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TENNESSEE VALLEY AUTHORITY

NUCLEAR

RADIOLOGICAL EMERGENCY PLAN

TVA NUCLEAR
The People
The Performance
The Power

3401128640
CHAT REP
REP-GENERIC PART
111695 26

Superseded pages for Rev.
NP REP 50-259/260/296
9607020168
6/26/96

REVISION LEVEL: 26 REVISION DATE: 11/16/95

APPROVED: ____________________
Vice President
Engineering & Technical Services

TENNESSEE VALLEY AUTHORITY

Nuclear Power - Radiological Emergency Plan

List of Effective Pages

This List of Effective Pages must be retained with the Nuclear Power Radiological Emergency Plan.

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TENNESSEE VALLEY AUTHORITY
RADIOLOGICAL EMERGENCY PLAN

REVISION LOG

Rev. & Date	Pages Revised	Reason for Change
0 4/22/88	All	General Revision to convert from individual site-REPs to Common REP with site-specific appendices. Also revises REP approval cycle.
1 12/7/88	A-9, A-14	Revised to add wind speeds to Browns Ferry's Emergency Action Levels (EALs) per memorandum from the NRC dated November 1, 1988.
2 6/5/89	Revised pages marked with an asterisk (*); all pages issued.	Revisions from annual review.
3 6/30/89	A-8, A-9, A-14	Revised Appendix A EALs regarding tornado warnings.
4 9/25/89	i, v, vii, 1, 12, 14, 15-19, 29, 38, 65, 74, A-25 thru A-29, B-30 thru B-33, B-47	Changed emergency action level for tornado at SQN; removed plant communication and CECC Communicator function; clarified training requirement.
5 4/6/90	i.ii, vii, viii, x, 11, 14, 15, 29-31, 35, 37, 44, 48, 52, 55, 56, 62, 63, 65, B-3 thru B-47	Revised to incorporate annual review comments which include: rewrite Section 6; title changes; word changes for clarification; minor changes in implementation; substantial rewording to SQN EALs.
6 5/4/90	v, vi, vii, viii, x, A-1 thru A-45 (A-46 thru A-115 added), B-1 thru B-47 (B-48 thru B-154 added).	Revised to incorporate new EAL format.
7 04/01/91	Revised pages marked with an asterisk (*); all pages issued.	Revisions from annual review and SQN and BFN EAL changes resulting from NRC comments.
8 10/25/91	A-65 and B-92	Revised for clarification of BFN EAL HU14 and SQN EAL HU15.
9 12/17/91	A-29, B-4, and B-5	Revised for clarification of BFN EAL SU7 and SQN EAL FU2.

TENNESSEE VALLEY AUTHORITY
RADIOLOGICAL EMERGENCY PLAN

REVISION LOG

Rev. & Date	Pages Revised	Reason for Change
10 5/5/92	3, 11, 12, 15, 17, 37, 52, (App. A) A-6, A-61, A-62, A-75, A-94, A-97, A-100, A-103, A-104, A-115; (App.B) B-4, B-9, B-18, B-22, B-25, B-32, B-37, B-39, B-44, B-45, B-46, B-48, B-49, B-52, B-53, B-54, B-57, B-58, B-59, B-60, B-61, B-62, B-63, B-66, B-71, B-88, B-106, B-119, B-122, B-131, B-132, B-133, B-139, B-140, B-141, B-142, B-148, B-149, B-154.	Annual Review.
11 11/25/92	B-4 thru B-8, B-14 thru B-22, B-25 thru B-33, B-36, B-38 thru B-39, B-44, B-46, B-60 thru B-67, B-70, B-73, B-73A, B-74, B-76 thru B-77, B-87, B-90, B-92, B-96 thru B-97, B-113 thru B-114, B-128 thru B-129.	EAL Review.
12 04/09/93	18, 35, 38, 42, A-75, A-100, A-105, B-14, B-25,B-37, B-49, B-54, B-59, B-67, B-92, B-139, and B-149.	Annual Review
13 04/30/93	1-2; B-14; B-22.	Changes in response to comments received from NRC in a letter dated April 2, 1993, after review of Revision 12 of the REP.
14 10/04/93	13, 35, 38, A-100, B-139, B-143, B-147, and B-148	Updated in response to NRC comments.
15 01/01/94	x, 1, 3, 5, 48-49, 51, 53, 54, 55, A-43-45, A-47, A-50, A-51, B-60, B-61, B-63 thru B-67, and B-69 thru B-76	Incorporate 10CFR20 and EPA 400 changes.
16 03/21/94	A-94, A-98, A-100, A-101, A-103, and A-104	Annual Review
17 06/30/94	1, 3, 5, 13, 15, 17-20, 25, 26, 30, 32-33, 35, 37, 43, 46, 49-50, 58-60, 64, 67, 69, 74, B-70, B-73, B-73A, B-76, B-83, B-136, B-150 - B-152	Annual Review
18 10/18/94	1-2, 5, 25, 59, 67, 69-73, A-48, A-50, A-51, B-26, B-34, B-60, B-61, B-63, B-65, B-66, B-67, B-68, B-70 thru B-73, B-73A, B-74 thru B-76, B-76A, B-97	Annual Review

TENNESSEE VALLEY AUTHORITY
RADIOLOGICAL EMERGENCY PLAN

REVISION LOG

Rev. & Date	Pages Revised	Reason for Change
19 1/12/95	A-11	Annual Review.
20 2/22/95	Page 63, B-10, B-61, B-65, B-67, B-70, B-73, B-73A, B-74 B-76	Annual Review.
21 4/12/95	C-1 thru C-218	Issue Appendix C (WBN).
22 7/12/95	C-11, C-15, C-17, C-26, C-27, C-28, C-49, C-53, C-75, C-77, C-95, C-98, C-102, C-107, C-113, C-119, C-124, C-132, C-133, C-134, C-136, C-138, C-151, C-159, C-162, C-163, C-165 thru C-181, C-187 thru C-190, C-194, C-197, C-200 thru C-206, C-211, C-212, C-216	Resolution of NRC Comments.
23 8/14/95	Appendix B, all pages	Issue revised EALs based on NUMARC criteria.
24 9/27/95	2, 11, 12, 14, 17, 18, 21, 22, 23, 24, 35, 42, 46, 49, 51, 57, 58, 59, 60, 61, A-100, A-114, C-7, C-13, C-14, C-15, C-18, C-20, C-24, C-28, C-62, C-64, C-66, C-88, C-115, C-116, C-128, C-129, C-132, C-162, C-163, C-165 - C-180, C-184 - C-190, C-200, C-201	Revise for clarification and organizational changes, add statement that the RAM is responsible for dose authorization for personnel under him, remove references for downgrading emergency classifications, revise PAR descriptions and add PAR diagram, revise BFN staffing chart, revise WBN EALs for accuracy.
25 11/01/95	51 Appendix A, all pages	Revise PAR Diagram. Issue revised EALs based on NUMARC criteria.
26 11/16/95	A-45, A-47, A-87, A-88, A-89	Incorporate BFN Unit 3 temperature limits and incorporate SSI-16 relating to Control Room abandonment.

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Generic REP Coversheet

Tennessee Valley Authority	Title RADIOLOGICAL EMERGENCY PLAN (GENERIC PART)	REP REV. 12
		Effective Date:

Written by: Thomas E. Adkins *Signature* Reviewed by: [illegible] *Signature* 3-1-93 *Date*

Plan Effectiveness Determination: Thomas E. Adkins *Signature* 3/1/93 *Date*

CONCURRENCES

Concurrence Signature	Date	Concurrence Signature	Date
☒ EP Manager SQN Nick S. Cost	3/3/93	☒ Manager, Technical Programs Wilson C. McCollum	4/2/93
☒ EP Manager BFN Timothy W Cornelius	03/03/93	☐ Vice President, Operations Services	
☐ EP Manager WBN N/A		☐ NRC N/A	
☐ Manager, EP Program Planning and Implementation B K Marks	4/2/93	☐	
☐ Manager, Emergency Preparedness P J Kitts	4/2/93	☐	

APPROVAL

Approved by: J. R. Bynum *Signature* Vice President, Nuclear Operations *Title* *Organization* 4/9/93. *Date*

1.0 DEFINITIONS AND ABBREVIATIONS

Annual - Any 12 months, plus or minus 3 months.

Exceptions:

1. Exercises, drills, emergency information for residents, media training, and offsite emergency response training is defined as "once per calendar year."

*2. 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.

AUO - Assistant Unit Operator.

BFN - Browns Ferry Nuclear Plant.

BFN-EPIPs (Browns Ferry Nuclear Plant Emergency Plan Implementing Procedures) - The set of BFN emergency response procedures developed to ensure that the capabilities described in the NP-REP are fulfilled at BFN.

CDE - Committed Dose Equivalent as defined by 10 CFR 20.1201.

CECC (Central Emergency Control Center) - The offsite TVA emergency response facility located in Chattanooga 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 the NP-REP are fulfilled in the CECC and offsite.

COO - Chief Operating Officer.

COC - TVA Chattanooga Office Complex, Chattanooga, Tennessee.

DAC - Derived Air Concentration

DDE - Deep Dose Equivalent as defined by 10 CFR 20.1201.

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.

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EDO - Emergency Duty Officer.

*EIC - Emergency Information Coordinator

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

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

EMT - Emergency Medical Technician.

ENS (Emergency Notification System) - The "Red Phone" 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.

EOF - Emergency Operations Facility.

EP - Emergency Preparedness.

EP Staff - Emergency Preparedness Staff.

EPA (Environmental Protection Agency) - An agency of the U.S. Government.

EPZ (Emergency Planning Zone) - The area surrounding the site for which planning is performed to prepare to respond to a nuclear plant accident. The two zones are (1) Plume Exposure EPZ - 10-mile radius; (2) Ingestion Exposure EPZ - 50-mile radius.

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

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 U.S. Government.

FRERP - Federal Radiological Emergency Response Plan.

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FSAR (Final Safety Analysis Report) - The final safety report that is submitted to the NRC in support of each plant's application for an operating license.

His - The use of "he," "him," "his," or any other similar terminology is not intended to imply or refer exclusively to the masculine gender. Rather, all such terms are to be read as applicable without regard to sex.

HPN (Health Physics Network) - The NRC's health physics information line.

INPO - Institute for Nuclear Power Operations.

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

LRC (Local Recovery Center) - A facility located near the affected site used as additional office space, if necessary, for TVA personnel during recovery operations. The facility is also available for NRC use during and incident.

MCR - Main Control Room.

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.
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NE - Nuclear Engineering.

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 accident at a TVA nuclear plant.

NRC - Nuclear Regulatory Commission.

