
Law Enforcement	X	X	--
Transportation	X	--	--
Protective Response	X	X	--
Radiological Exposure Control	X	X	X

2.4 NATIONAL RESPONSE FRAMEWORK

The National Response Framework (NRF) Nuclear/ Radiological Incident Annex provides for timely, coordinated response by federal agencies to a fixed nuclear power plant facility incident. The NRF is activated by either the affected State notifying the Department of Homeland Security (DHS), or the utility notifying the NRC of a radiological emergency at a nuclear plant site. The NRF is not included as part of the TVA Radiological Emergency Plan. Should additional radiological monitoring support be required, the appropriate State agency will make the request through DHS. The persons authorized to request this assistance, the specific resources expected, and resources available to support the federal response are provided in the respective State plans.

The NRF may be used by federal agencies in radiological emergencies. The NRF primarily concerns offsite federal response in support of State and local governments with jurisdiction for the emergency. The NRF provides the federal government's concept of operations for responding to radiological emergencies, outlines federal policies and planning assumptions, and specifies authorities and responsibilities of each federal agency that may have a significant role in such emergencies. The Central Emergency Control Center (CECC) Director is the TVA representative authorized to request federal assistance. Such a request from TVA will be made to the NRC.

TVA will utilize the CECC in Chattanooga Tennessee as the Emergency Operations Facility (EOF) for the Clinch River Nuclear Site. The CECC serves as the EOF for the other TVA nuclear plants (Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN)). This multi-site EOF was previously approved for use by the NRC in COMJA-80-37. Attachment 1 of this Plan provides additional description of and justification for the location of the CECC.

Because of the close proximity of the U.S. Department of Energy (DOE) Oak Ridge Reservation to the CRN Site, DOE response, should assistance be requested, is expected within 1 to 2 hours.

Additional information about the NRF and available support is provided in NRC RIS 2005-13, “NRC Incident Response and the National Response Plan” (RIS 2005-13), NUREG-0728, “Emergency Preparedness and Incident Response Programs” (NUREG-0728) or the FEMA website (www.fema.gov) as well as in the Agency Emergency Response Plan (TVA-SPP-35.01).

3.0 PROCESS

3.1 ROLES AND RESPONSIBILITIES

The development, implementation, and maintenance of the NP-REP is the responsibility of the TVA Nuclear organization. The General Manager, Support Services has delegated the authority for overall program control of the NP-REP to the Director, Emergency Preparedness as described below. Appendix A provides detailed staffing and organizational roles and responsibilities for the CRN Site minimum required Onsite Emergency Management Organization positions.

3.1.1 Emergency Management Organization (Concept of Operations)

The CRN Site Emergency Management Organization is divided into two categories; the Onsite Organization and the Offsite Emergency Organization. A block diagram of the Onsite Organization is presented in Appendix A and the Offsite Emergency Organization is presented in Figure 3-1. Emergency Management Organization personnel are required to participate in the Fitness for Duty Program.

The Onsite Organization is comprised of the Site Emergency Director (SED) and technical staff located in the Technical Support Center (TSC), a Control Room staff of Operations personnel, and additional support personnel located in the Operations Support Center (OSC). The Onsite Organization is responsible for the onsite response to an emergency condition. Onsite activities are directed by the SED to include such functions as Control Room operations, technical assessment, emergency mitigation analysis, onsite radiation surveys, and dose tracking for site personnel.

The Offsite Organization is designated as the CECC staff. The CECC staff is comprised of a CECC Director, a supporting group of technical assistants, and representatives of other TVA organizations. The CECC Director and supporting technical assistants report to the CECC during an emergency as required. Other TVA organizations will send representatives to the CECC as requested by the CECC Director.

The CECC is responsible for directing and coordinating the overall TVA response to an emergency condition. Functions such as offsite radiological monitoring and dose assessment, public information, State and local government coordination, and additional plant assessment are handled by the CECC relieving the Onsite Organization of the many peripheral duties necessary for the successful emergency response.

3.2 ONSITE ORGANIZATION

Under normal conditions the Site Vice President is in charge of activities at the site and the Plant Manager is responsible for the safe efficient operation of the plant. The person primarily responsible for mitigation of an emergency is the SED. Upon declaration of an emergency the Shift Manager (SM) on duty initially fills the position of SED and directs emergency response from the Control Room. This position is transferred to the TSC when that facility is activated. Once the TSC is activated, the SED and the TSC can provide technical support to the Control Room as part of their overall response to the emergency.

The CRN Site is staffed on a continual 24-hour basis. The minimum staffing requirements for plant operations are established in the plant Technical Specifications. The staff responsibilities are as outlined in the SSAR, and are unchanged during an emergency. The on-shift composition listed in Appendix A may be less than the minimum requirements for a period of time in order to accommodate unexpected absences of personnel provided action is taken to restore the composition within established time requirements.

Under emergency conditions, the normal plant staff is supplemented as shown in Appendix A. Appendix A also provides descriptions of the responsibilities of the personnel who augment the normal plant operating organization. Support personnel will be notified to report as required by the situation. Staffing time for the augmenting forces is indicated in Appendix A. This time could vary slightly, depending upon the time of day, weather conditions, immediate availability of personnel, and radiological conditions.

The Onsite Organization augments the shift operations crew. If members of the Onsite Organization are not present when an emergency occurs, the SM on-duty, or a designated Unit Supervisor when acting as the SM, is designated the SED and acts as such until relieved by the SED assigned to the TSC.

Upon detection of a known or suspected emergency, the SM on-duty refers to a CRN-EPIP to determine the classification of the emergency. After determining the classification of the incident, the SM assumes the responsibilities of SED and initiates the appropriate procedure referenced by the CRN-EPIP. Emergency communications / notifications with State, local and federal agencies, along with staffing instructions for the emergency response facilities are specified in CRN-EPIPs.

CRN-EPIPs designate personnel who staff the Emergency Notification System (ENS) and Health Physics Network (HPN) (NRC FTS 2000 System) Communication Systems. CRN-EPIPs also designate the interface with the NRC during TSC operation.

3.3 OFFSITE ORGANIZATION

Figure 3-1 provides a diagram of the Offsite Organization, including those positions that must respond within a prescribed time of an Alert or higher (see Section 4.0, Emergency Conditions) emergency declaration at the CRN Site. The prescribed response times for the Offsite Organization will be addressed in the COLA.

Activation for the CECC is accomplished within a prescribed time following declaration of an Alert or higher (see Section 4.0, Emergency Conditions) emergency classification at the CRN Site, depending upon time of day, weather conditions, or immediate availability of personnel. The prescribed activation time for the CECC for an event at the CRN Site will be addressed in the COLA.

3.3.1 CECC Director

The CECC Director has overall responsibility and authority for ensuring adequate TVA response to affected State/local governments in protecting the health and safety of the public. The CECC Director:

- Directs and coordinates TVA emergency response.
- Makes Protective Action Recommendations (PARs) to the State.
- Reviews and approves TVA press releases (excluding initial report of event).
- Reviews adequacy of information to news media/public.
- Acts as the primary point of contact for official TVA positions or recommendations.
- Ensures that key individuals are notified of the condition and severity of the events.
- Ensures information relative to the plant status, radiological impacts, and protective measures is available to emergency responders.
- Ensures NRC, U.S. Department of Energy (DOE), INPO, insurance underwriters, and the appropriate federal, State, and local agencies have been notified.
- Ensures points of contact for key types of information from the CECC are provided.
- Ensures 24-hour/day operations are established if required.

3.3.2 Assistant CECC Director

An optional position that may be filled at the CECC Director's discretion to assist in carrying out duties. This position will be filled by a person qualified as CECC Director.

3.3.3 Emergency Preparedness Staff Representative

The Emergency Preparedness (EP) Staff Representative:

- Advises the CECC Director regarding the NP-REP.
- Confirms the CECC is set up and operating properly.
- Assists the CECC Director in operating the CECC by evaluating, compiling, documenting, and posting data concerning the emergency situation.

3.3.4 State Communicator

The State Communicator:

- Acts as the TVA primary communicator to the State.

- Clarifies information discrepancies and ensures pertinent information related to plant status, onsite response, and TVA dose assessment is provided to the State.

- Further assists in providing TVA resource assistance, provides the State with technical advice as necessary, and assists the State Liaison (a State government representative) in briefings and coordinating responses to State inquiries.

3.3.5 TVA Operations Duty Specialist

The position of Operations Duty Specialist (ODS) is staffed seven days a week, 24 hours a day. After being notified of an emergency from the CRN Site, the ODS is responsible for making initial notification to the TVA REP Emergency Management Organization.

3.3.6 Emergency Duty Officer

The Emergency Duty Officer (EDO) is responsible for establishing initial operation of the CECC in the event the NP-REP is activated at the Alert or higher (see Section 4.0, Emergency Conditions) emergency classification. The EDO is responsible for ensuring that appropriate initial notifications of TVA and offsite emergency organizations have been made for each emergency classification.

3.3.7 TVA State Liaison

The TVA State Liaison acts as the CECC representative upon dispatch to the State Emergency Operations Center (SEOC) to interpret technical aspects of the emergency condition. He informs the CECC on State problems, requests, and actions.

3.3.8 CECC Plant Assessment Manager

The CECC Plant Assessment Manager:

- Maintains contact with the SED or Technical Assessment Manager and ensures that necessary support is provided.

- Requests assistance from other TVA organizations or Nuclear Steam Supply System (NSSS) vendors as needed.

- Provides technical support for planning and reentry/recovery operations.

- Ensures the CECC Director is briefed on information pertaining to plant status and any protective actions indicated for the public based upon an assessment of plant status by the CECC and TSC assessment teams.

- Ensures that periodic status reports are received from the site and are provided to the CECC Director and other TVA support organizations.

- Makes recommendations to the SED on actions to be considered by the site to mitigate the problem based upon the assessment of plant status by the CECC Plant Assessment Team.

The CECC Plant Assessment Manager is assisted by a Plant Assessment Team and additional support personnel who develop ongoing assessments of facility status and provide additional resource support.

3.3.9 Plant Assessment Coordinator

The Plant Assessment Coordinator coordinates the plant status assessment activities in the Plant Assessment Area and directs overall plant assessment function and reports results to the Plant Assessment Manager. The plant information needed by the coordinator and plant assessment team is provided by a continuous telephone communications hookup with plant emergency staff.

3.3.10 CECC Plant Assessment Team

The CECC Plant Assessment Team:

- Coordinates the decision to activate the Joint Information Center (JIC) with the CECC Director, the Director, Public Relations & Corporate Information, and SEOC if offsite officials elect to activate the SEOC.

- Provides a periodic evaluation of plant status information for input back to the TSC and the CECC Plant Assessment Manager. Members of the CECC Plant Assessment Team draw upon their knowledge of plant information, procedures, core damage assessment, and industry analysis to evaluate the assessments provided by the site in terms of current and long-range plant conditions. Results of evaluations and independent assessments provide the data needed for developing any necessary onsite protective actions.

- Serves as an engineering/operations/core damage assessment consultant for the plant and replies to plant inquiries based on the available information.

- Ensures that appropriate safety parameters are selected for trending and the CECC trend boards are maintained.

- Maintains a detailed log of the sequence of events during the emergency. Assists the CECC with other site-related communication needs, as necessary.

3.3.11 Resource Support Coordinator

The Resource Support Coordinator maintains communications with other TVA Nuclear technical personnel to coordinate support as necessary; coordinates support from other TVA organizations such as legal, medical, finance, and procurement; and coordinates requests for support from other organizations outside TVA such as equipment vendors and INPO. Coordinates arrangements for special equipment and supplies.

3.3.12 Engineering Representative

The Engineering Representative provides a point of contact in the CECC for onsite and offsite engineering and provides engineering support as needed.

3.3.13 Public Information Manager

The Public Information Manager:

- Coordinates the decision to activate the Joint Information Center (JIC) with the CECC Director; the Director, Public Relations & Corporate Information; and SEOC if offsite officials elect to activate the SEOC.
- Ensures the JIC Spokesperson and the JIC Information Staff are provided information to inform the public and news media in response to an emergency.
- Informs the CECC Director of TVA public information activities in response to an emergency.
- Coordinates news release drafts with the State and federal agencies participating at the JIC and secures approval of the CECC Director prior to making a release to the media.
- Coordinates the decision to establish the JIC with the SEOC.
- Directs the activities of support personnel who develop public information and maintain information flow into and from the JIC.

3.3.14 JIC Liaison

The JIC Liaison contacts responding agencies and transmits information for coordination, and establishes and maintains an information flow from the JIC or Site Communications to the CECC.

3.3.15 Public Information Writer

The Public Information Writer gathers information from the CECC personnel and Technical Advisor, prepares written statements based on that information, and develops information releases to be approved by the CECC Director for release to TVA employees.

3.3.16 Radiological Assessment Manager

The Radiological Assessment Manager (RAM):

- Ensures that the CECC Director is briefed on matters concerning radiological conditions.
- Provides consultation, technical assistance, and obtains additional services as may be required for plant Rad Protection and offsite environmental radiological surveys.
- Ensures that radiological monitoring is conducted in the environment for areas potentially affected by the emergency and evaluates the radiological information to determine the extent of actual or probable hazard to the public or environment.
- Responsible for radiation dose management, including emergency dose authorizations, for personnel under their direction and control.

- Provides technical support to the CECC Director for formulating protective actions for the public based on radiological conditions.

The RAM directs the activities of support personnel who coordinate collection and evaluation of radiological assessment data in the environs surrounding the facility.

3.3.17 Radiological Assessment Coordinator

The Radiological Assessment Coordinator (RAC):

- Coordinates dose assessment, environs, and meteorological assessment activities in the Radiological Assessment Area (RAA) located in the CECC.

- Provides PARs based on dose assessments and field measurements to the RAM. Ensures that information is provided to the TSC on dose projections, recommended offsite protective activities, environs measurements, and meteorological conditions.

- Directs the overall RAA function and communicates assessment results to the RAM.

- Ensures that information is provided to the TSC on dose projections, environs measurements, and meteorological conditions.

- Coordinates requests for additional Rad Protection equipment and personnel.

3.3.18 Environmental Assessor

The Environmental Assessor:

- Coordinates requests for additional Rad Protection equipment and personnel.

- Performs monitoring and assessment activities for the TVA environs and coordinates the TVA field monitoring effort with the appropriate State agency regarding field monitoring activities.

- Coordinates the analysis of environs samples with the Western Area Radiological Laboratory (WARL).

- Provides technical support for planning and reentry/recovery operations.

- Coordinates with Dose Assessor regarding the results of the environmental assessments.

- Provides environmental monitoring results to the RAC or RAM for formulation of PARs to the CECC Director.

3.3.19 Dose Assessor

The Dose Assessor:

- Initiates and performs dose assessment activities during the radiological emergency and during the recovery and reentry phase.
- Consults with appropriate state agencies to resolve significant difference in assessments.
- Coordinates with the Environmental Assessor regarding the predicted position, exposure levels, concentrations, and duration of radiological effluents
- Provides dose assessment results to the RAC or RAM for formulation of protective action recommendations to the CECC Director.

3.3.20 Meteorologist

The Meteorologist:

- Coordinates the analysis of environs samples with the Western Area Radiological Laboratory (WARL).
- Evaluating meteorological data and developing forecasts which may be used for dose assessment and other emergency preparedness activities.
- Reviews adequacy of observed data and replaces missing or invalid observations.
- Makes forecasts of dispersion conditions that affect radiological effluents.
- Provides dispersion knowledge to dose assessment staff.
- Prepares other meteorological forecasts needed for emergency preparedness activities.

3.3.21 Technical Advisors

Technical Advisors provide technical assistance and explanation to the State Communicator, Public Information Staff, and Public Information Manager to ensure accurate information is released to the public and State agencies.

3.3.22 Boardwriter(s)

Boardwriters maintain the CECC Status Boards and EPZ maps with current information.

3.3.23 Management Services

Management Services (MS) makes arrangements for and provides for clerical support, food and water, sanitary facilities, TVA transportation services, lodging, specialized equipment and supplies, communications, drawings, and controlled documents. MS is also authorized to issue checks for payment for emergency services to outside firms.

3.3.24 Local Support

TVA maintains agreements with police departments, fire departments, ambulance services, and hospitals near the CRN Site to provide appropriate services as requested.

3.3.25 Federal Agency Support

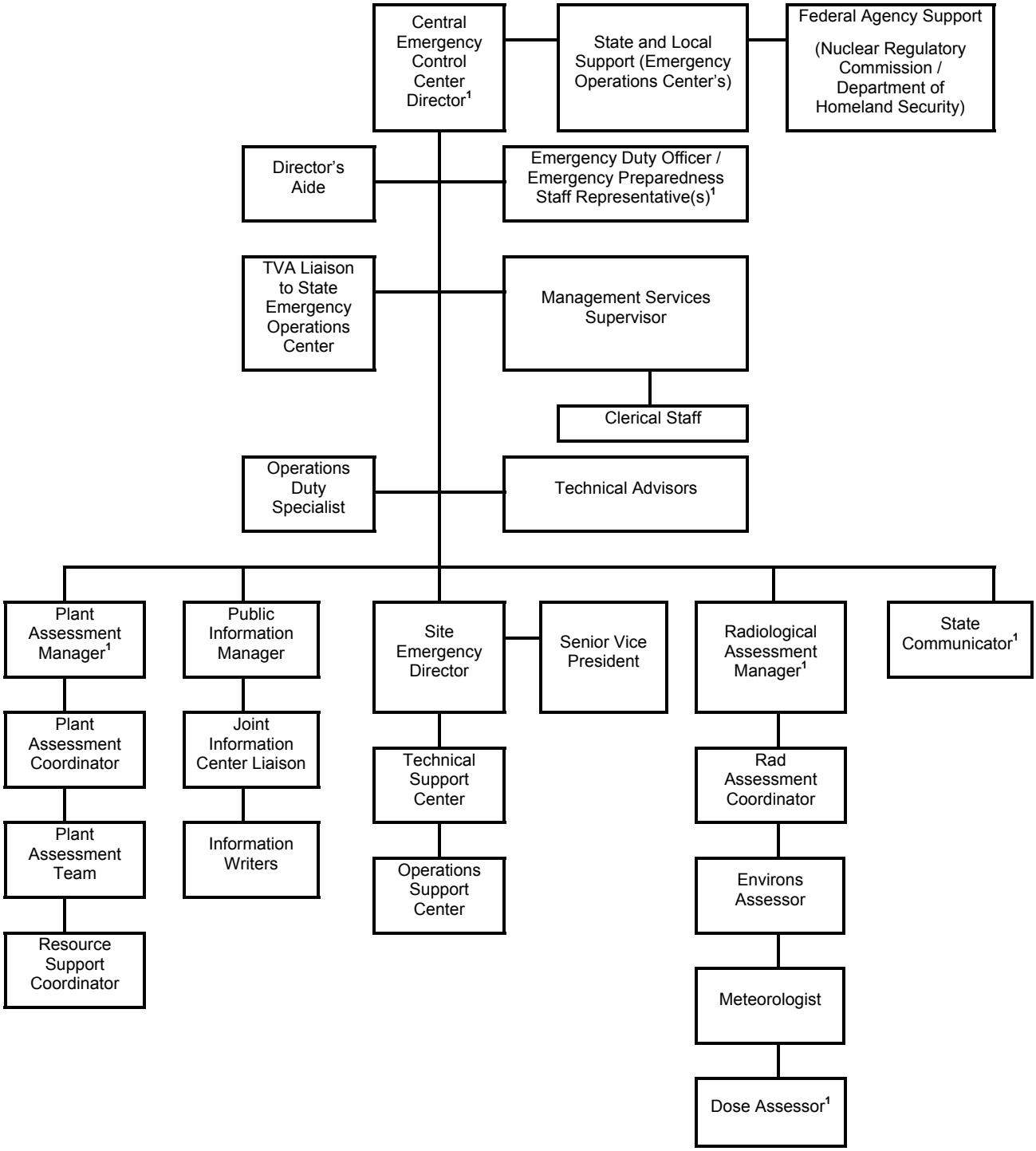
TVA maintains an agreement with DOE Radiation Emergency Assistance Center/Training Site (REAC/TS), Oak Ridge, Tennessee. Other federal support would be requested through the NRF.

3.3.26 Vendor Support

TVA may obtain technical support from the NSSS vendor during emergency situations. TVA may procure other vendor support as needed.

3.3.27 INPO

TVA maintains an agreement with INPO, a consortium of nuclear utilities and other nuclear industries, to obtain any necessary support available from the industry during an emergency.



[1] These Offsite Emergency Organization positions will be staffed within a prescribed time following an Alert or higher emergency declaration at the CRN Site. The prescribed time will be addressed in the CRN Site COLA.

Figure 3-1 Offsite Emergency Organization

4.0 EMERGENCY CONDITIONS

4.1 CLASSIFICATION SYSTEM

TVA utilizes the following emergency classifications:

- Notification of Unusual Event (NOUE)
- Alert
- Site Area Emergency
- General Emergency

This system of classification is consistent with the systems used by State and local emergency organizations. The emergency classifications are graded according to severity and immediate actions are taken to cope with the situation. Escalation to a higher class, or termination, occurs during the course of an emergency if warranted by conditions. Examples of plant conditions and their recommended emergency classes are given in the CRN-EPIPs. These procedures also specify the initial prompt notifications, information, and recommendations to be provided to State and local emergency organizations. Examples of Initiating Conditions (ICs) and specific instrument readings, if appropriate for the various classifications, are provided in the EPIPs.

4.1.1 NOUE

This classification provides early and prompt notification of events that are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

The purposes of the NOUE are: (1) to ensure that the first steps in activating emergency organizations have been carried out; and (2) to provide current information on the unusual event.

TVA maintains the NOUE classification until closeout or escalation to a higher class. TVA notifies the State authorities and the NRC. The State notifies the local authorities. Following closeout, TVA provides a briefing to State authorities. TVA provides a written summary of significant events to the State no later than the next working day.

4.1.2 Alert

An Alert classification is indicated when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of Hostile Action. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guides (PAG) exposure levels.

The purposes of the Alert classification are: (1) to ensure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring, if required; and (2) to provide offsite authorities current status information.

TVA maintains the Alert class until event termination or escalation to a higher class. TVA notifies the State authorities and the NRC. The State notifies the local authorities. Following closeout, TVA provides a briefing to State authorities. TVA provides a written summary of significant events to the State no later than the next working day.

4.1.3 Site Area Emergency

A Site Area Emergency is indicated when events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or Hostile Action that results in intentional damage or malicious acts: (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

The purposes of the Site Area Emergency classification are: (1) to ensure that emergency response centers are staffed; (2) to assure that monitoring teams are dispatched; (3) to assure that personnel required for evacuation of near-site areas are at duty stations if the situation becomes more serious; and (4) to provide current information for, and consultation with, offsite authorities and the public.

TVA maintains the Site Area Emergency classification until event termination or escalation to a higher class. TVA notifies the State authorities and the NRC. The State notifies the local authorities. Following closeout, TVA provides a briefing to State authorities. TVA provides a written summary of significant events to the State no later than the next working day.

4.1.4 General Emergency

A General Emergency is indicated when events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or Hostile Action that results in an actual loss of physical control of the facility. Due to the SMR design, releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

The purposes of the General Emergency classification are: (1) to initiate predetermined protective actions for the public; (2) to provide continuous assessment of information from the site and offsite; and (3) to initiate additional measures as indicated by releases or potential releases of radioactivity.

When a General Emergency is declared, TVA recommends that State and local organizations implement protective actions as specified in the EPIPs.

TVA maintains the General Emergency until event termination. TVA notifies the State authorities and the NRC. The State notifies local authorities unless the initial classification is General Emergency, in which case TVA initially notifies the local authorities. Following closeout, TVA provides a briefing to State authorities. TVA provides a written summary of significant events to the State no later than the next working day.

4.2 IDENTIFICATION OF EMERGENCY CLASSES

TVA uses a variety of methods to identify emergency situations and to categorize them. As indicated in the CRN-EPIPs, emergencies can be caused by natural disasters such as tornadoes or floods, hazards such as aircraft crashes, releases of toxic gases, or breaches of plant security, as well as by conditions involving plant systems directly.

Recognition of the emergency class is primarily a judgment matter for plant personnel. The ICs used for recognizing and declaring the emergency class are based on specific measurable values or observable conditions defined as Emergency Action Levels (EALs). These can be combinations of specific instrument readings (including their rates of change), annunciator warnings, time periods certain conditions exist, etc. The instrument readings and parameters required for determination of these EALs are detailed in the CRN-EPIPs. TVA uses these EALs as thresholds for determining the emergency classifications. The EALs are reviewed annually by the State.

TVA maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indication to plant operators that an emergency action level has been exceeded and to promptly declare the emergency condition upon identification of the appropriate EAL.

5.0 EMERGENCY NOTIFICATION AND ACTIVATION OF PLAN

Emergency measures are developed to aid in the mitigation of emergency conditions. Emergency measures begin with the declaration of an emergency class and activation of associated emergency organizations. These measures, which will include actions for assessment, correction, and protection, are described in general terms for each emergency class in the following parts of this section. Details of these emergency measures will be found in the appropriate sections of the CRN-EPIPs.

When the Plan is activated, TVA initiates certain predetermined actions. Notification is carried out as shown in Figure 5-1 to alert emergency staff personnel to handle the emergency situation.

5.1 ONSITE

Upon detection of a known or suspected emergency, the SM on-duty will utilize a CRN-EPIP to determine the classification of the emergency. After determining the classification of the emergency, the SED will initiate the appropriate procedures referenced by the CRN-EPIP. Each procedure referenced by the CRN-EPIP gives specific instructions on staffing the TSC and the OSC and for notifying appropriate State authorities, the ODS, and the NRC.

5.2 OFFSITE

Implementing procedures are provided to activate TVA and State emergency staffs. Essential emergency positions are covered on a 24-hour-a-day basis by duty personnel. Emergency response facilities are located to ensure rapid and effective response of personnel needed to assess and evaluate offsite conditions.

5.2.1 NOUE

Upon declaration of this classification, TVA initiates the following actions:

A. The Control Room notifies and relays the information to the State within 15 minutes of declaration of the event. TVA utilizes a dedicated “ring-down” phone to make this notification. TVA utilizes an available commercial telephone line as a back-up method in the event the dedicated circuit is unavailable.

B. The Control Room notifies the NRC immediately after notifying the State but not later than one hour after the emergency declaration is made.

C. The ODS in Chattanooga is notified of the event by the Control Room and records the details of the event in accordance with the appropriate EPIP.

D. The ODS notifies and relays the information to the EDO and CECC Director.

E. The EDO keeps the CECC Director and the Public Information Manager informed of the situation as necessary.

F. The Public Information Manager notifies the Site Communications Consultant, Director, Public Relations & Corporate Information, and the TVA News Bureau (Knoxville).

G. The SED augments plant on-shift personnel as necessary to initiate corrective or protective actions.

5.2.2 Alert

Upon declaration of this classification, TVA initiates the following actions:

A. Notifications outlined in Subsection 5.2.1 are performed.

B. The CECC is staffed.

C. Environmental sampling teams may be dispatched.

D. The TSC and the OSC are activated.

E. The situation is analyzed and any appropriate corrective or preventive actions are initiated.

F. Hourly, or more often as necessary, the State agencies are updated through the CECC on appropriate plant status and environmental conditions as follows:

1. Classification of emergency.

2. Type of actual or projected release (airborne, waterborne, or surface spill) and estimated duration/impact times.

3. Estimate of quantity of radioactive material released or being released and the height of release.

4. Chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines, and particulates.

5. Prevailing weather (wind velocity, direction, temperature, atmospheric stability data, and form of precipitation, if any).