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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 FSAR 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 is defined as "1000 meter radius", (4) in other contexts onsite is "within the reservation boundary.

ODS (Operations Duty Specialist) - The 24-hour per day emergency contact for the Tennessee Valley Authority.

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 accident 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.

PED - Plan Effectiveness Determination.

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

PNS - Prompt Notification System.

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.

PSS - Public Safety Service.

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

RAA - Radiological Assessment Area of CECC.

RadCon - Radiological Control.

*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 accident victims. The REAC/TS facility is a part of 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.

RPT - Recirculation Pump Trip.

SAE - Site Area Emergency.

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."

STA - Shift Technical Advisor.

SQN - Sequoyah Nuclear Plant.

SQN-EPIPs (Sequoyah Nuclear Plant Emergency Plan Implementing Procedures) - The set of SQN emergency response procedures developed to ensure that the capabilities described in the NP-REP are fulfilled at SQN.

T&CS - Transmission and Customer Services.

*TEDE - Total Effective Dose Equivalent as defined by 10 CFR 20.

*Revision

TLD - Thermoluminiscent Dosimeter.

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

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

WBN - Watts Bar Nuclear Plant.

WBN-EPIPs (Watts Bar Nuclear Plant Emergency Plan Implementing Procedures) - The set of WBN emergency response procedures developed to ensure that the capabilities described in the NP-REP are fulfilled at WBN.

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

2.0 INTRODUCTION

The development, implementation, and maintenance of the NP-REP is the responsibility of Nuclear Power (NP). The Senior Vice President of NP has delegated the authority for overall program control of the NP-REP to the Manager, Emergency Preparedness.

2.1 NP Radiological Emergency Plan (NP-REP) Purpose

NP-REP has been developed to provide protective measures for TVA personnel, and to protect the health and safety of the public in the event of a radiological emergency resulting from an accident at a TVA Nuclear Plant. This plan fulfills the requirements set forth in Part 50, Title 10 of the Code of Federal Regulations, and was developed in accordance with the NRC and FEMA guidance. As specified in NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans in Support of Nuclear Power Plants, the NP-REP provides for the following:

1. Adequate measures are taken to protect employees and the public.
2. Individuals having responsibilities during an accident are properly trained.
3. Procedures exist to provide the capability to cope with a spectrum of accidents ranging from those of little consequence to major core melt.
4. Equipment is available to detect, assess, and mitigate the consequences of such occurrences.
5. Emergency action levels and procedures are established to assist in making decisions.

The Radiological Emergency Plan consists of the NP-REP and appendices which are complementary with the State plans referenced in appendix E.

2.2 Plan

The NP-REP 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.

2.3 Appendices

Radiological Emergency Plan information specific to each site is included as appendices.

Site	Appendices
Browns Ferry	A, E
Sequoyah	B, E
Watts Bar	C, E

Appendices A through C detail facility features, capabilities, equipment, protective actions, and responsibilities. The NP-REP, together with the appendices, 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 accident.

Since TVA authority is limited to TVA-owned and -controlled property, State and local agencies are responsible for ordering and implementing actions offsite to protect the health and safety of the public. Appendix E is a list of various State plans which supplement the NP-REP.

2.4 Implementing Procedures

Specific procedures are developed to ensure that the plan is implemented as designed. These implementing procedures are designed to ensure that accidents are properly evaluated, rapid notifications made, and assessment and protective actions performed. These procedures are compiled in the 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.

2.5 State Radiological Emergency Plans

The State Radiological Emergency Plans, as well as the plans for those portions of States within the 50-mile ingestion pathway, are referenced in appendix E. These plans provide for the coordinated

response of the State and affected local governments as well as the States and local governments within the 50-mile ingestion pathway.

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

2.6 Federal Radiological Emergency Response Plan

The Federal Emergency Management Agency (FEMA) administers the Federal Radiological Emergency Response Plan (FRERP) which is the coordinated Federal Government response to a fixed nuclear power plant facility incident. This emergency plan is activated by either the affected State notifying the Federal Emergency Management Agency, or the utility notifying the NRC of a radiological emergency at a nuclear plant site. The FRERP 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 FEMA. 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 FRERP may be used by Federal agencies in radiological emergencies. It primarily concerns offsite Federal response in support of State and local governments with jurisdiction for the emergency. The FRERP 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 FRERP includes the Federal Radiological Monitoring and Assessment Plan for use by Federal agencies with radiological monitoring and assessment capabilities. The CECC Director is the TVA person authorized to request Federal assistance. Such a request from TVA will be made to NRC.

FIGURE 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
Accident 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

3.0 EMERGENCY MANAGEMENT ORGANIZATION

The TVA emergency organization is divided into two categories: the onsite organization and the offsite organization. A block diagram of the onsite organization is presented in the site specific appendix and the offsite organization is presented in Figure 3-1. All designated emergency response personnel are required to participate in the Fitness for Duty Program.

The onsite organization is comprised of the Site Emergency Director and technical staff located in the Technical Support Center, a Control Room Staff of operations personnel, and additional support personnel located in the Operations Support Center. The onsite organization is responsible for the onsite response to an emergency condition. All activities onsite will be directed by the Site Emergency Director and will include such functions as control room operations, technical assessment, accident mitigation analysis, onsite radiation surveys, and dose tracking for site personnel.

The offsite emergency organization is designated as the Central Emergency Control Center (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 and 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.

3.1 Onsite Organization

Under normal conditions the Site Vice President is in charge of all *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 Site Emergency *Director.

The minimum staffing requirements for operation are found in the plant Technical Specifications and/or FSAR. The staff responsibilities are as outlined in FSAR, and are unchanged during an emergency. Under emergency conditions, the normal plant staff is supplemented as shown in the site-specific appendix. The responsibilities of the personnel used to augment the normal plant operating organization are described in the site-specific appendix. Support personnel will be notified to report as required by the situation. Staffing time for the augmenting forces is indicated in the site-specific appendix. This time could vary slightly, depending upon the time of day, weather conditions, immediate availability of personnel, and radiological conditions.

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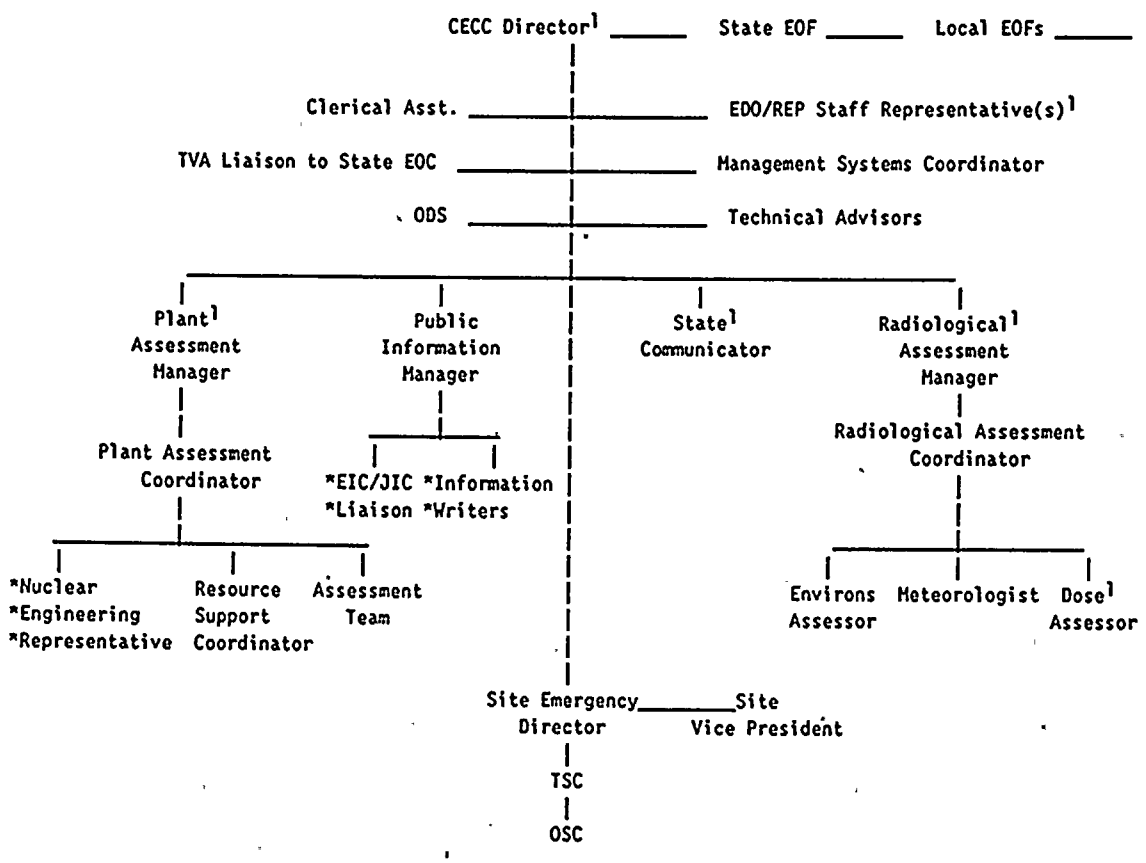
FIGURE 3-1

OFFSITE EMERGENCY ORGANIZATION



[1]These offsite positions will be staffed within approximately 60 minutes.

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The site emergency organization augments the shift operations crew. If members of the site emergency organization are not present whn an emergency occurs, the Shift Operations Supervisor on duty, or a designated Assistant Shift Operations Supervisor when acting as the Shift Operations Supervisor, is designated the Site Emergency Director and acts for him until relieved by the Plant Manager or his alternate.

Upon detection of a known or suspected emergency, the Shift Operations Supervisor on duty refers to the site-EPIP-1 to determine the classification of the emergency. After determining the classification of the incident, the Shift Operations Supervisor assumes the responsibilities of Site Emergency Director and initiates the appropriate procedure referenced by site-EPIP-1. Staffing instructions for the site emergency support centers are specified in the site-EPIPs.

Site procedures shall designate site personnel who shall staff the *ENS and HPN (NRC FTS 2000 System) Communication Systems. Site procedures shall designate the interface to NE during TSC operation.

Each site will at a minimum establish the following positions within its emergency response organization with corresponding responsibilities are outlined below. The site-specific appendix gives detailed staffing and organizational data, including additional positions deemed necessary by the site.

3.1.1 Site Vice President

The Site Vice President serves as a corporate interface for the SED, relieving him from duties which could distract from the SED's primary purpose of plant operations and accident mitigation activities. The Site Vice President provides assistance to the SED by providing TVA policy direction; directing site resources to support the SED in accident mitigation activities; and providing a direct interface on overall site response activities with NRC, FEMA, or other Federal organizations responding to the site, CECC Director, or onsite media.

At his discretion, he may provide an interface at the appropriate offsite location on the overall site response activities with State and local agencies, NRC region/corporate, or Joint Information Center. He also provides support to other emergency operation centers as necessary.

3.1.2 Site Emergency Director

The SED is responsible for directing onsite accident mitigation *activities; consulting with the CECC Director and Site Vice *President on significant events and their related impacts;

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protective actions; coordinating accident mitigation actions with the NRC; makes final decision on personnel entrance to radiologically hazardous areas when the RadCon Superintendent recommends against the entry; and initiating long-term 24-hour per day accident mitigation operations.

The SED makes recommendations for protective actions (if necessary) to the State and local agencies through the ODS prior to the CECC being staffed (this can be delegated only to the CECC Director). The SED is also responsible for determining the emergency *classification as well as the approval of emergency dose *authorizations for personnel under his direction and control (these responsibilities cannot be delegated).

3.1.3 Operations Manager

The Operations Manager is responsible for onsite operational activities; keeps the SED informed on plant status and operational problems; performs damage assessment as necessary; and recommends solutions and mitigating actions for operational problems.

3.1.4 Technical Assessment Manager

The Technical Assessment Manager is responsible for providing information, evaluations, and projections to the SED; coordinating assessment activities with the CECC; keeping the assessment team informed of plant status; assessing effluents; directing the technical assessment team; and projecting future plant status based on present conditions. Pertinent information is provided to appropriate organizations via a continuously used and monitored telephone communications hookup.

3.1.5 Maintenance Manager

The Maintenance Manager is responsible for directing the repairs and corrective actions; performing damage assessment; coordinating OSC teams and ensuring proper briefings and accompaniment by RADCON.

3.1.6 Radiological Control (RADCON) Manager

The RADCON Manager is responsible for assessing inplant and onsite radiological conditions; directing the onsite RADCON activities; coordinating additional RADCON support with the CECC; recommending protective actions for onsite personnel to the SED; maintaining the offsite radiological conditions status information; coordinating assessment of radiological conditions with the CECC; maintaining the inplant radiological status boards; assisting the Maintenance Superintendent in briefing maintenance teams; assigning appropriate RADCON support to maintenance teams; and making final recommendation to the SED for personnel entry to radiologically hazardous environments.

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3.1.7 Chemistry and Environmental Manager

Chemistry and Environmental is responsible for coordinating assessment of effluents with the CECC; directing post-accident sampling activities; directing radiochemical lab activities; assessing effects on radwaste and effluent treatment systems.

3.2 Offsite Organization

*A diagram of the Offsite Organization is provided in Fig. 3.1. *Positions that must respond within approximately 60 minutes of an *alert or higher declaration are indicated on the Figure.

*Activation time for the CECC is approximately 60 minutes following *declaration of an alert or higher classification, depending upon *time of day, weather conditions, or immediate availability of *personnel.

3.2.1 CECC Director

The CECC Director shall have 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 shall direct and coordinate TVA emergency response; review and approve TVA press releases (excluding initial report of event); review adequacy of information to news media/public; and act as the primary point of contact for official TVA positions or recommendations.

The CECC Director shall ensure that key individuals are notified of the condition and severity of the events; information relative to the plant status, radiological impacts, and protective measures is available to emergency responders; NRC, DOE, INPO, insurance underwriters, and the appropriate Federal, State, and local agencies have been notified; points of contact for key types of information from the CECC are provided; and 24-hour/day operations are established if required.

3.2.1.1 Assistant CECC Director

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

3.2.2 REP Staff Representative

Advises the CECC Director regarding all aspects of 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.

3.2.3 State Communicator

Acts as TVA's primary communicator to the State. He clarifies information discrepancies and ensures pertinent information related to plant status, onsite response, and TVA dose assessment is provided to the State. He further assists in providing TVA resource assistance, provides the State with technical advise as necessary, and assists the State Liaison (a State government representative) in briefings and coordinating responses to State inquiries.

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3.2.4 TVA Operations Duty Specialist (ODS)

The position of ODS is staffed seven days a week, 24 hours a day. After being notified of an emergency from a site, the ODS is responsible for making initial notification and reporting recommended protective actions, determined by the site, to the appropriate State emergency organization. In addition, the ODS notifies appropriate TVA offsite emergency personnel. In the event of the initiation of the event as a General Emergency, he is required to notify the appropriate local response agencies.

3.2.5 Emergency Duty Officer (EDO)

The EDO is responsible for establishing initial operation of the CECC in the event the NP-REP is activated at the Alert or higher classification. He is responsible for ensuring that all appropriate initial notifications of TVA and offsite emergency response organizations have been made for all emergency classifications.

3.2.6 TVA State Liaison

Acts as the CECC representative to the SEOC to interpret technical aspects of the emergency condition. He will inform the CECC on State problems, requests, and actions.

3.2.7 CECC Plant Assessment Manager

Maintains contact with the SED and ensures that necessary support is provided. Requests assistance from other TVA organizations or 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 Assessment Team.

3.2.7.1 Plant Assessment Coordinator

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

3.2.7.2 CECC Plant Assessment Team

Will provide a periodic evaluation of plant status information for input back to the TSC and the CECC Plant Assessment Manager. Members of the CECC assessment team will 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. They will apply their evaluation and independent assessment to develop any necessary protective action recommendations for the public. The CECC assessment team will serve as an engineering/operations/core damage assessment consultant for the plant and will reply to plant inquiries based on the available information. The leader will also ensure 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.

3.2.7.3 Resource Support Coordinator

Will provide necessary clerical support to operate the CECC and will maintain communications with other NP technical personnel to coordinate support as necessary. Will coordinate support from other TVA organizations such as legal, medical, finance, and procurement, and will coordinate requests for support from other organizations outside TVA such as equipment vendors and INPO. Will coordinate arrangements for transportation, communications, lodging, food, sanitary facilities and special equipment, and supplies.

3.2.7.4 Nuclear Engineering Representative

Will provide a point of contact in the CECC for onsite and offsite Nuclear Engineering. Will provide necessary engineering support as needed from the Nuclear Engineering organization.

*3.2.8 Public Information Manager

He will ensure the TVA Chief Spokesperson and the JIC Information Staff are provided information to inform the public and news media about an emergency. Will inform the CECC Director of TVA's Public Information activities in response to an emergency.

He will coordinate all news release drafts with the State and Federal agencies participating at the JIC and secure approval of the CECC Director prior to making a release to the media. Will coordinate the decision to establish the JIC with the SEOC.

*3.2.8.1 EIC/JIC Liaison

Responsible for contacting responding agencies and transmitting information for coordination. Will establish and maintain an information flow from the JIC or Site Communications to the CECC.

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3.2.8.2 Information Writers

Gather information from the CECC officers and technical advisor and prepare written statements based on that information. Will develop information releases for the approval of the CECC Director for release to the TVA employees.

3.2.9 Radiological Assessment Manager (RAM)

Ensures that the CECC Director is briefed on matters concerning offsite and onsite radiological conditions. He provides consultation, technical assistance, and obtains additional services as may be required for plant RADCON and offsite environmental radiological surveys. He will ensure that radiological monitoring is conducted in the environment for all 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. The RAM is responsible for radiation dose management, *including emergency dose authorizations, for personnel under his *direction and control. He makes recommendations to the CECC Director on protective actions for the public based on radiological conditions.

3.2.9.1 Radiological Assessment Coordinator (RAC)

Coordinates dose assessment, environs, and meteorological assessment activities in the Radiological Assessment Area (RAA). Directs the overall RAA function and communicates assessment results to the Radiological Assessment Manager. Provides protective action recommendations 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. Coordinates requests for additional RADCON equipment and personnel.

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3.2.9.2 Environmental Assessor

Responsible for the TVA environs monitoring and assessment activities and coordinates the TVA field monitoring effort with the appropriate State agency. Coordinates the analysis of offsite environs samples with 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 Radiological *Assessment Coordinator or RAM for formulation of protective action recommendations to the CECC Director.

3.2.9.3 Dose Assessor

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

3.2.10 Technical Advisors

Provides 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.

3.2.11 Boardwriter(s)

Maintains the CECC Status Boards and EPZ maps with the most current information.

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3.2.12 Management Systems

Makes arrangements for and provides for clerical support, food, TVA, transportation services, lodging, supplies, drawings, and controlled documents. Authorized to issue checks for payment for emergency services of outside firms.

3.3 Local Support

TVA has agreements with police departments, ambulance services, and hospitals near each site to provide appropriate services as requested. (See Subsection 16.5.)

3.4 Federal Agency Support

TVA has developed agreements (see Subsection 16.5) with DOE, Oak Ridge Operations Office and Savannah River Office, to provide *experienced specialists and/or specialized equipment for use during radiological emergencies. The CECC Director implements these agreements as necessary during the course of an emergency.

3.5 Vendor Support

The NSSS vendor has an organization set up to provide technical support during emergency situations. Other vendor support may be procured as needed (see Subsection 16.5).

3.6 Institute of Nuclear Power Operations (INPO)

TVA maintains an agreement, (see Subsection 16.5), with INPO, a consortium of nuclear utilities and other nuclear industries, to obtain any necessary support available from the industry during an emergency.

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4.0 EMERGENCY CONDITIONS

4.1 Classification System

TVA utilizes the following emergency classifications:

1. Notification of Unusual Event (NOUE)
2. Alert
3. Site Area Emergency
4. 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 (see the site-specific *appendix). Escalation to a higher class or termination occurs *during the course of an emergency if warranted by conditions. Example of plant conditions and their recommended emergency classes are given in the specific site 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 and specific instrument readings, if appropriate for the various classifications, are given in the site-specific appendix.

4.1.1 Notification of Unusual Event

This class provides early and prompt notification of minor events which could develop into or be indicative of more serious conditions which are not yet fully realized.

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

The Notification of Unusual Event class is maintained until closeout or escalation to a higher class. The State authorities are notified and in turn notify the local authorities. Following closeout, State authorities are briefed, and no later than the next working day a written summary of significant events which occurred is forwarded to the State.

4.1.2 Alert

An Alert class 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.

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The purposes of the Alert class 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) provide offsite authorities current status information.

*The Alert class is maintained until event termination or escalation to *a higher class. The State authorities are notified and in turn notify the local authorities. Following closeout, State authorities are briefed and no later than the next working day a written summary of significant events which occurred is forwarded to the State.

4.1.3 Site Area Emergency

A Site Area Emergency is declared when events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.

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

*The Site Area Emergency class is maintained until event termination. *or escalation to a higher class. The State authorities are notified and in turn notify the local authorities. Following closeout, State authorities are briefed and no later than the next working day a written summary of significant events which occurred is forwarded to the State.