6. Actual or projected doses at site boundary.

7. Projected dose rates and integrated dose at about 0.5, 1, and 2 miles.

8. Estimate of any surface spill radioactive contamination.

9. Emergency response actions underway.

10. Request for any needed onsite support by offsite organizations.

11. Prognosis for worsening or termination of event based on plant information.

G. The JIC may be activated.

H. Periodic media releases are provided.

I. The SED augments plant on-shift personnel, as necessary, to initiate corrective and protective actions.

5.2.3 Site Area Emergency

Upon declaration of this classification:

A. Each of the actions outlined in Subsection 5.2.2 are performed.

B. Personnel knowledgeable of plant systems are dispatched to the SEOC.

C. The CECC recommends appropriate protective actions for the public to State agencies.

D. The JIC is activated.

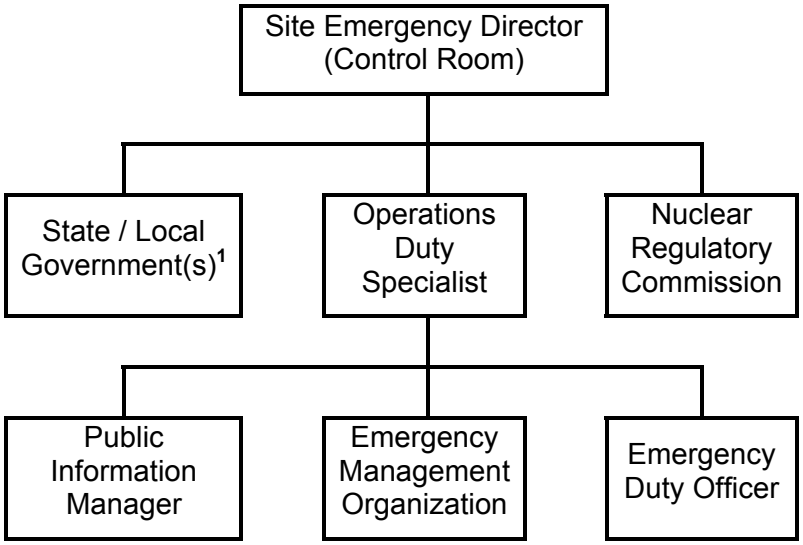
5.2.4 General Emergency

Upon declaration of this classification:

A. Each of the actions outlined in Subsection 5.2.3 are performed.

B. Appropriate PARs to the State are required upon declaration of General Emergency.

C. If this is the initial classification, the Control Room notifies the local government agencies within 15 minutes and provides the PARs.



[1] The Control Room also notifies the local government(s) if the initial classification is a General Emergency.

Figure 5-1 Chains of Notification

6.0 COMMUNICATIONS

The radiological emergency communications network consists of the EP telephone system, the EP notification system, and the EP radio system. These systems are designed to complement each other in the overall plan for REP communications.

The communications facilities described in the following sections are integrated with the requirements for communications to local and State response organizations. TVA conducts testing of these systems in accordance with established procedures.

6.1 EP TELEPHONE SYSTEM

The EP telephone system includes communications equipment installed at the CRN site and the CECC, a number of leased commercial circuits, and privately-owned circuits connecting the CRN Site to the required locations.

6.2 PLANT TELEPHONE SWITCHING EQUIPMENT

The telephone switching equipment installed at the CRN Site consists of one or more switching centers equipped with fully redundant common logic and redundant power sources. The majority of plant telecommunications services are served from this switching equipment.

6.3 PLANT OR BUILDING LOUDSPEAKER PAGING

This system(s) may be accessed from the plant telephone system and is used for normal plant operations (plant paging) and to instruct and notify personnel during an emergency.

6.4 OFFSITE TELEPHONE COMMUNICATIONS

The offsite communications network is used to communicate with federal, State, and other supporting agencies. Access to these agencies is provided through several redundant, diverse routes. This diversity provides offsite routing through more than one type of facility. These facilities include, but are not limited to, commercial facilities such as central office trunks, tie-lines and digital services, plus privately owned and maintained microwave and fiber-optic systems. The offsite telecommunications network is designed to facilitate traffic in the most fail-safe manner to the emergency response organizations.

Telecommunications services are provided between the following locations in a redundant, diverse manner:

- CECC to State Emergency Management Agencies.
- CECC to the CRN Site.
- State Emergency Management Agencies to County Emergency Management Agencies.

In addition to the above listed emergency organizations, the following emergency response facilities are also equipped with public telephone lines:

- JIC(s).
- Field Coordination Center(s).

ENS and HPN (NRC FTS 2000 System) telephones provide communications from the TSC, Control Room, and the CECC to the NRC Headquarters and regional offices. TVA performs testing of these telephones on a monthly basis.

6.5 EP NOTIFICATION SYSTEM

The EP notification system is an automated system which is used to notify key personnel during nuclear emergencies. The EP notification system has provisions to periodically monitor its own performance to detect and report equipment failures.

6.6 TVA ENTERPRISE EMERGENCY NOTIFICATION SYSTEM

The TVA Enterprise Emergency Notification System (TEENS) is a hosted Emergency Management Organization notification system that notifies Emergency Management Organization personnel by contacting devices such as assigned office, mobile, and home telephones, work e-mail, and assigned pagers.

6.7 EP RADIO SYSTEM

The EP radio system is a VHF mobile radio system which provides redundant radio coverage of the PEP EPZ. It provides radiological monitoring vehicles with mobile communications to other vehicles and to the following locations:

- Radiation Protection.
- TSC.
- Control Room.
- CECC in Chattanooga.

6.8 OTHER RADIO COMMUNICATIONS

There is an in-plant repeater system utilized by Nuclear Security Services which enables transmission without interruption to various areas of the plant. A separate radio located in the plant Central Alarm Station (CAS) is a direct link to the local law enforcement agency (LLEA) officials. The plant ambulance has a radio used for communication with the local hospitals and the plant. Portable two-way radios are available for additional site communications.

7.0 PUBLIC INFORMATION AND EDUCATION

7.1 PURPOSE

The purpose of the TVA emergency public information and education program is to ensure timely distribution of accurate information during an emergency in accordance with one or more applicable EPIPs. The program also provides education to the public located within the PEP EPZ on emergency plans. The program also provides for TVA to coordinate emergency information with non-TVA agencies that have a primary response role prior to its release to the public or news media. The program provides for a JIC to be established for use during an emergency. The purpose of the JIC is to provide a single location for TVA, local, State, and federal agencies to coordinate public information activities. On an annual, non-emergency basis, the program provides that TVA, in coordination with the State, disseminates information to the public located within the PEP EPZ regarding emergency notification methods and actions. In addition, TVA and the State conduct coordinated annual orientations to acquaint the local area news media with the emergency plans, radiological information, and points of contact for release of information in an emergency.

7.2 RESPONSIBILITIES

7.2.1 CECC Director

The CECC Director or delegate is responsible for approving written news statements after the CECC is activated.

7.2.2 JIC Spokesperson

The JIC Spokesperson is responsible for representing TVA during news briefings and coordinating information with other federal, State, and local spokespersons prior to the briefings.

7.2.3 Director, Public Relations & Corporate Information

Director, Public Relations & Corporate Information is responsible for directing emergency public information activities of the agency in accordance with approved procedures. This includes the responsibility for coordinating with the CECC Director and non-TVA agencies, who would participate in JIC activities, in determining when to activate or deactivate the JIC.

7.2.4 Operations Communications

Operations Communications is responsible for the development, implementation, and maintenance of nuclear public information organizations and activities for an emergency, as well as those nuclear public information programs conducted on an annual basis.

7.3 PUBLIC INFORMATION FACILITIES

Public Information personnel are present at three locations with sufficient staff available to maintain operations on a 24-hour basis: (1) Operations Communications directs the activities of the emergency public news media present at the site; (2) the CECC in the Chattanooga Office Complex where staff will develop news releases and coordinate the news releases with offsite agencies; and (3) the JIC where staff coordinates with the offsite agencies in presenting emergency news briefings and respond to public telephone inquiries.

7.4 COORDINATION OF INFORMATION

Prior to activation of the CECC, coordination of public information with non-TVA primary response agencies is handled through Operations Communications in accordance with emergency public information procedures. Upon activation and staffing of the CECC, the responsibility for coordination of public information with non-TVA agencies shifts to the CECC Information Staff. Upon activation and staffing of the JIC, the responsibility for coordination of public information shifts from the CECC to the JIC emergency response staff when and if offsite agencies are also operational at the JIC. The CECC Director continues to approve written news statements. Non-TVA primary response agencies are provided copies of written news statements until they are available to support coordination in the JIC.

7.5 PUBLIC EDUCATION

TVA coordinates development and distribution of public education materials and programs with the appropriate State agency. Distribution of public information on actions the permanent and transient populations should take in the event of an emergency occurs annually. Mailing lists for the public in the PEP EPZ are updated annually to assure thorough and accurate distribution of the emergency information.

7.6 EMPLOYEE COMMUNICATIONS

An information system that employees can access provides a method of informing TVA employees who do not have emergency response assignments about an emergency.

7.7 RUMOR CONTROL/PUBLIC INFORMATION

Teams in the JIC are responsible for emergency information. In the JIC, a trained media relations team responds to news media inquiries by telephone and media briefing and a trained information team responds to citizen telephone inquiries. Also in the JIC, a trained media monitoring team monitors news media coverage. TVA coordinates information activities with offsite agencies at the JIC.

7.8 TRAINING

TVA provides initial training and annual retraining to emergency public information staff to allow them to respond.

8.0 EMERGENCY RESPONSE FACILITIES, EQUIPMENT, AND SUPPLIES

8.1 NUCLEAR SITE FACILITIES

8.1.1 Technical Support Center

The CRN Site has a Technical Support Center (TSC) which is dedicated for use during an emergency. Once activated, the TSC is the focal point of onsite activity and is the primary source of communication from the site with offsite organizations during the event. The TSC has sufficient staff to provide management control of the site response to the event. Equipment is available to enable the TSC staff to communicate with onsite and offsite TVA emergency personnel. An area within the TSC is dedicated for NRC use which includes commercial telephones and the NRC FTS 2000 System telephones. Sufficient plant parameter information is available to the TSC to enable the TSC staff to assess the consequences of an event and assist the Control Room personnel in mitigating the emergency. Sufficient information is transmitted to the CECC to enable the CECC Director to make PARs to State authorities.

The TSC is activated during radiological emergencies in accordance with CRN-EPIPs. The degree of activation varies depending upon the emergency class. Additional information regarding the TSC is provided in Appendix A.

8.1.2 Operations Support Center

The CRN Site has an Operations Support Center (OSC) which is a pre-designated area for the assembly of personnel to support the Control Room Operations crew during an emergency. The OSC area(s) is under the control of the SED in the Control Room until the TSC is staffed and will provide damage assessment, maintenance and repair services, and necessary technical services. Communications are available with the TSC. The OSC also establishes and maintains appropriate communications with any teams that may enter the plant for assessment or repair. Respiratory protective devices, protective clothing, portable lighting, other protective equipment and tools are available in the OSC, as needed.

The OSC is activated during radiological emergencies in accordance with CRN-EPIPs. The degree of activation varies depending upon the emergency class. Additional information regarding the OSC is provided in Appendix A.

8.1.3 Local Recovery Center

The CRN Site has a Local Recovery Center (LRC) which is a pre-designated facility dedicated for use by offsite TVA and NRC personnel that may be assigned to the CRN Site for recovery operations. In addition, the LRC may be used by the NRC during the event as an area near the site for assessment and assistance and has the capability to communicate offsite. Personnel in the LRC have access to necessary drawings and documents. Meteorological information is available in the LRC. The LRC may serve as an alternate emergency response facility, as needed, and during an emergency, may be used as a staging location for personnel prior to dispatch to the CRN Site. Additional information regarding the LRC is provided in Appendix A.

8.1.4 Site Decontamination Facilities

The CRN Site has facilities for the decontamination of personnel including those with injuries. Information on these facilities is provided in Appendix A.

8.1.5 Equipment, Supplies, and Supplemental Data

The CRN Site has sufficient equipment and supplies for the operation of the site emergency response facilities. Additional seismic and hydrological information can be obtained by the CECC from other TVA nuclear plants or the TVA water quality organization. Reference Appendix A, Attachment 2 for additional information regarding emergency equipment and supplies.

8.2 CENTRAL EMERGENCY CONTROL CENTER

The purpose of the Central Emergency Control Center (CECC) and associated CECC staff is to provide the facilities and manpower for evaluating, coordinating, and directing the overall activities involved in coping with a radiological emergency. The specific response time for staffing the CECC will be determined as a result of evaluating the specific accident sequences and included in the COLA.

During an emergency, the CECC Director and staff will review the response to the emergency by TVA and the appropriate State agencies to ensure that an effective and cooperative effort is being made. The CECC Director is responsible for providing PARs to the appropriate State officials.

The CECC staff coordinates with other TVA emergency response facilities to ensure an effective TVA effort in response to an emergency situation. The CECC staff also provides an accurate description of the emergency situation for TVA management and public information. In addition, the CECC coordinates with offsite federal agencies, such as NRC and DOE, to ensure availability of additional outside resources to TVA.

The CECC is located in the northeast corner of the sixth floor of Lookout Place in the TVA Chattanooga Office Complex (COC) in Chattanooga, Tennessee. It is designed to house the CECC Director and staff during an emergency situation. Included in the CECC are areas for the Plant Systems Assessment, Radiological Assessment, and Public Information Staff. A floor plan for the CECC is provided in Figure 8-1. Access control to the CECC is provided by Security personnel.

The CECC is designed to serve as the central point for information collection, assessment, and transfer during an emergency. The CECC is provided with direct communication links with State emergency response centers, other TVA emergency response organizations, other TVA nuclear plant sites, the JIC, and offsite federal and State organizations.

The CECC is activated during radiological emergencies in accordance with CRN-EPIPs. The degree of activation varies depending upon the emergency classification.

Attachment 1 of this Plan provides additional description of and justification for the location of the CECC.

8.3 RADIOLOGICAL MONITORING CONTROL CENTER

The Radiological Monitoring Control Center (RMCC) is located in the Tennessee Emergency Management Agency East facility (TEMA East) in Knoxville, Tennessee, and is staffed by the TVA Field Coordinator and personnel from the State. These personnel cooperate in providing direction and control of the monitoring teams.

Monitoring teams have maps of the area and are directed to selected monitoring points or locations to collect data. This data is transmitted to the RMCC and CECC for analysis.

Facilities at the RMCC include radio and telephone communications, and necessary desks, tables, and chairs. Maps of the PEP EPZ and the ingestion exposure pathway EPZ are located at the RMCC.