4.1.4 General Emergency

A General Emergency is declared when events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

The purposes of the General Emergency class are: (1) to initiate predetermined protective actions for the public, (2) provide continuous assessment of information from the site and offsite, and (3) 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.

*Revision

*The General Emergency is maintained until event termination. The *State notifies local authorities unless the initial classification is General Emergency in which case TVA initially notifies the local authorities. Following closeout, State authorities are briefed and no loater than the next working day a written summary of significant events which occurred is forwarded to the State.

4.2 Identification of Emergency Classes

A variety of methods must be used to identify emergency situations and to categorize them. As indicated in the site-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 initiating conditions 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 site EPIPs. These EALs are used as thresholds for determining the emergency classifications. Examples EAL's are presented in the site-specific appendix. The EALs are reviewed annually by the appropriate State.

*Revision

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 are found in the appropriate sections of the EPIPs.

5.1 Onsite

Upon detection of a known or suspected emergency, the Shift Operations Supervisor on duty will utilize the site-EPIP-1, to determine the classification of the emergency. After determining the classification of the emergency, the SED will initiate the appropriate procedures referenced by the site-EPIP-1. Each procedure referenced by site-EPIP-1, gives specific instructions on staffing the TSC, the OSC, and for notifying the ODS and NRC.

5.2 Offsite

When the plan is activated, certain predetermined actions are performed. Notification is carried out as shown in figure 5-1 to alert emergency staff personnel to handle the emergency situation. 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 carrying pagers. Emergency centers are located to ensure rapid and effective response of personnel needed to assess and evaluate offsite conditions.

5.2.1 Notification of Unusual Event (NOUE)

Upon declaration of this class, the following actions are performed:

1. The ODS in Chattanooga is notified of the unusual event by the SED. The ODS records the details of the event in accordance with the appropriate EPIP.

2. The ODS notifies and relays the information to the State within 15 minutes of declaration of the event. The ODS also notifies and relays the information to the EDO and CECC directors.

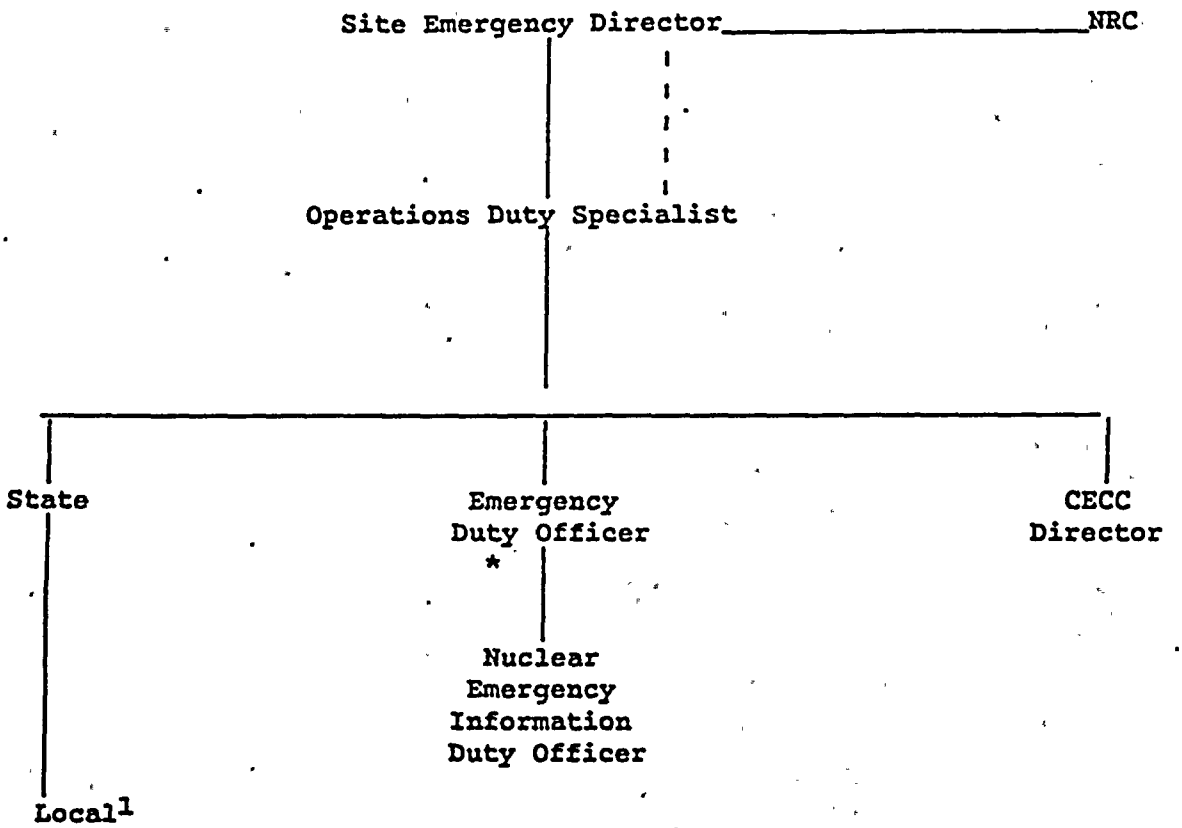
3. The EDO keeps the CECC Directors and the Nuclear Emergency Information Duty Officer informed of the situation as necessary.

*4. The Nuclear Emergency Information Duty Officer notifies the Site Communications Manager, Public Relations, the Energy Communications Manager, and Media Relations.

*5. The SED augments plant shift personnel as necessary to initiate corrective or protective actions.

FIGURE 5-1

CHAINS OF NOTIFICATION



[1]The ODS also notifies the local governments if the initial classification is a General Emergency

- - - - Verification

*Revision

5.2.2 Alert

Upon declaration of this class, the following minimum actions are performed:

1. The ODS in Chattanooga is notified of the incident by the SED. The ODS records the details of the event in accordance with the appropriate EPIP.

2. The ODS makes the notifications described in section 5.2.1.

3. The CECC is staffed.

4. Environmental sampling teams may be dispatched.

5. The TSC and the OSC are activated.

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

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

   a. Class of emergency.

   b. Type of actual of projected release (airbourne, waterbourne, surface spill) and estimated duration/impact times.

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

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

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

   *f. Actual or projected doses at site boundary.
   *

   g. Projected dose rates and integrated dose at about 2, 5, and 10 miles, including sector(s) affected.

   h. Estimate of any surface radioactive contamination.

   i. Emergency response actions underway.

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

*Revision

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

8. The JIC may be activated.

9. Periodic media releases are provided.

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

5.2.3 Site Area Emergency

1. Upon declaration of this class, all actions in section 5.2.2 are performed.

2. Personnel knowledgeable of plant systems are dispatched to the SEOC. Upon notification, these individuals should arrive at the applicable emergency operations center within a timeframe limited only by their commuting time.

3. Any appropriate protective actions for the public are recommended to State agencies by the CECC.

4. The JIC is activated.

5.2.4 General Emergency

1. Upon declaration of this class, all the actions performed in section 5.2.3 are performed.

2. If this is the initial classification, the ODS notifies the local government agencies within 15 minutes, and passes along the protective action recommendations.

5.3 Transportation Accidents

5.3.1 Notification by Carrier

In the event of a transportation accident involving a TVA shipment of radioactive materials, the carrier (or other person at the accident site) contacts the ODS. The carrier has procedures outlining the notifications.

5.3.2 Notification by ODS

1. State

2. EDO

3. Shift Operations Supervisor/Supervisor of the Affected Site

4. CECC Director

5. Radiological Assessment Manager

6. Plant Assessment Manager

5.3.3 CECC Director Actions

The CECC Director notifies the NRC, DOT, State authorities, ANI, and DOE (information only). The appropriate State agency, NRC, ANI, and DOE have duty officers available 24 hours a day to facilitate notification of their respective agencies.

5.3.4 Radiological Assessment Manager Actions

The Radiological Assessment Manager will dispatch a radiological monitoring team, if deemed necessary by the CECC Director or requested by the appropriate State agency. A Radwaste Specialist will be sent with the team. The TVA Representative at the scene will be the senior TVA person at the site of the incident.

6.0 COMMUNICATIONS

The radiological emergency communications network consists of the Emergency Preparedness (EP) telephone system, the EP paging 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. Testing is performed in accordance with established procedures.

6.1 EP Telephone System

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

6.2 Plant Telephone Switching Equipment

The telephone switching equipment installed at each plant 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. Principal system features include:

1. Critical areas served by more than one switching center.
2. Dial access to any TVA or offsite location for properly authorized personnel.
3. Dial access to Federal, State, and local emergency response organizations through redundant, diverse pathways for properly authorized personnel.
4. Radio paging access for summoning key employees wearing pagers.
5. Consistent dialing plan with other TVA locations.
6. Plant fire and medical alarm activation through dial access.
7. Executive override privilege for authorized personnel requiring the ability to interrupt conversations in progress.
8. Access to the plant loudspeaker paging system.

6.3 Sound-Powered Telephone System

Sound-powered telephones are provided for emergency shutdown of the units from remote locations in the event that evacuation of the Control Room is required. Operations of the sound-powered system is completely independent of all other plant communications systems. All cables are routed to avoid common failure points.

6.4 Plant Loudspeaker Paging

This system may be accessed from any plant telephone and is used for normal plant operations and to instruct and notify personnel during an emergency. Also, executive override is provided at the unit operator's desks and the electrical control desk.

6.5 Operations Intercom System

This system connects the unit operator's desks, electrical control desk, shift operation supervisor's office, and the auxiliary Control Room on a common intercom system. This system is accessed from the telephone sets located on these desks.

6.6 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:

Central Emergency Control Center (CECC) to State Emergency Management Agencies.

CECC to each nuclear site.

State Emergency Management Agencies to County Emergency Management Agencies.

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

Joint Information Centers.

Field Coordination Centers.

Other communications include those not provided by TVA, but that reside *at TVA facilities. These are the ENS and HPN telephones (NRC FTS 2000 *System) which provide communications from each site Technical Support Center, Control Room, and the CECC to the NRC Headquarters and regional offices. These telephones are tested on a monthly basis.

*Revision

6.7 EP Paging System

The EP paging system is an automated paging system which is used to automatically page key personnel during nuclear emergencies. It is computer-activated via dedicated CRT terminals located in the shift operations supervisor's office at each nuclear site and the Operations Duty Specialist's office in Chattanooga, all of which are manned 24 hours a day.

The EP paging system has provisions to periodically monitor its own performance to detect and report equipment failures.

6.8 EP Radio System

The EP radio system is a VHF mobile radio system which provides *redundant radio coverage of the 10-mile emergency zone. It provides *radiological monitoring vans with mobile communications to other vans and to the following locations:

Radiological Control.