8.4 JOINT INFORMATION CENTER

The CRN Site has a Joint Information Center (JIC) established near the site to assist the news media in providing press coverage during an emergency. The location, function, and capabilities of the JIC is addressed in the CRN Site COLA.

8.5 ALERT AND NOTIFICATION SYSTEM

Information regarding the CRN Site Alert and Notification System (ANS) is provided in Appendix A. Additional details describing the CRN Site ANS will be addressed in the CRN Site COLA.

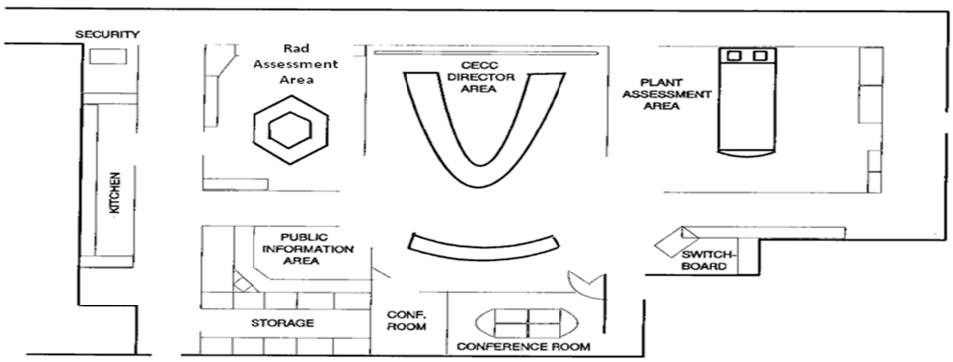


Figure 8-1 Central Emergency Control Center

9.0 ACCIDENT ASSESSMENT

9.1 ONSITE

In-plant accident assessment actions are carried out by the plant emergency staff in order to properly characterize and classify the emergency, determine the actual or potential radioactivity releases, and determine the effect on plant personnel and the public.

Assessment methodology consists of actions carried out through plant operating procedures as well as CRN-EPIPs. At the onset of an emergency, plant operating procedures (normal, abnormal, and emergency) assist the plant operator and SED in identifying the cause of the emergency, actions necessary to control the emergency, radioactivity release rate, if any, and in-plant radiation levels. The CRN-EPIPs assist the SED in: (1) identifying and reassessing emergency classification; (2) determining the need for offsite protective actions; (3) determining the need for plant area evacuation; (4) initiating activation of onsite and offsite emergency organizations; (5) directing the utilization of needed medical and/or decontamination facilities; and (6) implementing predetermined security and access control plans.

Each of the above-mentioned activities is described within the plant operating procedures or CRN-EPIPs, as applicable, for a given situation. The distinct breakdown of assessment actions into operating procedures and implementing procedures is necessary since some assessment actions are necessarily carried out prior to identification or classification of an emergency. The procedures to ensure that emergencies are properly evaluated, timely notifications are made, and assessment and protective actions are performed, are compiled in the CRN-EPIPs. These procedures are summarized by topic in Appendix A, Attachment 1.

Under severe emergency conditions, and as required by the plant emergency operating procedures, the onsite Emergency Management Organization is responsible for recognition of severe emergency conditions, transition to, and implementation of the Severe Accident Management Guidelines (SAMGs).

9.2 OFFSITE

9.2.1 General Information

TVA and State agencies are prepared to assess the consequences of potential or actual releases of radioactivity offsite. State and local agencies implement protective actions for the public. Written messages have been prepared which give the public instructions with regard to specific protective actions to be taken by occupants of affected areas. These messages are included in the State Plan referenced in Appendix A, Attachment 1.

Implementing procedures have been developed for the CECC to ensure that emergencies are properly evaluated, timely notifications are made, and assessment and protective actions are performed. Once an SMR technology is selected, the details on staffing levels, response times, and accident progression rates will be known and can then be reflected in a set of EPIPs similar to the following list:

- CECC-EPIP-1-CENTRAL EMERGENCY CONTROL CENTER OPERATIONS
- CECC-EPIP-2-OPERATIONS DUTY SPECIALIST PROCEDURE FOR NOTIFICATION OF UNUSUAL EVENT
- CECC-EPIP-3- OPERATIONS DUTY SPECIALIST PROCEDURE FOR ALERT, SITE AREA EMERGENCY, OR GENERAL EMERGENCY
- CECC-EPIP-4-NOT ACTIVE AT THIS TIME
- CECC-EPIP-5-NOT ACTIVE AT THIS TIME
- CECC-EPIP-6- CECC PLANT ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY
- CECC-EPIP-7- CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY
- CECC-EPIP-8- DOSE ASSESSMENT STAFF ACTIVITIES DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES
- CECC-EPIP-9-EMERGENCY ENVIRONMENTAL RADIOLOGICAL MONITORING PROCEDURES
- CECC-EPIP-10-NOT ACTIVE AT THIS TIME
- CECC-EPIP-11-SECURITY OF OFFSITE EMERGENCY RESPONSE FACILITIES
- CECC-EPIP-12-OPERATIONAL READINESS CHECK OF THE CECC AND THE FIELD COORDINATION CENTERS FOR SQN, BFN, WBN & CRN AND JOINT INFORMATION CENTERS (JIC)
- CECC-EPIP-13-NOT ACTIVE AT THIS TIME
- CECC-EPIP-14-NUCLEAR EMERGENCY PUBLIC INFORMATION ORGANIZATION AND OPERATIONS
- CECC-EPIP-15- EP FIELD SUPPORT STAFF RADIOLOGICAL EMERGENCY PROCEDURE
- CECC-EPIP-16- TERMINATION AND RECOVERY
- CECC-EPIP-17- CENTRAL EMERGENCY CONTROL CENTER METEOROLOGIST PROCEDURES
- CECC-EPIP-18-TRANSPORTATION AND STAFFING UNDER ABNORMAL CONDITIONS

- CECC-EPIP-19- POST EMERGENCY FUEL DAMAGE ASSESSMENT
- CECC-EPIP-20- NOT ACTIVE AT THIS TIME
- CECC-EPIP-21- EMERGENCY DUTY OFFICER PROCEDURE FOR NOTIFICATION OF UNUSUAL EVENT, ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY
- CECC-EPIP-22- OPERATIONS DUTY SPECIALIST TRANSPORTATION INCIDENTS INVOLVING A SHIPMENT OF RADIOACTIVE MATERIAL
- CECC-EPIP-23- RADIOACTIVE MATERIAL TRANSPORTATION INCIDENTS

9.2.2 Sampling Team

TVA has vehicles equipped to monitor the environment for radioactivity. Each vehicle has an air sampler, radiation measurement equipment, a generator, radio, and other assorted equipment. A detailed listing of the minimum required equipment is available in the CECC-EPIPs.

These vehicles are dispatched for environmental monitoring for Site Area Emergency and General Emergency classifications. TVA may deploy these vehicles for the NOUE and Alert classifications, if warranted. One or more vehicles is stationed at the CRN Site.

Each sampling team has the capability to:

- Obtain environmental samples for analysis.
- Make direct radiation readings.
- Collect air samples and analyze them for gross beta-gamma radioactivity over a range of energies.
- Collect air samples and analyze them for radioiodine in the field, to concentrations as low as 10^{-7} microcuries/cc.

CRN-EPIPs describe the composition and activation of sampling teams.

For the Site Area Emergency and General Emergency classifications, teams are dispatched from the nearest location. Teams may be deployed for the NOUE or Alert, if warranted. If necessary, TVA can coordinate team transport via helicopter or fixed-wing aircraft.

The TSC Rad Protection Manager or CECC Environs Assessor can request assistance from a neighboring plant for environmental monitoring, if deemed necessary.

TVA has aquatic monitoring teams located at Chattanooga, Tennessee, and Knoxville, Tennessee. These teams have boats that can be deployed to obtain samples from the river for subsequent analysis for radioactivity in the laboratories.

State agencies have the responsibility to coordinate and evaluate offsite assessment actions. Environmental monitoring activities are coordinated through the RMCC. State environmental monitoring capabilities and the RMCC operations are referenced in Appendix A, Attachment 1. TVA personnel are co-located in the RMCC, which provides for coordination of TVA and State monitoring teams. TVA and the State share environmental monitoring data.

Additional environmental monitoring assistance is available from the DOE offices at Oak Ridge, Tennessee, or Aiken, South Carolina. The EPA in Montgomery, Alabama, can also provide assistance. Available support includes environmental monitoring teams and mobile radioanalytical laboratories. The State agencies usually request and coordinate these services.

9.2.3 Analyzing Environmental Samples

The sampling teams may send samples to the WARL for analysis. The WARL has the capability to perform further quantitative and qualitative analysis. The WARL is available as needed and can be operated 24 hours per day. The WARL can establish a central point for receipt of samples when needed.

9.2.4 Meteorological Information

9.2.4.1 Primary Meteorological Measurements

TVA has developed the meteorological measurements program to conform to the intent and guidance of Regulatory Guide 1.23, “Meteorological Monitoring Programs for Nuclear Power Plants (RG 1.23).” Wind direction, wind speed, and air temperature are measured at two levels. The temperature difference is used to estimate the Pasquill stability class. Precipitation and dew point temperature are also measured. Hourly and 15-minute average meteorological data from the plant Environmental Data Station are available to the CECC, TSC, State, and LRC. More specific information on the meteorological measurements program can be found in Section 2.3 of the CRN SSAR.

9.2.4.2 Backup Meteorological Data Estimation Procedures

TVA has prepared objective backup procedures to provide estimates for missing or garbled data needed to perform dose calculations and to determine transport estimates. They incorporate available onsite and offsite data. Each procedure has an accompanying statement of reliability.

9.2.4.3 Real Time and Forecast Meteorological Data

The CECC Meteorologist has the responsibility for providing meteorological information to CECC Staff. The dose assessors use this meteorological information to project offsite doses. Plume positions are plotted on a site area map. The meteorological support actions and projection of doses are discussed in detail in CECC-EPIPs. Meteorological support may be provided in the CECC or from a remote location.

9.2.4.4 Remote Access of Meteorological Data

Access of up to the most recent 168 hours of 15-minute and hourly meteorological data is available to authorized users through the CECC computer. The remote access system gathers data from the CRN Site, performs unit conversion, reformats data, and flags questionable values.

9.2.5 Dose Assessment

On-shift dose assessment capability is maintained at the CRN Site, and can be implemented (if needed during the initial phase of an emergency) until the CECC is activated and assumes the dose assessment function.

Offsite doses from emergency-related releases of radioactivity are estimated using a combination of calculations, field measurements, and laboratory analyses of environmental samples. Data on meteorological conditions are used in determining offsite dispersion factors. Using plant operational data, field measurements, and effluent monitor readings, actual or potential releases of radioactivity are analyzed by the plant staff, the Radiological Assessment staff, or the CECC Plant Assessment Team to generate or modify a source term for use in the dose assessment.

With this information, the CECC dose assessment team can predict offsite doses through the use of several models and/or methods described in the CECC-EPIPs. These models provide a means of estimating public exposures throughout the emergency and recovery period. Environs measurements are used, to the extent possible, to confirm doses projected by modeling.

A preliminary dose projection is performed following receipt of measured effluent release data (the source term) and meteorological data. The preliminary dose projection is followed up by a more detailed assessment using computerized dose models. Manual dose assessment methods are available for use in the event that the computer is unavailable. Input to the detailed calculations includes measured source terms, projected future releases, near real-time and forecast meteorological data, field measurements of exposure rates and/or airborne radioactivity in the environs around the plant, or a combination thereof. Field measurements are used to estimate doses, and (especially in the case of an unmonitored release) source terms, and to verify doses projected using models.

After termination of emergency-related releases to the atmosphere, integrated doses are calculated to assist in recovery/reentry operations. A combination of inputs including results from modeling field exposure rate and air concentration measurements and laboratory analyses of soil, vegetation, and water samples are used to assess doses. Recommendations are made regarding evacuation area clearance and reentry based on doses calculated for exposure from ground contamination, inhalation of re-suspended radioactivity, and ingestion of radioactivity in vegetables and milk.

10.0 PROTECTIVE RESPONSE

10.1 ONSITE PROTECTIVE ACTIONS FOR RADIOLOGICAL EVENTS

In the event of an unplanned significant release of radioactivity or sudden increase in radiation levels, it is the responsibility of the SED to make the decision concerning the necessity for building and area evacuation. In arriving at this decision, the primary consideration is personnel safety. The SED may use the various radiation and airborne radioactivity monitors placed throughout the plant, with readout in the Control Room, to assess the extent of the radiological hazards and to determine the extent of evacuation necessary.

The assembly/accountability alarm is used to initiate the assembly of site personnel. The public address system is used if only specific areas are to be evacuated. Nuclear Security Services personnel patrol the area between the security boundary described in the Physical Security Plan and the Site Boundary, and evacuate any nonessential personnel.

Upon hearing the emergency alarm, persons in the plant areas proceed to their pre-assigned areas to be accounted for and await further instructions from the SED. The pre-assigned areas are designated in approved procedures. Predetermined assembly areas are identified in approved procedures and radiological surveys are completed as required by the TSC. The number of unaccounted individuals should be available within approximately 30 minutes for persons within the security area as defined in the Physical Security Plan.

If only a particular area is cleared, personnel in that area evacuate to a safe area. An accountability report is provided to the SED from Security. Further details of evacuation procedures are described in CRN-EPIPs.

If radiation levels or airborne radioactivity at an assembly point is significantly higher than alternative assemble areas, or the SED deems it necessary, the SED orders relocation to a safe assembly point. Employees are released from this assembly point when the SED determines it is suitable to do so.

Procedures require that potentially contaminated people and vehicles pass through a Rad Protection check-point for survey prior to being released.

In the event of the evacuation of nonessential site personnel, the SED notifies the CECC Director. If the personnel require transportation and sheltering, the CECC Director coordinates arrangements with the appropriate State agency. If the evacuees require radiological decontamination, they are informed of transportation, sheltering, and decontamination arrangements prior to leaving the plant site. An alternate decontamination facility is specified in a CRN-EPIP.

Contaminated personnel are decontaminated to the limits specified in the CRN Site Radiological Control Instructions (RCIs) by methods described in the instructions before being released by TVA.

Procedures also specify the action to be taken by, and the accountability of, personnel having an emergency assignment. Essential plant personnel remaining onsite are protected by plant systems designed to provide a habitable environment even under the most serious emergency conditions or by precautionary measures such as the use of respiratory protective equipment and protective clothing. Personnel doses are controlled in accordance with Section 11.0.

10.2 ONSITE PROTECTIVE ACTIONS FOR HOSTILE ACTION EVENTS

A range of protective actions to protect onsite personnel during a Hostile Action event are developed to ensure the continued ability to safely shut down the reactor(s) and perform the functions of the Emergency Plan. This range of protective actions are contained in the CRN Site abnormal procedures. These procedures are classified security sensitive.

10.3 OFFSITE

Should an event be initially classified as a General Emergency, the SED has the responsibility to determine an initial protective action for recommendation to State and local government agencies. CRN-EPIPs provide a logic diagram as a decisional aid to facilitate this recommendation.

After the CECC is staffed, the responsibility for PARs is transferred to the CECC Director. The CECC Plant Assessment Manager provides an assessment of actual and projected plant conditions. The RAM provides an assessment of actual and/or projected radiological conditions offsite. The RAM also provides a recommendation for a specific protective action. The CECC Director evaluates the recommendation from staff and make a recommendation to the State. The logic diagram for PEP recommendations is provided in the CECC-EPIPs as a decisional aid to facilitate the recommendation.

The State and local agencies are responsible for implementing actions to protect the health and safety of the public offsite. Although TVA may recommend protective actions to these agencies, the State and local governments are responsible for deciding if any actions are needed and what they should be. The CECC will discuss and provide ingestion exposure pathway recommendations (i.e., agricultural) and recommendations for liquid releases (i.e., closing of public water supplies) with the State as appropriate.

The decision to implement one or more of the above actions is based upon some or all of the following considerations:

- Projected offsite integrated doses.
- Actual measured dose rates.
- Present and future weather conditions.
- Projected improvement or deterioration of plant conditions.
- State protective action guides.
- Levels of airborne radioactivity.

- Levels of waterborne radioactivity.
- Concentrations of radioactivity in items for human consumption.
- Evacuation time estimates (from Evacuation Time Estimate or maintained in the State Plan).

11.0 RADIOLOGICAL PROTECTION

The Radiological Protection Section at the CRN Site is responsible for Radiological Protection activities onsite. Its function is to develop instructions to implement the requirements of Title 10 Code of Federal Regulations, Part 20, and other required standards as well as the requirements and policies in TVA radiological control procedures. The Section provides surveillance during normal operation as well as emergency situations. In addition, the Section advises key plant personnel on radiological matters for routine and emergency conditions.

The limiting doses to occupational workers during routine plant operations are found in TVA radiological control procedures. If possible, TVA maintains these limits during emergency operations. If these standards cannot be met during emergencies, TVA implements the dose guidance described in Table 11-1. A CRN-EPIP describes the methods to use and authorizes the doses outlined in Table 11-1. Table 11-2 describes the health effects of radiation doses greater than 25 RAD.

For individuals entering radiation work permit areas, electronic dosimeters and primary dosimeters are issued and read in accordance with the site TVA radiological control procedures. The electronic dosimeters can be read at any time. Primary dosimetry processing and evaluation is performed by an organization currently accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology for the type or types of radiation that most closely approximates the type of radiation or radiations for which the individual wearing the dosimeter is monitored. Dose records are maintained on each monitored individual by a computer.

TVA radiological control procedures contain the criteria used to establish contamination zones and to release personnel, equipment, and clothing. Onsite facilities are available to decontaminate equipment and personnel.

Procedures for using individual respiratory protection and protective clothing are provided in specific plant operating procedures. Procedures for the use of radioprotective drugs are provided in the EPIPs. Drinking water and eating controls are established by Radiation Protection.

Authorizations for emergency dose limits for onsite personnel is provided by the SED while authorizations for offsite personnel is provided by the CECC Radiological Assessment Manager.

TVA implements adequate protective measures so that dose, considering both internal and external pathways, is maintained As Low As Reasonably Achievable (ALARA). Internal dose is minimized by the use of respiratory protection equipment consistent with maintaining the Total Effective Dose Equivalent (TEDE) ALARA, and protective clothing is used to minimize personnel contamination. If a projected dose to a worker’s thyroid is expected to exceed 10 rem during a radiological emergency, Potassium Iodide (KI) is issued in accordance with applicable implementing procedures.

Personnel shall not enter any area where dose rates are unknown or unmeasurable with either instruments or available dosimetry.

Receipt of emergency exposures in excess of 10 CFR 20.1201 limits shall be on a voluntary basis. Personnel receiving emergency exposures shall be informed of the risks involved including the numerical levels of dose at which acute effects of radiation will be incurred, and numerical estimates of the risk of delayed effects. Table 11-2 provides information consistent with “Environmental Protection Agency Protective Action Guides and Planning Guidance for Radiological Incidents (EPA PAG Manual), Draft for Interim Use and Public Comment, dated March 2013," which may be useful for this briefing purpose.

Personnel receiving emergency doses should be restricted from further occupational exposure pending the outcome of exposure evaluations, and, if necessary, medical surveillance.

Any personnel dose in excess of five (5) rem TEDE shall be handled in accordance with the TVA Nuclear Radiological Protection Plan.

TABLE 11-1

EMERGENCY WORKER DOSE GUIDANCE

TEDE Dose	Condition
5 rem	All, maintain dose ALARA
10 rem	Protection of valuable property when lower dose not practicable.
25 rem	Lifesaving or protection of large populations when lower dose not practicable.
Greater than 25 rem	Lifesaving or protection of large populations when lower dose not practicable. Only on a volunteer basis to persons fully aware of the risks involved.

NOTE: Situations may occur in which a dose in excess of regulatory limits (10 CFR 20.1201) would be required for plant and lifesaving operations. It is not possible to prejudge the risk that one person should be allowed to take in these situations. However, persons undertaking an emergency mission in which the dose would exceed regulatory limits should do so only on a voluntary basis and with full awareness of the risks involved (EPA PAG Manual, March 2013).

Guidance for dose to the lens of the eye is three (3) times the listed TEDE value. Dose to any other organ (including skin and body extremities) is ten (10) times the listed TEDE value.

TABLE 11-2

HEALTH EFFECTS OF RADIATION DOSES GREATER THAN 25 RAD

I. Health Effects Associated with Whole Body Absorbed Doses Received Within a Few Hours[1].

Whole Body Absorbed Dose (rad)	Early Fatalities[2] (percent)	Whole Body Absorbed Dose (rad)	Prodromal Effects[3] (percent)
140	5	50	2
200	15	100	15
300	50	150	50
400	85	200	85
460	95	250	98

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

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

Age at Exposure (years)	Risk of Premature Death (deaths per 1,000 persons exposed)	Average year 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

Note: Tables referenced from the "Environmental Protection Agency Protective Action Guides and Planning Guidance for Radiological Incidents (EPA PAG Manual), Draft for Interim Use and Public Comment, dated March 2013."

12.0 MEDICAL SUPPORT

12.1 GENERAL INFORMATION

Facilities, equipment, medical supplies, and trained personnel are available for first aid/emergency medical treatment of ill or injured persons onsite.

Guidance for medical assistance is found in a CRN-EPIP. Immediate lifesaving and disability limiting procedures take precedence over noncritical decontamination and dosimetry assessment measures.

When activated, the CECC coordinates the care, disposition, and reporting of injuries known or suspected to be associated with excess levels of radiation exposure or contamination. The purpose of the Medical Emergency Response Team (MERT) (team composition specified in a CRN Site procedure) is to:

- Provide first aid/emergency medical treatment for ill or injured persons onsite, including those who may have been exposed to or contaminated with radioactive material.
- Minimize injury during the rescue, treatment, and transport of injured persons, while minimizing radiological hazards and exposure to the victim.
- Advise and protect attending personnel from unacceptable and unnecessary radiological hazards and exposures.
- Identify, document, and control radiation exposure and contamination hazards associated with the emergency.

12.2 CLASSIFICATION AND HANDLING OF MEDICAL EMERGENCY PATIENTS

12.2.1 Noncontaminated-Nonirradiated

When it is known that the patient is not contaminated and has not been overexposed to radiation, TVA handles the patient according to standard first aid/emergency medical protocol. The patient, ambulance crew, receiving hospital, and attending physician (as applicable) are advised of the absence of radiological complications.

12.2.2 Irradiated-Noncontaminated

TVA coordinates the removal of the patient from the source of radiation exposure as soon as medical conditions and essential treatments permit. Continued medical care for physical injuries, including ambulance transport, is provided as indicated. Rad Protection determines and reports radiation exposure levels, including affected body areas. Emergency care for the radiation exposure is governed by the dose assessment and the medical status. Involved personnel are advised of the absence of radiological contamination.

12.2.3 Contaminated

For patients known to be or suspected of being contaminated, TVA coordinates essential first aid and emergency medical care. Decontamination activities are accomplished as the medical status permits. Involved personnel are advised of the contamination hazard. Continued care and decontamination decisions are made on an individual basis by the responsible medical care provider and Rad Protection.

12.3 TRANSPORTATION OF INJURED PERSONNEL

The decision to transport a patient offsite is the responsibility of the emergency medical care provider performing patient assessment, i.e., Emergency Medical Technician (EMT) or Registered Nurse. If conflicting decisions arise, the option which provides the patient with the optimal level of medical care is chosen.

When ambulance transportation is indicated, transport may be provided by either the site Fire Protection EMTs (using a TVA ambulance) or by an agreement ambulance service. The MERT Team Leader coordinates requests for offsite ambulance assistance through the SM. The SM performs initial requests and notifications for assistance.

TVA maintains arrangements for one or more agreement ambulance services for the CRN Site with trained personnel to transport patients, including those who may have been exposed to or contaminated with radioactive material. These services are designated in a CRN-EPIP and letters of agreement for response are maintained. (See Section 16.5.)

12.4 INTERAGENCY ASSISTANCE FROM REAC/TS

TVA maintains arrangements with the Radiation Emergency Assistance Center/Training Site (REAC/TS) as the CRN Site receiving hospital. REAC/TS, which is in close proximity to the CRN Site, is a DOE-sponsored facility operated by Oak Ridge Associated Universities Medical and Health Sciences Division in cooperation with the Oak Ridge Methodist Medical Center in Oak Ridge, Tennessee. The University of Tennessee Medical Center in Knoxville, Tennessee serves as a back-up to REAC/TS. Specialized facilities and expert personnel are available at both medical facilities for definitive care for radiation emergency victims. Letters of Agreement for services are maintained. (See Section 16.5.)

13.0 TERMINATION AND RECOVERY

13.1 TERMINATION

The SM/SED is responsible for the decision to terminate an event for which the onsite and offsite emergency response facilities have not been activated.

In the event of an incident requiring activation of onsite and offsite emergency centers, the SED coordinates the decision to terminate the event with the CECC Director after consultation with the plant technical and operations staffs. This decision is based upon a comprehensive review of plant status and system parameters. These considerations include, but are not limited to, the following:

- Stability of the reactor shutdown condition, i.e., successful progress toward a cold shutdown condition.
- Integrity of the reactor containment building.
- Operability of engineered safety systems and decontamination facilities.
- Availability and operability of a heat sink.
- Integrity of power supplies and electrical equipment.
- Operability and integrity of instrumentation including radiation monitoring equipment (also including portable equipment assigned during the emergency).
- Availability of trained personnel and support services.
- Control of radiological effluent releases.

State representatives are responsible for decisions to relax protective actions for the public. The CECC Director provides information to the appropriate State agencies to facilitate the decision. The State has the authority and responsibility for offsite recovery efforts. TVA will provide assistance, as requested, through the recovery organization shown in Figure 13-1. (Figure 13-1 lists functions which must be addressed for recovery; the normal organizational titles may be different than what is represented here.)

The CECC Director, after consultation with the State, the SED, and discussion with the NRC (if appropriate), announces that the emergency has terminated and the recovery phase is to be initiated, if appropriate. TVA then develops procedures and plans to implement the most expeditious recovery sequence to return the plant to normal operation.