Technical Support Center.

Control Room at each plant.

CECC in Chattanooga.

6.9 Other Radio Communications

There is an inplant repeater system utilized by Nuclear Security Service which enables transmission without interruption to various areas of the plant. The Nuclear Security Service radio also has access to a Valley-wide (TVA only) radio network for emergency Valley-wide communications. A separate radio located in the plant Central Alarm Station is a direct link to the local law enforcement 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.

*Revision

7.0 PUBLIC INFORMATION AND EDUCATION

7.1 Purpose

The purpose of TVA emergency public information and education is to ensure timely distribution of accurate information during an emergency. The program also provides education to the public located within the 10-mile 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. A Joint Information Center (JIC) would be established under the program 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, nonemergency basis, the program provides that TVA, in coordination with the state, will disseminate information to the public located within the 10-mile EPZ regarding how they will be notified and what their actions should be in an emergency. In addition, TVA and the state will 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 his delegate is responsible for approving written news statements after the CECC is activated.

7.2.2 TVA Chief Spokesperson

The TVA Chief 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 *Vice President, Public Relations

*The Vice President, Public Relations 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 *Energy Information

*Energy Information 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.

*Revision

7.3 Facilities

*The Vice President, Public Relations, directs the activities of the emergency public information personnel at three locations: (1) Communications at the plant will respond to the news media present at the site; (2) the CECC in the Chattanooga Office Complex where staff will develop news releases and coordinate the releases with offsite agencies; (3) the JIC near the plant site where staff will coordinate with the offsite agencies in presenting emergency news briefings and respond to public telephone inquiries. The emergency public information organization shall have sufficient staff at all locations to maintain operations on a 24-hour basis.

7.4 Coordination of Information

Prior to activation of the CECC, coordination of public information with non-TVA primary response agencies will be handled through 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 will shift to the CECC Information Staff. Upon activation and staffing of the JIC, the responsibility for coordination of public information will shift from the CECC to the JIC emergency response staff when and if offsite agencies are also operational at the JIC. The CECC Director will continue to approve written news statements. Non-TVA primary response agencies will be provided a copy of written news statements until they are available to support coordination in the JIC.

7.5 Public Education

Public education materials and programs shall be coordinated with the appropriate State agency. Public information on actions the fixed and transient populations should take in the event of an emergency shall be distributed annually. Mailing lists for the public in the 10-mile EPZ shall be updated annually to assure thorough, accurate distribution of the emergency information.

7.6 Employee Communications

A method of informing TVA employees who do not have emergency response assignments about an emergency shall be the Inside TVA Today (a computer data base information system that employees can access for written information).

*Revision

7.7 Rumor Control

*Emergency information responsibilities are handled by three teams in *the JIC near the plant site. In the JIC, a trained media relations *team will respond to news media inquiries by telephone and media *briefing and a trained information telephone team will respond to *citizen telephone inquiries. Also, in the JIC located near the plant, a trained media team will monitor news media coverage. *Information activities will be coordinated with offsite agencies at the JIC.

7.8 Training

Emergency public information staff and local media expected to respond to an event shall be adequately trained or retrained on an annual schedule.

*Revision

8.0 EMERGENCY RESPONSE FACILITIES, EQUIPMENT, AND SUPPLIES

8.1 Nuclear Site Facilities

8.1.1 Technical Support Center (TSC)

Each site will have a TSC. The TSC is an area within the plant near the control room dedicated for use during an emergency. The TSC will be the focal point of onsite activity and will be the primary source of communication from the site with offsite organizations during the event. The TSC will have sufficient staff to provide management control of the site response to the event. Equipment will be available to enable the TSC staff to communicate with onsite and offsite TVA emergency personnel. An area within the TSC will be dedicated for NRC use and will include five telephone sets and the NRC FTS 2000 System telephones. The TSC will have the same habitability as the control room. Sufficient plant parameter information will be 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 accident. Sufficient information will be transmitted to the CECC to enable the CECC Director to make protective action recommendations to State authorities. Specific plant TSC information is provided in the site-specific appendix. Activation time for the TSC is approximately 60 minutes following *declaration of an Alert or higher classification depending upon time of day, weather conditions, or immediate availability of personnel.

8.1.2 Operations Support Center (OSC)

Each site will have an OSC. The OSC is a predesignated area for the assembly of personnel to support the control room operations crew during an emergency. The OSC area(s) will be under the control of the TSC and will provide damage assessment, maintenance and repair services, and necessary technical services. Communications will be available to the TSC. The OSC will also establish and maintain appropriate communications with any teams that may enter the plant for assessment or repair. Specific plant OSC information is provided in the site-specific appendix. Activation time for the OSC is approximately 60 minutes following declaration of an Alert or higher classification, depending upon time of day, weather conditions, or immediate availability of personnel.

8.1.3 Local Recovery Center (LRC)

Each site will have an LRC. The LRC is an area predesignated for use by offsite TVA and NRC personnel that may be assigned to the 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 with the TSC and offsite. The LRC will be located near the site so that personnel will have access to necessary drawings and documents. Meteorological information will also be available in the LRC.

*Revision

Specific site LRC information is provided in the site-specific appendix.

8.1.4 Site Decontamination Facilities

Each site will have facilities for the decontamination of personnel including those with injuries. Information on specific site facilities is provided in the site-specific appendix.

8.1.5 Equipment, Supplies, and Supplemental Data

Each site will have sufficient equipment and supplies for the operation of the site emergency facilities. Additional seismic and hydrological information can be obtained by the CECC from other TVA nuclear plants or the TVA water quality organization.

8.2 Central Emergency Control Center (CECC)

The purpose of the 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.

During an emergency, the CECC Director and his 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 TVA's recommended protective actions to the appropriate State officials.

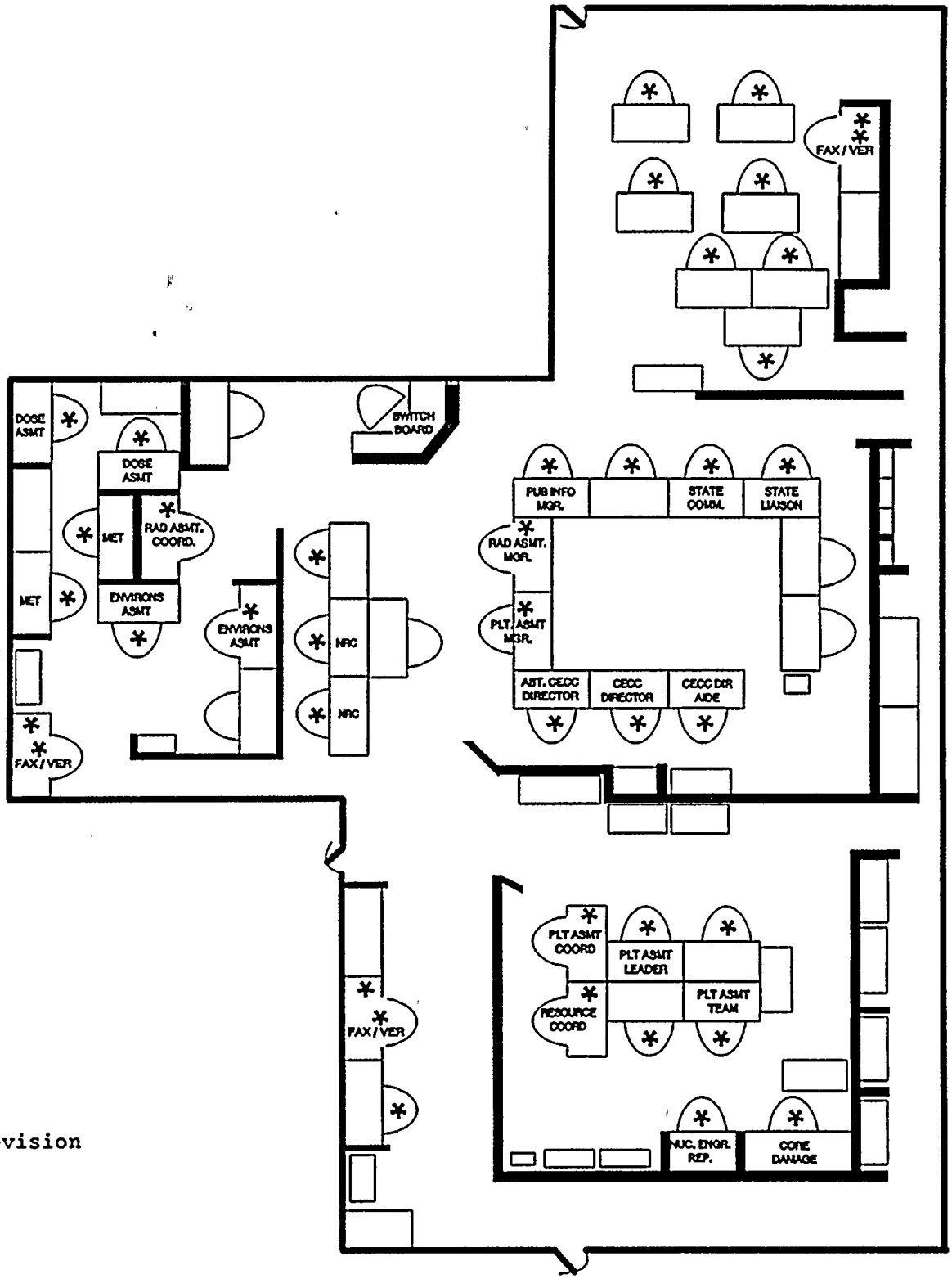
The CECC staff will coordinate with all other TVA emergency centers to ensure an effective TVA effort in response to an accident situation. The CECC staff will also provide an accurate description of the emergency situation for TVA management and public information. In addition, the CECC will coordinate 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 his staff during an emergency situation. Included in the CECC are areas for the Plant Systems Assessment, Radiological Assessment, Information Staff, and the TVA Operations Duty Specialist (ODS). A floor plan for the CECC is provided in figure 8-1. Access control to the CECC is provided by Public Safety.

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, the plant sites, the JIC, and offsite Federal and state organizations.

FIGURE 8-1

CENTRAL EMERGENCY
CONTROL CENTER



*Revision

The CECC is activated during radiological emergencies. The degree of activation varies depending upon the emergency class. However, following the declaration of an Alert or higher classification, the CECC Director reports immediately to the CECC and assembles the essential CECC Staff.

* Activation time for the CECC is approximately 60 minutes following declaration of an Alert or higher classification, depending upon time of day, weather conditions, or immediate availability of personnel.