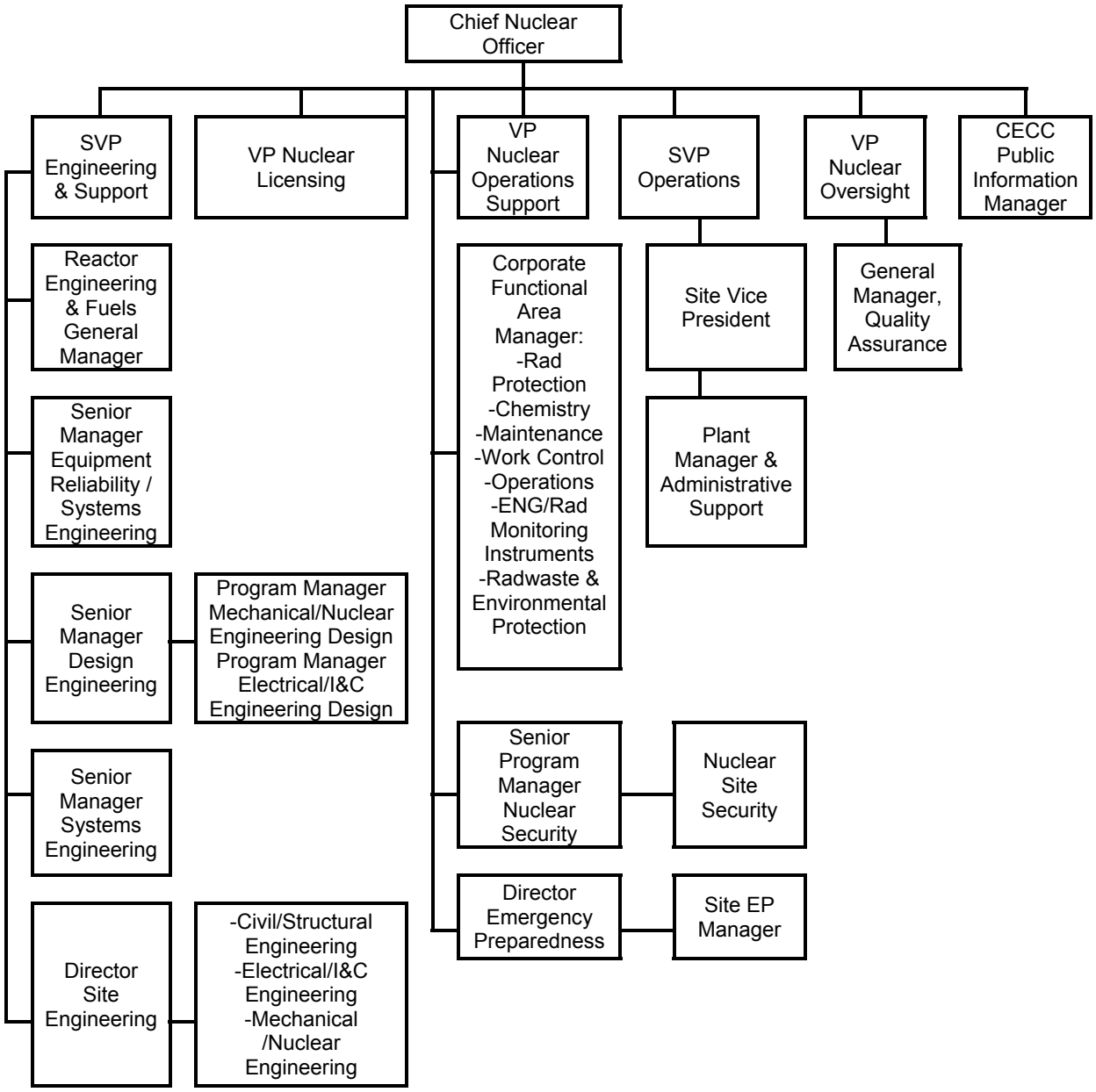


Figure 13-1 TVA Recovery Organization

13.2 RECOVERY ORGANIZATION

13.2.1 Chief Nuclear Officer

The Chief Nuclear Officer will direct the overall recovery effort. If the recovery phase is expected to be a long-term process, he may form a team to be responsible for continuous control of the recovery operation, thus permitting other personnel to return to their normal duties. The organizational structure of such a team would be contingent upon the emergency situation and procedures required for recovery. The LRC is available to provide additional office space near the site for the recovery team at the discretion of the Chief Nuclear Officer.

13.2.2 Senior Vice President Operations

The Senior Vice President Operations is responsible for the onsite recovery effort and for developing required recovery procedures. He requests any needed offsite support through the Site Vice President and/or Plant Manager.

13.2.3 Site Vice President

The Site Vice President is responsible for coordinating the onsite efforts with the overall TVA recovery effort. The Site Vice President (SVP) is in charge of the LRC should additional office space be needed.

13.2.4 Vice President, Operations Support

The Vice President, Operations Support directs that the Corporate Functional Area Managers provide support in the following areas:

- Radiological Protection
- Chemistry
- Maintenance
- Work Control
- Operations
- Radwaste & Environmental Protection
- Emergency Preparedness
- Nuclear Security Services
- Eng/Rad Monitoring Instrument
- Technical support and Environs sampling assistance as requested by the State
- Dose Assessment

- Environmental Monitoring

13.2.5 CECC Public Information Manager

The CECC Public Information Manager acts as an interface between TVA and the news media. Assists the Chief Nuclear Officer in drafting news releases concerning progress of the recovery operation. Coordinates news releases with TVA management and State and federal officials as required. Coordinates press briefings and interviews concerning the incident.

13.2.6 Vice President, Nuclear Licensing

The Vice President, Nuclear Licensing provides support in various licensing issues including primary interaction with the NRC.

13.2.7 Vice President, Engineering & Support

The Vice President, Engineering & Support provides support in the area of plant components, Reactor Engineering, fuels and in various engineering disciplines.

13.2.8 Vice President, Nuclear Oversight

The Vice President, Nuclear Oversight provides Quality Assurance oversight of the recovery process.

13.2.9 Other TVA Resources

Other TVA resources plus other governmental and vendor support will be available through the TVA corporate organization to aid the SED in developing, evaluating, and implementing specific site recovery and reentry operations.

13.3 ONSITE RECOVERY

Major post-emergency onsite recovery measures are performed in accordance with written procedures. Additional procedures which may be developed following an emergency include the following activities:

- The first auxiliary/reactor building entry.
- The first containment building entry.
- Damage evaluation
- Decontamination
- Disassembly
- Repair
- Disposal

- Test and startup of restored facilities.

Appropriate personnel protective measures are taken on initial entries and throughout assessment and recovery operations to limit exposures to those outlined in Section 11.0.

Reentry and recovery individual and population dose estimates are obtained using dose rate measurements or calculations and population distribution (see Section 9.2.5). The CECC-EPIPs contain this methodology.

13.4 LOCAL RECOVERY CENTER

The LRC provides a facility for TVA recovery management as well as NRC emergency response personnel and other emergency and/or recovery personnel. The LRC provides adequate space for TVA and others who may locate there to support the site should additional office space near the site become necessary during the recovery phase. The LRC provides dedicated space for NRC personnel and contains adequate supplies, communications, and data necessary for them to carry out appropriate functions. See Appendix A for the description of the CRN Site LRC.

13.5 OFFSITE RECOVERY

The State has the authority for actions taken offsite; however, TVA serves as an important source of technical and analytic assistance for the State in offsite monitoring and sampling needed to determine the extent and methods of offsite recovery. The Chief Nuclear Officer, or designee, serve as the State's contact for coordination of TVA efforts in offsite monitoring, sampling, and recovery.

14.0 DRILLS AND EXERCISES

14.1 DRILLS

Drills are conducted to develop and maintain key skills required for emergency response. These drills may be conducted individually or as part of an REP exercise.

The following drills are required:

14.1.1 Medical Emergency Drills

A medical emergency drill involving a simulated contaminated/injured individual, with participation by a TVA or agreement ambulance and each agreement hospital (see Section 16.5) is conducted each calendar year for the CRN Site. Scenario development, drill activities, and evaluations will be jointly conducted and critiqued by EP and the site.

14.1.2 Radiological Monitoring Drills

Environmental monitoring vehicle drills are conducted each calendar year for the CRN Site. These drills include collection and analyses of sample media (i.e., water, air, grass, and/or soil as may be required by the scenario), direct radiation measurements, operation of vehicles, communication equipment, sampling equipment, and recordkeeping. The scenario is developed and the drills are conducted and critiqued by the site or EP.

14.1.3 Rad Protection Drills

Rad Protection drills are conducted twice each calendar year for the CRN Site. These drills involve response to, and analysis of, simulated elevated airborne samples and direct radiation readings in the plant. The scenario is developed and the drills are conducted and critiqued by the site.

14.1.4 Radio Chemistry Drills

Radiochemistry drills are conducted each calendar year at the CRN Site. These drills involve collecting and analyzing in-plant liquid and gaseous samples containing actual or simulated elevated levels, including use or simulated use of the post-emergency sampling system. The scenario is developed and the drills are conducted and critiqued by the site.

14.1.5 Radiological Dose Assessment

Radiological dose assessment drills are conducted at least twice each calendar year to test the procedures, calculation techniques, computer codes, and environmental assessment abilities of the CECC staff and support groups. These scenarios are developed and the drills are conducted and critiqued by EP.

14.1.6 Fire Drills

Fire drills will be conducted at the CRN Site in accordance with, and as required by, specific procedural requirements.

14.1.7 Communications Drills

Communications drills are conducted at least once each calendar year at the CRN Site.

14.2 EXERCISES

Exercises are scheduled and conducted such that:

- A biennial exercise will be conducted for the CRN Site to test the REP every 2 calendar years. State of Tennessee participation in other TVA Exercises within the State determines if there will be full or partial participation by the State during CRN Site Exercises.

- The CRN Site ensures that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the onsite emergency response capabilities. (The principal functional areas of emergency response include activities such as management and coordination of emergency response, emergency assessment, protective action decision making, and plant system repair and corrective actions. During these drills supervised instruction is permitted, and activation of all of the emergency response facilities is not necessary. Sites have the opportunity to consider emergency management strategies, operating staff have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills can focus on onsite training objectives. Sites shall enable the states and local authorities to participate in such drills when requested.)

- An exercise is conducted for the CRN Site, with full participation by State and local authorities, every two years. (Where a State has more than one site it shall participate fully every two years at some site and partially participate at the other sites offsite exercises.)

- An exercise is conducted for the CRN Site such that the State may exercise emergency plans related to ingestion exposure pathway measures every eight years. (Where a State has more than one site, this participation should be rotated between sites.)

- Major elements of the emergency plans and organizations are tested within an eight-year period.

- The CRN Site initiates an exercise between 6:00 p.m. and 4:00 am at least once every eight years. The exact time of the exercise is unannounced.

14.3 SCENARIOS

Drills and exercises are conducted in accordance with scenarios that have been properly planned, researched, and developed.

The drill and exercise scenarios include, but are not limited to, the following:

- The basic objectives of each drill or exercise.

- The date(s), time period, place(s), and participating organizations.
- The simulated events.
- A time schedule of real and simulated initiating events.
- A narrative summary describing the conduct of the exercises or drill, including simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

Drill scenario development and implementation is the responsibility of the organization responsible for the specific drill.

Exercise scenario development and implementation is the responsibility of EP. Exercise scenario planning and development is coordinated with representatives of appropriate organizations and State agencies. Scenario specifics are not released by those representatives prior to the exercise.

Exercise scenarios will be developed to thoroughly test the REP on an eight year cycle. The exact time of an exercise is not released; however, a time span within which the exercise is to occur may be supplied to appropriate organizations and the news media so that the exercise is not confused with an actual emergency.

In the event a remedial exercise is required, a scenario is developed to demonstrate corrective measures have been taken regarding the described deficiencies.

14.4 CRITIQUES

Representatives of Quality Assurance, INPO, NRC, DHS, State/local agencies and others may observe the exercise. Additional evaluators may be requested from other organizations as necessary. Evaluators are provided with sufficient material and a briefing prior to the exercise to become familiar with the Emergency Plan and exercise scenario.

At the conclusion of each exercise, a critique is conducted where the exercise and its participants are evaluated for effectiveness, procedural compliance and good practices. EP evaluates critique comments, develops a formal written report, coordinates corrective actions for deficiencies or items needing improvement, and follows up to ensure completion of corrective actions.

Drill critiques, critique reports, coordination of corrective action and follow-up to ensure completion is the responsibility of the organization administering the drill.

15.0 TRAINING

TVA ensures that personnel with specific duties and responsibilities in the NP-REP receive instruction in the performance of these duties and responsibilities.

15.1 ONSITE

Site Nuclear Training/line organizations/site EP provide training in emergency procedures to permanent plant personnel and applicable non-plant personnel in accordance with plant training procedures.

For personnel with specific duties involving the NP-REP, this training consists of initial training classes and annual retraining to maintain familiarity with the features of the NP-REP. Participation in drills, while not a requirement, does augment the training of those personnel who do participate. The site EP group provides training to key site responders in the TSC and OSC, and the SED.

Training for Plant Access is conducted in accordance with applicable CRN Site security procedures.

The Safety and Emergency Response Training Academy (SERTA) provides emergency medical care training to medical personnel and selected Nuclear Power personnel stationed at the CRN Site. Successful completion of training commensurate with their duties allows personnel to fulfill the role of medical care provider on the site MERT.

15.2 OFFSITE

CECC personnel have current fitness for duty training. EP is responsible for ensuring that lesson plans are developed and training is conducted for CECC personnel. Training provided under this Plan is documented on an annual basis. Such documentation includes the date of the training, the names of those trained, and the training administered.

Training and annual retraining are provided to local plant support agencies (security, fire, ambulance, and hospital personnel) who may be involved with direct support of the site during an emergency.

Nuclear Support Services is responsible for providing agreement hospital and ambulance support training. The CRN Site is responsible for providing fire support training, with assistance from Nuclear Support Services, as needed. The CRN Site is responsible for providing local law enforcement (security) training. Training includes procedures for notification, basic radiation protection, expected roles, and site access procedures (as applicable).

15.3 PROFESSIONAL DEVELOPMENT TRAINING

Full time EP staff members are afforded formal professional development training or activities commensurate with their duties and experience.

16.0 PLAN MAINTENANCE

16.1 NP-REP

Document Identification

The CRN NP-REP has a controlled copy number.

Each page of the CRN NP-REP contains the following information:

NP-REP Page 1 Rev. 1	-or-	NP-REP Appendix A Page A-1 Rev.1

Documents referenced in Appendix A, Attachment 1 are issued in accordance with appropriate State procedures.

Periodic Review

The CRN NP-REP and the appendices are reviewed by CRN Site and EP staff annually for accuracy, completeness, operational readiness, and compliance with existing regulations and established policy. This review is initiated by EP and results are documented.

TVA has agreements with outside organizations for radiological emergency support to furnish specific services. Copies of the letters documenting these agreements are forwarded to EP and are reviewed annually and updated as necessary by EP.

Changes

Revision to the CRN NP-REP may result from the reviews described in Subsection 16.1, drills, exercises, or changes in regulations. Changes are made and distributed according to Figure 16-1. Changes identified from these reviews and drills and exercises are made as expeditiously as possible and are not necessarily held for submittal with an annual review.

Each line affected by a particular revision is marked in the margin. Changes in a revision are stated in the Revision Log; the pages affected and a brief explanation of the change are included in the Revision Log.

Plant Operations Review Committee (PORC) approval is obtained on CRN NP-REP revisions to Appendix A prior to their implementation. Changes to the main body of the CRN NP-REP and Appendices are scheduled for PORC review (up to 30 days based on the volume and complexity of the change). If comments cannot be resolved by the Director, Emergency Preparedness, and responsible site management, the comment is escalated to higher line management up to and including the TVA Chief Nuclear Officer and Executive Vice President. Changes to the CRN NP-REP are approved by the General Manager, Support Services, or designee.

Distribution

The CRN NP-REP, its additions, and revisions are authorized by an approval form and distributed by MS.

MS issues controlled revisions and ensures CRN NP-REP holders have received changes by requiring that copy holders sign a receipt, which is provided, and return it within two weeks.

MS maintains a historical file of superseded REP material.

To provide REP holders with assurance that the Plan is up-to-date, cover pages and revision logs are distributed with each revision or addition. The revision log lists the latest revision number, the date revised, pages revised, and the reason for the revision.

16.2 EPIPs

16.2.1 Document Identification

The CRN Site and CECC EPIP manuals bear a copy number. Pages of controlled documents are issued in accordance with approved procedures. Each page contains the following information similar to the following example:

CECC-EPIP-1
Page 5 of 12
Rev. 1

Each procedure in an EPIP manual has a cover page listing the revision number and the effective date. Each procedure also has a revision log or description of the revision. The procedure revision approval form is signed by the approving authority (or their designee) responsible for that EPIP as listed below:

EPIPs	Approving Authority
CECC	Director, Emergency Preparedness
CRN	Plant Manager, CRN Site

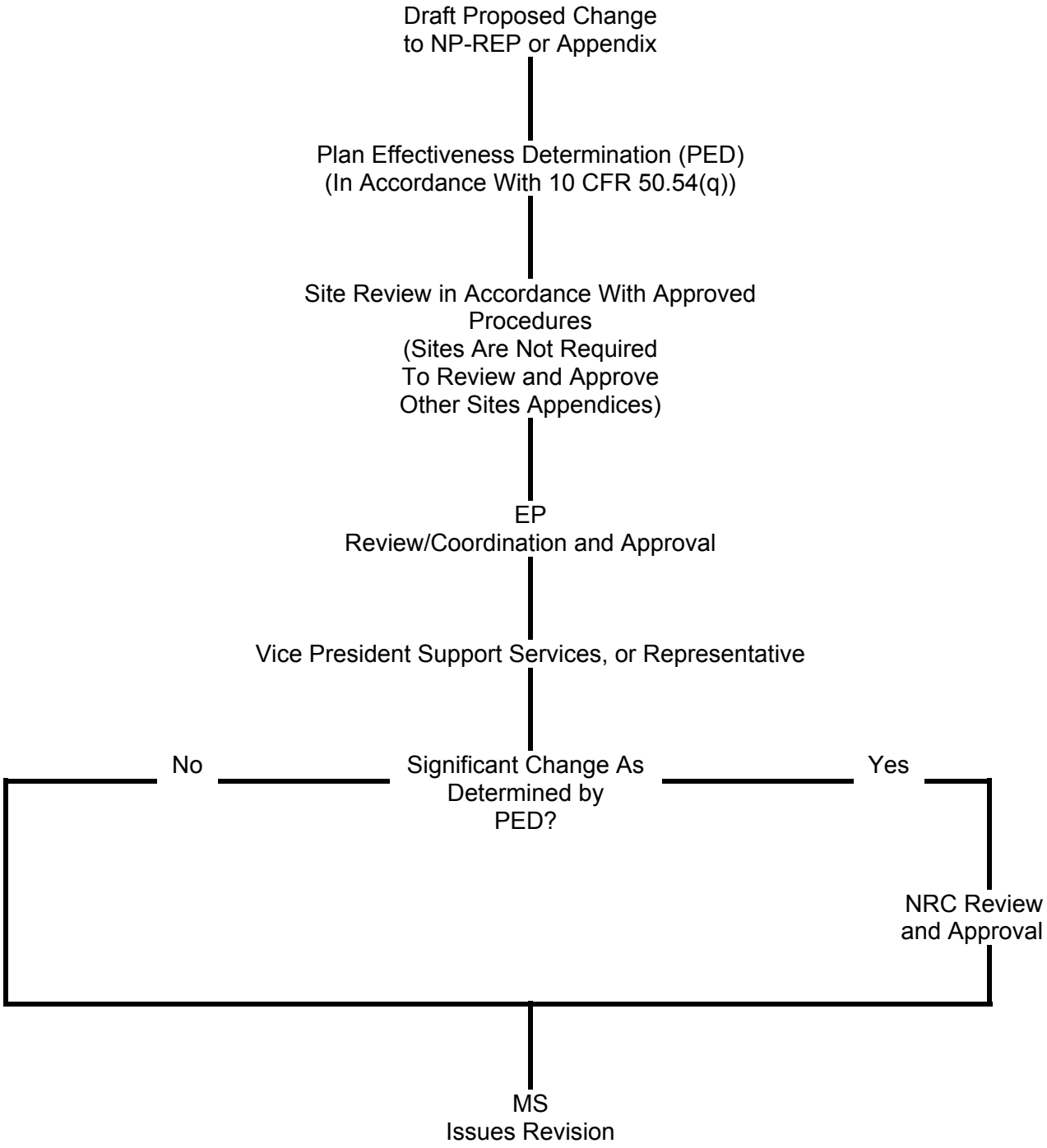


Figure 16-1 Update Procedure for NP-REP and Appendices

16.2.2 Periodic Review

The EPIPs are reviewed annually for accuracy, completeness, operational readiness, and compliance with existing regulations by the responsible organization listed below. This review is initiated by Nuclear Support Services and results are documented.

EPIPs	Organization
CECC	REP Staff
CRN	CRN Site

EP coordinates a quarterly review of notification lists in the Radiological Emergency Notification Directory (REND). The review covers phone numbers and names and is documented by the REND Revision Log.

16.2.3 EPIP Changes

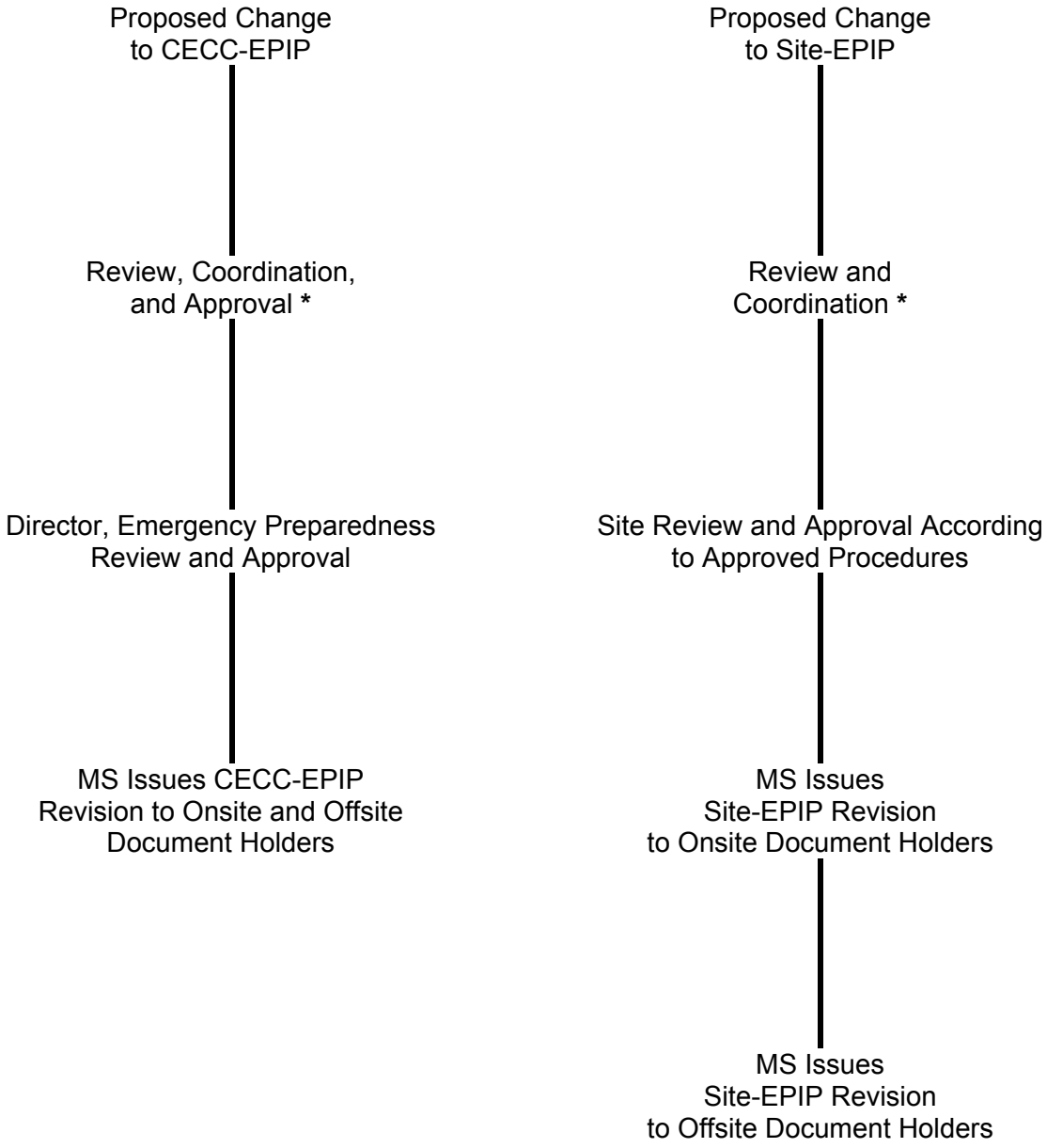
CECC-EPIP Changes

Revision to a CECC-EPIP may result from the reviews described in Section 16.2.2, drills and exercises, or changes to regulations. Changes are made and distributed according to Figure 16-2. EPIPs receive a review in accordance with 10 CFR 50.54(q) screening process consistent with the REP.

Each line affected by a particular revision is marked. Changes in a revision are stated in the Revision Log; the pages affected and a brief explanation of the change are included in the Revision Log.

CRN-EPIP Changes

Permanent, temporary, and emergency CRN-EPIP changes are issued as controlled documents to plant document holders in accordance with CRN Site document control practices. MS issues the changes to other document holders in accordance with MS document control practices. CRN-EPIPs receive a review in accordance with 10 CFR 50.54(q) screening process consistent with the REP.



*EPIPs receive review in accordance with 10 CFR 50.54(q)
Screening process consistent with the REP.

Figure 16-2 Update Procedure for EPIPs

16.2.4 Distribution

Each CECC-EPIP or revision is authorized by an approval form and distributed by MS. CRN-EPIP changes are distributed as discussed in Section 16.2.3.

Upon receiving revision from EP, those who are assigned controlled copies of an EPIP sign a receipt, which is provided, and return it within two weeks to MS.

Each revision is accompanied by a revised cover page for that procedure. MS maintains a historical file on superseded CECC-EPIP material and the site maintains a historical file on superseded CRN-EPIP material.

16.3 DOCUMENT RELATIONSHIPS

The NP-REP and the associated supporting plans and procedures are issued as separate documents.

TVA maintains the following documents:

- NP-REP.
- CECC-EPIP.
- CRN-EPIP.
- REND.
- Evacuation Time Estimate Manual.
- On-shift Staffing Analysis Report (CRN Site).
- Evaluation and Analysis of the ANS for the CRN Site.

These documents, along with the State Plan referenced in Appendix A, Attachment 1, may be issued separately or in combinations as applicable for the individual document holder.

16.4 AUDITS

Quality Assurance conducts audits/reviews of the NP-REP program in accordance with 10 CFR 50.54(t) for compliance with existing regulations and its own internal requirements.

It is also responsible for offering recommendations on overall Plan improvement.

The results of the audit/review are documented, reported to appropriate organization management, and retained in the files for a period of five (5) years.

16.5 AGREEMENT LETTERS

This Section includes a listing of agreements or contracts maintained for services of outside organizations during an emergency. The detailed agreements with the Tennessee Emergency Management Agency, the Department of Energy, Roane County, and the City of Oak Ridge will be addressed at COLA and documented in a Multi-Jurisdictional Emergency Response Plan.

- Agreement letters for offsite law enforcement support are maintained by CRN Site Nuclear Security Services and are updated annually. These agreement letters may be examined upon obtaining approval from the site Nuclear Security Services Manager.

- Agreement letters with other offsite organizations are maintained by EP.

- Agreements are maintained with ambulance services for 24-hour availability of EMT-staffed ambulances for the transport of irradiated/contaminated patients.

- Agreements are maintained with fire departments having 24-hour assistance capabilities.

- Agreements are maintained with DOE REAC/TS, Oak Ridge, Tennessee and the University of Tennessee Medical Center, Knoxville, Tennessee. Both medical facilities can provide 24-hour availability to TVA for medical/radiological emergencies which exceed in house capabilities.

INPO provides assistance in locating and arranging additional emergency manpower, equipment, and the services of various technical experts from industry sources. INPO maintains this utility data in the INPO Emergency Resources Manual.

17.0 DEFINITIONS AND ACRONYMS

Activated - Minimum Activation Staff Positions are present onsite or in the facility within the assigned time following emergency declaration and ready to assume assigned functions. Turnovers should be done as soon as practical, with consideration to performing them after the facility is activated.

Annual - Any 12 months, plus or minus 3 months with the following exceptions:

- TVA executes “annual” activities associated with exercises, drills, emergency information for residents, media training, and offsite emergency response training are defined as "once per calendar year."

- TVA annual training is for a 12-month period which includes a grace period extending to the end of the calendar quarter in which training is due.

ANI - American Nuclear Insurers.

CECC (Central Emergency Control Center) - The offsite TVA emergency response facility located in Chattanooga, Tennessee, with the overall TVA responsibility for response to an emergency. It consists of a director and staff to coordinate and direct TVA’s efforts during the emergency.

CECC-EPIPs (Central Emergency Control Center Emergency Plan Implementing Procedures) - The set of emergency response procedures developed to ensure that the capabilities described in Part 5B of the CRN Site ESPA are fulfilled in the CECC and offsite.

COC - TVA Chattanooga Office Complex, Chattanooga, Tennessee.

CRN Site – The Clinch River Nuclear Site.

CRN-EPIPS (Clinch River Nuclear Site Emergency Plan Implementing Procedures) – The set of CRN Site emergency response procedures developed to ensure that the capabilities described in Part 5B of the CRN Site ESPA are fulfilled at the CRN Site.

DHS – U.S. Department of Homeland Security.

DOE - U.S. Department of Energy.

DOT - U.S. Department of Transportation.

Drill - A supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation. A drill is often a component of an exercise.

EAL (Emergency Action Level) - Specific events and criteria used to determine the appropriate emergency classification.

EDO - Emergency Duty Officer.

Emergency Classification (Also Class or Classification) - A scheme derived to categorize a plant emergency into one of four classes according to severity so that appropriate actions might be rapidly taken.