8.3 Radiological Monitoring Control Center (RMCC)

The RMCC 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 specific predetermined monitoring points to collect data. This data is passed by radio to the RMCC and relayed to the CECC for integration and analysis with the plant data.

Facilities at the RMCC include radio and telephone communications, tie-in to the Hard Copy Transmitting System, and necessary desks, tables, and chairs. Maps of the 10-mile EPZ and the 50-Mile EPZ with preselected radiological sampling and monitoring points are located at the RMCC. The preselected mobile laboratory locations are also reflected on a map at the RMCC.

8.4 Joint Information Center (JIC)

Each nuclear facility has a JIC. The JICs are located at:

Site	Location of JIC
Browns Ferry	Calhoun State Community College, Decatur, AL
Sequoyah	TVA-COC-Chattanooga, TN
Watts Bar	TVA-COC-Chattanooga, TN
Bellefonte	(Later)

8.5 Prompt Notification System (PNS)

Each site has a PNS capable of warning the public within the plume exposure EPZ of a serious event. Specific PNS information is provided in the site-specific appendix.

*Revision

9.0 ACCIDENT ASSESSMENT

9.1 Onsite

Inplant accident assessment actions are carried out by the plant emergency staff in order to properly characterize and classify the accident, determine the actual or potential radioactivity releases, and determine if there has been any effect on plant personnel or a threat to the public.

Assessment methodology consists of actions carried out through plant operating procedures as well as the site-EPIPs. At the onset of an accident, plant operating procedures (normal, abnormal, and emergency) assist the plant operator and SED in identifying the cause of the accident, actions necessary to control the accident, radioactivity release rate, if any, and inplant radiation levels. The site-EPIPs assists the SED in: (1) identifying and reassessing accident 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 site-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 accidents are properly evaluated, timely notifications are made, and assessment and protective actions are performed, are compiled in the site-EPIPs. These procedures are summarized in the site-specific appendix.

9.2 Offsite

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 Plans referenced in appendix E.

Implementing procedures have been developed for the CECC to ensure that accidents are properly evaluated, timely notifications are made, and assessment and protective actions are performed. These procedures are compiled in the CECC-EPIPs and are summarized below.

*CECC-EPIP-1 - CENTRAL EMERGENCY CONTROL CENTER ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

*This procedure is designed to direct the CECC *Director and staff to ensure a consistent, accurate, *and timely response to the events of an accident. *This procedure further serves to identify the *necessary information to provide for prompt, *accurate public protective action recommendations to *appropriate State authorities.

CECC-EPIP-2 - OPERATIONS DUTY SPECIALIST PROCEDURE FOR NOTIFICATION OF UNUSUAL EVENT

This procedure is designed to direct the ODS during a Notification of Unusual Event to ensure a consistent, accurate, and timely response in the event of an emergency.

*CECC-EPIP-3 - OPERATIONS DUTY SPECIALIST PROCEDURE FOR ALERT

*This procedure is designed to direct the ODS during *an Alert to ensure a consistent, accurate, and *timely response in the event of an emergency.

*CECC-EPIP-4 - OPERATIONS DUTY SPECIALIST PROCEDURE FOR SITE AREA EMERGENCY

*This procedure is designed to direct the ODS during *a Site Area Emergency to ensure a consistent, *accurate, and timely response in the event of an *emergency.

*CECC-EPIP-5 - OPERATIONS DUTY SPECIALIST PROCEDURE FOR GENERAL EMERGENCY

*This procedure is designed to direct the ODS during *a General Emergency to ensure a consistent, *accurate, and timely response in the event of an *emergency.

CECC-EPIP-6 - CECC PLANT ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

This procedure is designed to direct the Plant Assessment Manager and staff to ensure a consistent, accurate, and timely response in the event of an accident. This procedure further serves to identify the necessary information which is provided to the CECC Director to ensure that prompt, accurate public protective action recommendations can be made by the CECC to appropriate State authorities.

*Revision

CECC-EPIP-7 - CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

This procedure is designed to direct the Radiological Assessment Manager and staff to ensure a consistent, accurate, and timely response in the event of an accident. This procedure further serves to identify the necessary information which is provided to the CECC Director to ensure that prompt, accurate public protective action recommendations can be made by the CECC to appropriate State authorities.

CECC-EPIP-8 - DOSE ASSESSMENT STAFF ACTIVITIES DURING NUCLEAR PLANT RADIOLOGICAL EMERGENCIES

This procedure is designed to guide Dose Assessment in obtaining necessary information, calculating doses and dose rates, developing protective action recommendations, and communicating assessment results, used in responding to radiological emergencies at nuclear power plants or arising in shipment of radioactive materials.

CECC-EPIP-9 - EMERGENCY RADIOLOGICAL MONITORING PROCEDURES

The objective of this procedure is to provide guidance and instructions to the environs monitoring personnel should a radiological emergency occur at a TVA nuclear plant.

CECC-EPIP-10- WATER RESOURCES RADIOLOGICAL EMERGENCY PROCEDURES

This procedure is designed to direct the water resources support of the CECC in mitigating the effects of a radiological emergency at TVA nuclear plants on the water resources of the Tennessee Valley region.

*CECC-EPIP-11- SECURITY OF OFFSITE EMERGENCY FACILITIES

*This procedure defines CECC and JIC security *requirements and specific instructions for TVA *Public Safety Officers when the CECC or JIC is *activated.

CECC-EPIP-12- DATA SYSTEMS RADIOLOGICAL EMERGENCY PROCEDURES

This procedure is designed to direct the Field Support staff by: (1) providing meteorological and hydrological data for use in protecting the public health, and (2) assisting in mitigating the effects of a radiological emergency at TVA nuclear plants.

*Revision

*CECC-EPIP-13- TERMINATION AND RECOVERY

*This procedure gives guidance on event termination *and transition from the Emergency Response Organization to the Recovery Organization.

CECC-EPIP-14- EMERGENCY PUBLIC INFORMATION ORGANIZATION AND OPERATIONS

This procedure is designed as guidance for CECC and JIC staff personnel and support personnel during an abnormal event at a TVA nuclear plant to ensure timely and accurate release of information to the public. This procedure also provides information for the activation and deactivation of the JIC and the CECC Information work area.

CECC-EPIP-15- JOINT INFORMATION CENTER ACTIVATION, SHIFT CHANGE, AND DEACTIVATION

Cancelled - Combined with CECC EPIP-14.

CECC-EPIP-16- CENTRAL EMERGENCY CONTROL CENTER INFORMATION STAFF ACTIVATION, SHIFT CHANGE, AND DEACTIVATION

Cancelled - Combined with CECC EPIP-14.

CECC-EPIP-17- CENTRAL EMERGENCY CONTROL CENTER METEOROLOGIST PROCEDURES

This procedure is designed to direct the activities of the Meteorologist during a radiological emergency to provide a timely response, consistent and accurate meteorological information, and atmospheric transport and dispersion advice.

CECC-EPIP-18- TRANSPORTATION AND STAFFING UNDER ABNORMAL CONDITIONS

This procedure provides instructions for the transportation of TVA employees under certain limited circumstances. It also includes instructions for lodging and meals as necessary under those circumstances.

*Revision

CECC-EPIP-19- POST ACCIDENT CORE DAMAGE ASSESSMENT

This procedure provides a method to assess the degree of reactor core damage from measured fission product concentrations and interpretations of other plant parametric data under accident conditions. The procedure also provides guidance in obtaining necessary information to predict radionuclide releases (source term) from TVA nuclear plants during accident conditions.

CECC-EPIP-20- CECC TRAINING REQUIREMENTS

*Cancelled - replaced by TRN-30
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CECC-EPIP-21- EMERGENCY DUTY OFFICER PROCEDURE FOR NOTIFICATION OF UNUSUAL EVENT, ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

This procedure is designed to direct the EDO in notifying key TVA organizations and contacts in the event of a Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency.

CECC-EPIP-22- OPERATIONS DUTY SPECIALIST TRANSPORTATION ACCIDENT INVOLVING A SHIPMENT OF RADIOACTIVE MATERIAL FROM A TVA FACILITY

This procedure directs the ODS in obtaining information concerning a transportation accident involving radioactive material.

CECC-EPIP-23- RESPONSE TO RADIOACTIVE MATERIAL TRANSPORTATION ACCIDENTS

The objective of this procedure is to provide guidance and instructions to emergency personnel concerning transportation accidents involving radioactive materials.

*Revision

9.2.1 Sampling Team

TVA has vans equipped to monitor the environment for radioactivity. Each van 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 classes. They may be deployed for the Notification of Unusual Event and Alert classes, if warranted. Van(s) are stationed at each site and in Muscle Shoals, Alabama, at the WARL.

Each team has the capability to:

1. Obtain environmental samples for analysis.

2. Make direct radiation readings.

3. Collect air samples and analyze them for gross beta-gamma radioactivity over a range of energies.

4. Collect air samples and analyze them for radioiodine in the field, to concentrations as low as 10^{-7} microcuries/cc.

Within 30 minutes of an emergency declaration, one sampling team can be deployed from the plant for environmental assessment. Additional teams can be dispatched from other facilities. At least one additional team can be deployed within approximately one hour of notification. Composition and activation of sampling teams are described in the EPIPs.

For the Site Area Emergency, and General Emergency classes, teams are dispatched from the nearest location. They may be deployed for the Notification of Unusual Event or Alert, if warranted. If necessary, teams can be transported in a helicopter or fixed-wing aircraft.

*The TSC RadCon 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 Knoxville and Chattanooga, Tennessee, and Muscle Shoals, Alabama. These teams have boats that can be deployed to obtain samples from the river for subsequent analysis for radioactivity in the laboratories.

*Revision

State agencies have the responsibility to coordinate and evaluate offsite assessment actions. All environmental monitoring activities will be coordinated through the RMCC. State environmental monitoring capabilities and the RMCC operations are referenced in appendix E. TVA will be co-located in the RMCC and coordination of TVA and State monitoring teams will be conducted from that point. Environmental monitoring data will be shared between the State and TVA.

Additional environmental monitoring assistance can be obtained by contacting the DOE offices at Oak Ridge, Tennessee, or Aiken, South Carolina. The EPA in Montgomery, Alabama, can also provide assistance. Environmental monitoring teams and mobile radioanalytical laboratories can be supplied. The State agencies usually request and coordinate these services.

9.2.2 Analyzing Environmental Samples

A mobile radioanalytical laboratory can be dispatched to the site to be the central point for receipt of samples and for detailed field analysis. Samples obtained by the sampling teams may be returned to the WARL, which has the capability to perform further quantitative and qualitative analysis. The mobile radiological laboratory and the WARL are available at all times and can be operated 24 hours per day.