EMT (Emergency Medical Technician) - An individual certified under a recognized TVA system to provide emergency and related services to victims of illness or injury.

ENS (Emergency Notification System) - The phone line used to notify and inform the NRC of Event Status Data.

Environs - The atmospheric, terrestrial, and aquatic areas outside the site boundary.

EOC - Emergency Operations Center.

EP - Emergency Preparedness.

EP Staff - Emergency Services, Emergency Preparedness Staff.

EPA – U.S. Environmental Protection Agency.

EPZ (Emergency Planning Zone) - The area surrounding the site for which planning is performed to prepare to respond to a nuclear plant emergency. The two zones are (1) plume exposure pathway EPZ; (2) ingestion exposure pathway EPZ.

Exclusion Area Boundary - The area for which TVA has absolute authority for exclusion of personnel and property within the site boundary. This boundary is used in SSAR dose assessments to define the distance to the first member of the public and is defined in the SSAR.

Exercise - An event that tests the integrated capability and a major portion of the basic elements existing within the Emergency Plan.

FEMA (Federal Emergency Management Agency) - An agency of the federal government.

Hostile Action - An act toward a nuclear site or its personnel that includes the use of violent force to destroy equipment, takes hostages, and/or intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should NOT be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear site.

Hostile Force - One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

HPN (Health Physics Network) - The NRCs health physics information line.

IC - (Initiating Condition) - An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

INPO - Institute for Nuclear Power Operations.

JIC (Joint Information Center) - A center established near the CRN Site to assist the news media in providing press coverage during an emergency.

LRC (Local Recovery Center) - A facility located near the CRN Site used as additional office space, if necessary, for TVA personnel during recovery operations. The facility is also available for NRC use during an emergency. Additionally, the LRC may serve as an alternate emergency response facility if needed, and can also serve as a staging area for individuals or teams prior to dispatch to the CRN Site.

MASP – Minimum Active Staffing Positions.

MERT - Medical Emergency Response Team.

Missiles - As used in the EALs, a missile is any hurled object (e.g., debris from explosions, fragments from rotating equipment breaks).

Monthly - Any 30-day period, plus or minus 7 days.

MS - Management Services.

NOAA - National Oceanic and Atmospheric Administration.

NOUE - Notification of Unusual Event.

NP - Nuclear Power.

NP-REP (Nuclear Power Radiological Emergency Plan) - The Plan which provides the policies and the actions to be used to minimize the impact on personnel, public, and the environment from an emergency at a TVA nuclear plant.

NRC – U.S. Nuclear Regulatory Commission.

NRF - National Response Framework.

NSS - Nuclear Security Services.

NSSS - Nuclear Steam Supply System.

Offsite - The area around a nuclear plant site that is not onsite.

Onsite - Onsite is defined according to the subject ... (1) in relation to SSAR dose assessment, onsite is "within the exclusion area;" (2) in relation to accountability and site notifications, onsite is "within the site's outermost secured area;" (3) in relation to EP dose assessments onsite is defined as "1000 meter radius;" and (4) in other contexts onsite is "within the reservation boundary."

ODS (Operations Duty Specialist) - The 24-hour per day emergency contact for TVA.

ORAU (Oak Ridge Associated Universities) - A nonprofit corporation and prime contractor with DOE for operation of the REAC/TS facility.

ORMMC (Oak Ridge Methodist Medical Center) - In conjunction with the REAC/TS facility, provides continuing medical care to radiological emergency victims.

OSC (Operations Support Center) - An area set aside within the plant for providing an assembly area for operational support personnel during an emergency situation.

PABX (Private Automatic Branch Exchange) - A communications system, controlled by TVA, employing microwave and land line transmissions.

PAR - Protective Action Recommendation.

Plant Manager - Key plant management serving as the Shift Manager's supervisory contact during off-hours.

PORC (Plant Operations Review Committee) - A group of plant supervisors whose function is to provide a safety review of procedures and operations for the plant and make recommendations to the Plant Manager on these matters.

Quarterly - Any three-month period, plus or minus one month.

RAA - Radiological Assessment Area of CECC.

Rad Protection - Radiological Protection.

R or r - For purposes of this Plan and its implementing procedures, radiation exposure as expressed in units of R/hr and subunits, thereof, is equivalent to dose (rad) and dose equivalent (rem).

RCI - Radiological Control Instructions.

RCS - Reactor Coolant System.

REAC/TS (Radiation Emergency Assistance Center/Training Site) - A special facility that is operated by ORAU for DOE, to provide a sophisticated facility to handle radiological emergency victims. The REAC/TS facility is located in ORMMC.

Recovery - The post emergency activities in which the plant conditions are assessed and the plant is returned to an operational mode.

REND (Radiological Emergency Notification Directory) - A directory of key personnel for support of the CECC.

REP - Radiological Emergency Plan.

RMCC (Radiological Monitoring Control Center) - An environmental monitoring coordination center.

SAE - Site Area Emergency.

Security Condition- Any Security Event as listed in the approved Security Contingency Plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A Security Condition does NOT involve a Hostile Action.

SED - Site Emergency Director.

Semiannual - Any six-month period, plus or minus 45 days. (The exception to this is for drills for which it is defined as "twice each calendar year.")

SEOC- State Emergency Operations Center.

Site Boundary - The appropriate boundary between "onsite" and "offsite."

SSAR (Site Safety Analysis Report) – The report required by 10 CFR 52.17(a)(1) to be included in each application for an early site permit. The SSAR includes a description of the facility, the maximum levels of thermal and radiological effluents, and a description of seismic, meteorological, hydrologic, and geologic characteristics of the proposed site.

SM - Shift Manager.

TEDE - Total Effective Dose Equivalent as defined by 10 CFR 20.1201.

TSC (Technical Support Center) - An assembly/work area for designated support individuals knowledgeable of and responsible for engineering and management support of reactor operations in the event of an emergency.

UE (Unusual Event) - terminology that is commonly used referring to the term Notification of Unusual Event (NOUE). UE and NOUE are synonymous.

WARL (Western Area Radiological Laboratory) - TVA laboratory located in Muscle Shoals, Alabama, capable of analyzing environmental samples for radioactive content.

Weekly - Any seven-day period, plus or minus two days.

Attachment 1

Justification for the Central Emergency Control Center

Under 10 CFR Part 50, Appendix E, Section IV.E.8, TVA is required to provide a licensee near-site Emergency Operations Facility (EOF) from which effective direction can be given and effective control can be exercised during an emergency. The NRC provides guidance for design and location of the EOF in NUREG-0696, “Functional Criteria for Emergency Response Facilities” (NUREG-0696). Since the early 1980s, TVA has used a centralized concept for providing the EOF function for its nuclear sites. Consistent with this approach, the CRN Site Emergency Plan relies on the use of the Central Emergency Control Center (CECC) as the EOF for the CRN Site. The CECC serves as the EOF for the other TVA nuclear plants (Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN)). The CECC is located in the TVA Chattanooga Office Complex (COC) in Chattanooga, Tennessee, approximately 78 air miles from the CRN Site. The CECC is further than 20 miles from the CRN Site Technical Support Center (TSC), as is the case for BFN, SQN, and WBN, but does not alter the functions of the EOF as described in NUREG-0696.

The use of the CECC as the EOF for the CRN Site allows TVA to continue to operate a standardized program for corporate management and response to radiological emergencies at TVA nuclear facilities. The effectiveness of CECC operations has been demonstrated during numerous drills and exercises. Communications systems, data links, and staffing have been incorporated and tested. Using the CECC for the CRN Site also allows TVA to apply its corporate emergency response structure and experience to the CRN Site Emergency Plan.

TVA has discussed this concept with the Tennessee Emergency Management Agency (TEMA). TEMA is familiar with the CECC because the facility is used for responding to radiological emergencies at SQN and WBN. Through the letter referenced in SSAR, Section 13.3 of the CRN ESPA, TEMA confirms their support of the TVA emergency response program, included the use of the CECC in Chattanooga.

Access to the station by the NRC site team is accommodated. The CRN Site has a Local Recovery Center (LRC) which is a pre-designated facility dedicated for use by offsite TVA and NRC personnel that may be assigned to the CRN Site for recovery operations. In addition, the LRC may be used by the NRC during the event as an area near the site for assessment and assistance and has the capability to communicate offsite. Additional information regarding the LRC can be found in section 8.1.3 of this Plan and in A.4.8 in Appendix A.

The CECC includes space for State liaisons reporting to the CECC in Chattanooga.

The following discussion provides an evaluation of the CECC against the criteria provided in NUREG-0696.

Evaluation Against NUREG-0696:

The CECC is designed to provide for the effective and timely performance of the following functions:

- Management of overall licensee emergency response.
- Coordination of radiological and environmental assessment.

The primary role of the CECC is to relieve the plant staff of the functions of keeping the federal, State, and county emergency response organizations informed, for directing dose assessment and field monitoring, for managing the informational needs of the media, interested industry groups, and elected officials, and for supporting the emergency assessment needs of the TSC staff. The NRC will have access to plant data through the CECC computer system and the Emergency Response Data System (ERDS). The NRC also has telephones on the Emergency Telecommunications System (ETS) in Chattanooga.

Equipment exists in the CECC for the acquisition, display, and evaluation of radiological, meteorological, and plant system data. Because a similar set of data currently used for BFN, SQN, and WBN are required for the CRN Site, the plant and effluent data would be provided on as timely a basis at the CECC as it would be at a near-site location.

Normal industrial security is already provided for the CECC and processes are already established to upgrade the security of the facility during an activation.

Location, Structure, and Habitability

The CECC is located in the northeast corner of the sixth floor of Lookout Place in the TVA COC in Chattanooga, Tennessee. The CECC has proven to be an effective facility for implementation of the TVA nuclear station emergency plans. The CECC is used for existing TVA nuclear plants at the BFN, SQN, and WBN sites. The facility is more than ten miles from any of the TVA nuclear stations; therefore, there are no specific habitability criteria.

Staffing and Training

Incorporation of CRN emergency response functions into the CECC will not adversely affect the ability of TVA to staff the CECC in a timely manner. The CECC is staffed with experienced personnel from the TVA COC and personnel from one or more TVA nuclear plants. The CECC staff has demonstrated their ability to staff the CECC within required time-frames following emergency declaration during previous staff augmentation drills. The CECC staff includes personnel to manage overall licensee emergency response, and coordinate radiological and environmental assessment.

Size

The CECC size has proven to be adequate during drills and exercises for the existing TVA nuclear facilities. In addition, the NRC has workspace co-located with the decision makers, radiological assessment, and emergency assessment personnel.

Radiological Monitoring

The CECC is beyond 10 miles from any nuclear stations, and therefore does not require radiological monitoring equipment.

Communications

The communications systems available in the CECC consist of:

- Central Office Trunks.
- Tie-lines.
- Digital Services.
- Privately-owned/maintained microwave systems.
- Privately-owned fiber-optic systems.
- NRC ETS phones.
- EP Radio System.

The emergency communications systems at the CECC are designed to provide a reliable, timely flow of information between the parties having an emergency response role. The single facility results in commonality of communications and interface with offsite officials and liaisons. The EP telephone system continues to be the primary means of communicating changes in event classification. This system operates on a combination of the TVA telecommunications network and leased circuits.

The offsite communications network is used to communicate with federal, State, and other supporting agencies. Access to these agencies is provided through several redundant, diverse routes. This diversity provides offsite routing through more than one type of facility. These facilities include, but are not limited to, commercial facilities such as central office trunks, tie-lines and digital services, plus privately owned and maintained microwave and fiber-optic systems. The offsite telecommunications network is designed to facilitate traffic in the most fail-safe manner to the emergency response organizations.

The Emergency Notification System (ENS) and Health Physics Network (HPN) (NRC FTS 2000 System) communication systems provide communications from each site TSC, Control Room, and the CECC to the NRC Headquarters and regional offices. These telephones are tested on a periodic basis consistent with the CRN Site Emergency Plan.

The EP radio system is a VHF mobile radio system which provides redundant radio coverage of the Plume Exposure Pathway (PEP) Emergency Planning Zone (EPZ) and provides radiological monitoring vehicles with mobile communications to other vehicle(s) and to the following locations: Radiological Control, TSC, Control Room at each TVA plant, and the CECC.

Instrumentation, Data System Equipment, and Power Supplies

Various plant parameters are available to the CECC staff via a connection through the TVA CECC computer network. Data available at the CECC provides a snapshot of data from each unit's integrated set of plant data. Plant data can be displayed at the CECC. These data are sufficient to perform emergency assessment and evaluate the potential environmental consequences of an emergency at the CRN Site. Detailed discussion on CRN Site plant-specific parameters are described in the Emergency Plan. The computers in the dose assessment area are capable of running the dose projection computer programs and accessing plant status data.

Hourly and 15-minute average meteorological data from the plant Environmental Data Station are available to the CECC, TSC, State, and LRC. The CECC computer system provides access to up to the most recent 168 hours of this data. A meteorologist in the CECC provides meteorological information to the CECC staff in support of offsite dose projections.

The CECC draws its primary power from commercial power. A loss of commercial power should not impact any of the voice or data communications equipment located in the CECC. Common TVA telecommunications infrastructure that supports CECC functions, including, but not limited to fiber optic transmission equipment, telephone switching equipment, and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, dc battery and uninterruptible power supply systems.

Technical Data and Data Systems

As discussed in the previous section, a variety of plant parameters are provided over the TVA communications network to the CECC.

Reports Availability and Management

Hard copies of key reference materials are maintained in the CECC. In addition, station design documentation, plant drawings, procedures, etc. are available via Local Area Network connection from the Business Support Library.

The following information is available for the CRN Site at the CECC:

- Plant technical specifications.
- Plant operating procedures.
- Emergency operating procedures.
- Final Safety Analysis Report.
- Up-to-date licensee, State, and local emergency response plans.

Conclusion

The CECC meets the functional and design criteria provided in NUREG-0696 for an EOF with the exception that it is located more than 20 miles from the CRN Site. This document describes the TVA approach to assuring that these functional and design criteria are met and maintained. The consolidation of TVA corporate emergency response functions into a centralized facility provides a timely and effective response to a radiological emergency at the CRN Site.