9.2.3 Meteorological Information

9.2.3.1 Primary Meteorological Measurements

The meteorological measurements program is designed to conform to the intent and guidance of Regulatory Guide 1.23. Wind direction, wind speed, and air temperature are measured at three 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 the site-specific FSAR.

9.2.3.2 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 (from other TVA nuclear plants and the National Weather Service first-order stations). Each procedure has an accompanying statement of reliability.

9.2.3.3 Real Time and Forecast Meteorological Data

A meteorologist in the CECC has the responsibility for providing meteorological information to CECC Staff. The dose assessors use this meteorological information to project offsite doses. The meteorological support actions and projection of doses are discussed in detail in CECC-EPIPs. Plume positions are plotted on a site area map.

9.2.3.4 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 TVA nuclear plants, performs unit conversion, reformats data, and flags questionable values.

9.2.4 Dose Assessment

Offsite integrated doses from accidental 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 and/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 individual and population 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 measure 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 measure 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 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.

*Revision

After termination of accidental 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 sector clearance and reentry based on doses calculated for exposure to ground contamination, inhalation of resuspended radioactivity, and ingestion of radioactivity in vegetables and milk.

Dilution factors are predicted for radioactive discharges into the river. From this information, concentrations of radioactive material in the river downstream can be predicted and sampling locations identified. Dose calculations are also performed for individuals drinking water from downstream water supplies.

9.2.5 Transportation Accidents

TVA emergency teams can be dispatched by land vehicle, helicopter, or fixed-wing aircraft to assist in assessing and controlling the situation. The response of emergency teams is decided by the CECC Director.

Appropriate methods described in section 9.2.4 can be applied in assessment of radioactive releases involved with transportation accidents.

10.0 PROTECTIVE RESPONSE

10.1 Onsite

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 various radiation and airborne radioactivity monitors placed throughout the plant, with readout in the control room, indicate the extent of the radiological hazards and may be utilized by the SED to determine the extent of evacuation necessary.

The assembly/accountability alarm is used to initiate the assembly of all site personnel. The public address system is used if only specific areas are to be evacuated. Nuclear Security will patrol the area between the security boundary described in the physical security plan and the site boundary and will evacuate any nonessential personnel.

Upon hearing the emergency siren, all persons in the plant areas will go to their preassigned areas to be accounted for and await further instructions from the SED. The preassigned areas are designated in approved procedures. Predetermined assembly areas are identified in approved procedures and radiological surveys will be made 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 will evacuate to a safe area. An accountability report is made to the SED. Further details of evacuation procedures are described in the site-EPIPs.

If radiation levels at an assembly point are >100 mrem/hr, airborne *radioactivity is in excess of 10 CFR 20 DAC limits, or the SED deems it necessary, the SED will order relocation to a safe assembly point. Employees will be released from this assembly point when the SED determines it is suitable.

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

In the event of the evacuation of nonessential site personnel, the SED will notify the CECC Director. If the personnel require transportation and sheltering, the CECC Director will coordinate arrangements with the appropriate State agency. If the evacuees require radiological decontamination, they will be informed of transportation, sheltering, and decontamination arrangements prior to leaving the plant site. An alternate decontamination facility is specified in the site-EPIPs.

*Revision

All contaminated personnel will be decontaminated to the limits specified in the site Radiological Control Instructions (RCI's) by methods described in the site instructions before being released by TVA. Additional clothing is available onsite if required.

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 accident 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 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. A logic diagram is provided in the site-EPIPs as a decisional aid to
* facilitate this recommendation. These diagrams provide the site
* specific information contained in the CECC logic diagram (Figure
* 10-1).

After the CECC is staffed, the responsibility to recommend protective action is transferred to the CECC Director. The CECC Plant Assessment Manager will provide an assessment of actual and projected plant conditions. The Radiological Assessment Manager will provide an assessment of actual and projected radiological conditions offsite. They will provide a coordinated recommendation for a specific protective action considering both plant and offsite conditions. The CECC Director will evaluate the recommendation from
* his staff and make a recommendation to the State. The logic diagram
* for plume exposure pathway recommendations is provided in Figure
* 10-1 and 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 pathway
* recommendations (i.e., agricultural) and recommendations for liquid
* releases (i.e., closing of public water supplies) with the state as
* appropriate.

*Revision

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

1. Projected offsite integrated doses.

*2. Actual measured dose rates.

3. Present and future weather conditions.

4. Projected improvement or deterioration of plant conditions.

5. State protective action guides.

6. Levels of airborne radioactivity.

7. Levels of waterbourne radioactivity.

8. Concentrations of radioactivity in items for human consumption.

9. Evacuation time estimates (from Evacuation Time Estimate Manual or appropriate state plan).

*Revision

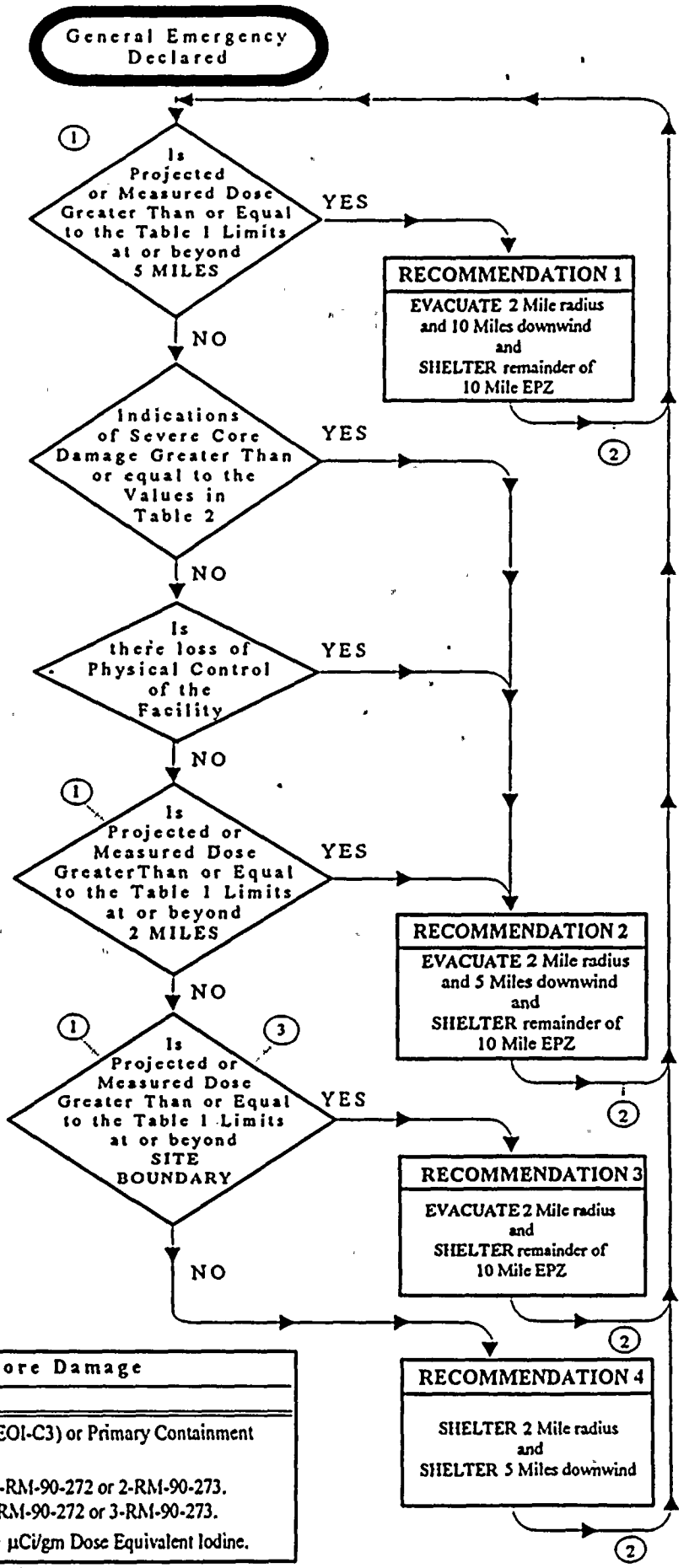
Figure 10-1

NOTES
(1) IF Conditions Are not known, Then Answer No.
(2) CONTINUE ASSESSMENT. Modify protective actions based on available plant and field monitoring infomation. Locate and evacuate additional localized hot spots.
BFN ONLY
(3) When Dose Assessment Projections OR Actual Measured Exposures are not known, a stack release rate * of ≥ 1.3 E11 µCi/sec noble gas can be utilized to meet the condition of 1 REM/hr External Dose at the site boundary.

TABLE 1 RADIOACTIVITY RELEASE DOSE	
TYPE	LIMIT
Measured	3.9 E-6 µCI/cc of Iodine-131
	1 REM/hr External Dose
Projected	1REM TEDE
	5 REM Thyroid CDE

WBN TABLE 2 - Severe Core Damage
INDICATIONS
1. Containment radiation monitor reading on 1-RE-90-271 and 272 equal to or greater than 9.0 E+1 R/hr or Containment radiation monitor reading on 1-RE-90-273 and 274 equal to or greater than 7.0 E+1 R/hr.
2. Reactor Coolant Activity of ≥300 µCi/gm Dose Equivalent Iodine-131.
3. Inadequate core cooling as indicated by "red" path from core cooling status tree.
4. Core exit TCs greater than 1200° F

SQN TABLE 2- Severe Core Damage
INDICATIONS
1. Containment radiation monitors RM-90-271 and 272 increase by greater than 100 REM/hr.
2. Containment radiation monitors RM-90-273 and 274 increase by greater than 1000 REM/hr.
3. Reactor Coolant Activity of ≥ 300 µCi/gm Dose Equivalent Iodine-131.
4. Inadequate core cooling as indicated by "red" or "orange" path from core cooling status tree.



BFN TABLE 2 - Severe Core Damage
INDICATIONS
1. Fuel Not Covered And Steam Cooling Entered (EOI-C3) or Primary Containment Flooding Entered (EOI-C6).
2. • Unit 2 - Drywell Radiation Exceeds 270 R/hr on 2-RM-90-272 or 2-RM-90-273. • Unit 3 - Drywell Radiation Exceeds 90 R/hr on 3-RM-90-272 or 3-RM-90-273.
3. Equilibrium Reactor Coolant Activity of ≥ 300 µCi/gm Dose Equivalent Iodine.

* Revision

11.0 RADIOLOGICAL PROTECTION

The RadCon Section at the site is responsible for all RadCon 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 of NP STD-5.1, "Radiation Protection Plan." 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 NP STD-5.1, and the site Radiological Control Instructions (RCIs). If at all possible, these limits will be employed during emergency operations. If these standards cannot be met during emergencies, the dose limits described in figure 11-1 will be used. The site-EPIPs describe the methods to use and authorizes the doses outlined in figure 11-1.

For all individuals entering radiation work permit areas, direct reading pocket dosimeters and TLD badges are issued and read in accordance with the site RCIs. The pocket dosimeters can be read at any time and the TLD badges can be read by the onsite RadCon Section, other nuclear plants, or the WARL. Dose records are maintained on each monitored individual by a computer.

Figure 11-2 describes the criteria and limits for the emergency condition contamination response at the plant.
*NP STD-5.1 contains TVA's 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 in NP STD-5.1.

*Revision

FIGURE 11-1

EMERGENCY WORKER DOSE LIMITS

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

NOTE: Situations may occur in which a dose in excess of 25 rem would be required for lifesaving operations. It is not possible to prejudge the risk that one person should be allowed to take to save the life of another. However, persons undertaking an emergency mission in which the dose would exceed 25 rem to the whole body should do so only on a voluntary basis and with full awareness of the risks involved.

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

Authorizations for emergency dose limits for onsite personnel will be provided by the SED, while authorizations for offsite personnel will be provided by the CECC Radiological Assessment Manager. In both cases, the person(s) accepting the dose must do so on a voluntary basis.

In all cases adequate protective measures shall be provided so that dose, considering both internal and external pathways, will be maintained As Low As Reasonably Achievable (ALARA). Internal dose should be minimized by the use of respiratory protection equipment and protective clothing should be used to minimize personnel contamination. If a projected dose to the thyroid is expected to exceed 10 rem during a radiological emergency, Potassium Iodide (KI) should be issued, in accordance with applicable implementing procedures.

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

Emergency doses are considered "once in a lifetime exposures" and will be included in lifetime exposure records.

Receipt of emergency dose 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. Figure 11-2 provides information consistent with EPA-400, "Manual of Protective Action guides and Protective Actions for Nuclear Incidents," 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 reported to a TVA Physician. The Physician shall be responsible for determining appropriate evaluation and care.

Following the dose, these individuals must not be assigned duties where they could receive another emergency dose.

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FIGURE 11-2

HEALTH EFFECTS OF RADIATION DOSES GREATER THAN 25 REM

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 years of life lost if premature death occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

Note: Tables referenced from the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," (EPA-400), October 15, 1991, page 2-18.

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12.0 MEDICAL SUPPORT

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 the site-EPIPs, with further guidance provided in the Administrative Release Manual. Immediate lifesaving and disability limiting procedures takes precedence over noncritical decontamination and dosimetry assessment measures.

The care, disposition, and reporting of all injuries known or suspected to be associated with excess levels of radiation exposure or contamination are coordinated with the CECC when activated. The purpose of the medical emergency response team (MERT) (team composition specified in the site procedures) is to:

1. 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.

2. Minimize injury during the rescue, treatment, and transport of injured persons, while minimizing radiological hazards and exposure to the victim.

3. Advise and protect attending personnel from unacceptable and unnecessary radiological hazards and exposures.

4. Identify, document, and control radiation exposure and contamination hazards associated with the emergency.

12.1 Classification and Handling of Medical Emergency Patients

12.1.1 Noncontaminated-Nonirradiated

When it is known that the patient is not contaminated and has not been overexposed to radiation, he is handled 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.

12.1.2 Irradiated-Noncontaminated

The patient is removed 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. RadCon 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.

12.1.3 Contaminated

Patients known or suspected of being contaminated are provided essential first aid/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 RadCon.

12.2 Transportation of Injured Personnel

The decision to transport a patient offsite shall be the responsibility of the emergency medical care provider performing patient assessment, i.e., EMT or RN. If conflicting decisions arise, the option which provides the patient with the optimal level of medical care shall be chosen.

When ambulance transportation is indicated, transport may be provided by the site Fire Protection EMTs (using a TVA ambulance) or by an agreement ambulance service. The MERT Team Leader will coordinate any request for offsite ambulance assistance through the SOS. The SOS will perform initial requests/notifications for assistance.

Arrangements have been made for one or more agreement ambulance services for each nuclear facility, with trained personnel to transport patients, including those who may have been exposed to or contaminated with radioactive material. These services are designated in the site EPIPS and letters of agreement for response are maintained. (See Section 16.5.)

12.3 Local Hospital Assistance

Arrangements have been made for one or more receiving hospitals for each nuclear facility. These agreement hospitals have adequate equipment and trained personnel to care for ill and injured persons, including those who might have been exposed to or contaminated by radioactive material. Initial notifications are performed by the SOS. Hospitals for each site are designated in site EPIPS and letters of agreement are maintained. (See Section 16.5.)

12.4 Interagency Assistance from REAC/TS

Arrangements have been made for assistance from the Radiation Emergency Assistance Center/Training Site (REAC/TS). REAC/TS 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. Specialized facilities and expert personnel are available, after consultation, for backup definitive care for radiation accident victims. Specific guidance and travel instructions are contained in the site EPIPS. A letter of agreement for services is maintained. (See Section 16.5.)

*13.0 TERMINATION AND RECOVERY

*Most emergencies will not require long-term recovery operations. In those cases where recovery operations are indicated, the following guidelines will be used to establish the recovery phase. Recovery operations will vary greatly depending upon the circumstances of the emergency situation. Criteria and procedures will be developed as required considering maximum protection for plant personnel and the public.

*13.1 Termination

*13.1.1 The decision to terminate an event for which the onsite and offsite emergency centers have not been activated will be made by the SED/SOS.

*13.1.2 The decision to terminate and/or enter recovery from an incident for which onsite and offsite emergency centers have been activated will be made by the SED after consultation with the plant technical and operations staffs and will be coordinated with the CECC Director. This decision will be based upon a comprehensive review of plant status and system parameters. These shall include, but not be limited to, the following:

1. Stability of the reactor shutdown condition, i.e., successful progress toward a cold shutdown condition.

2. Integrity of the reactor containment building.

3. Operability of engineered safety systems and decontamination facilities.

4. The availability and operability of a heat sink.

5. The integrity of power supplies and electrical equipment.

6. The operability and integrity of instrumentation including radiation monitoring equipment (also including portable equipment assigned during the emergency).

7. Availability of trained personnel and support services.

8. Control of radiological effluent releases.

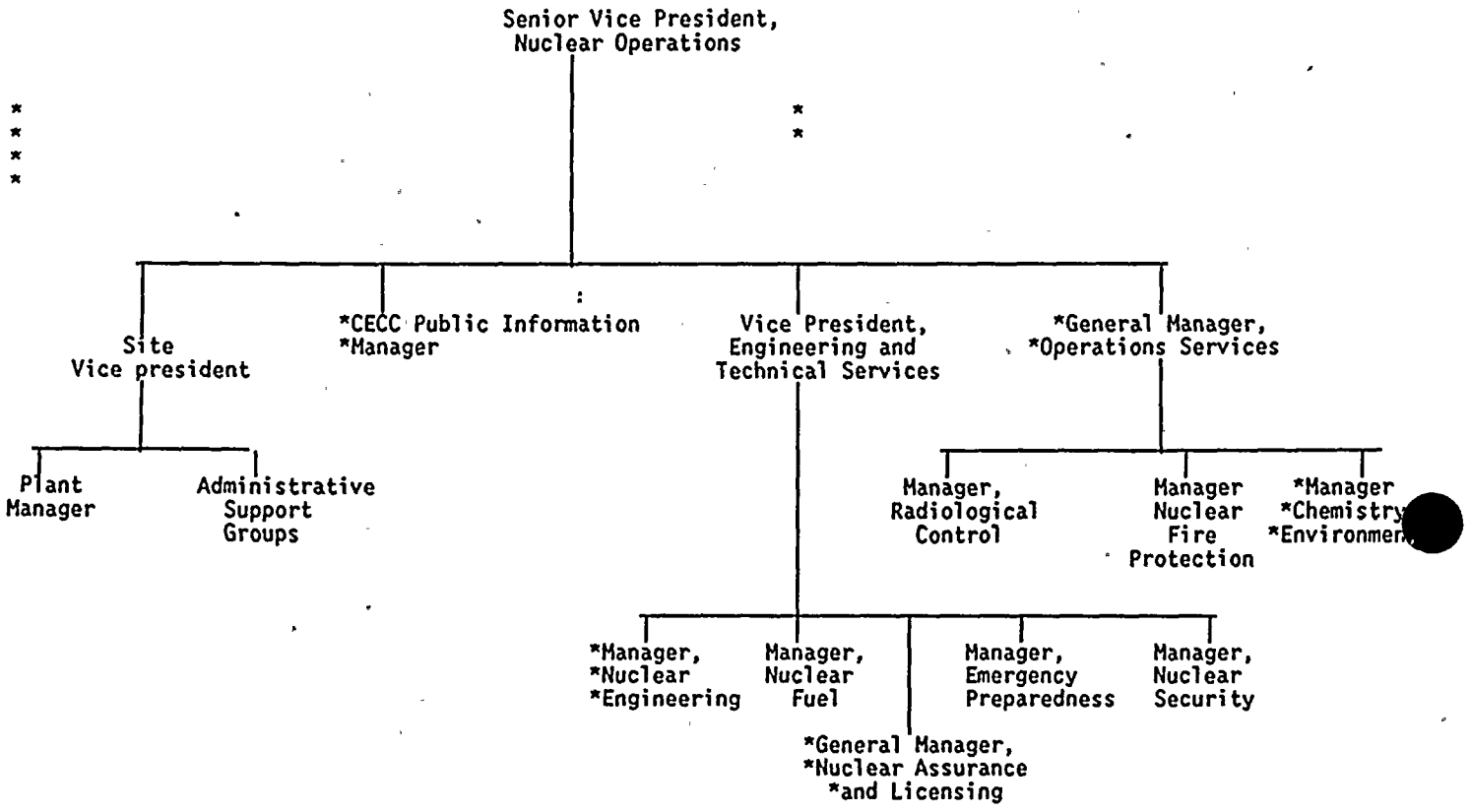
Decisions to relax protective actions for the public will be made by the appropriate State representatives. The CECC Director will provide information to the appropriate State agencies to facilitate the decision. The State has the authority and responsibility for offsite recovery efforts. TVA will provide assistance, as requested, through the recovery organization shown in Figure 13-1.

* The CECC Director, after consultation with the state, the SED, and NRC (if appropriate) will announce that the emergency has terminated and the recovery phase is to be initiated if appropriate. Procedures and plans shall then be drawn up to implement the most expeditious recovery sequence to return the plant to normal operation.

*Revision

FIGURE 13-1

TVA RECOVERY ORGANIZATION



*Revision

13.2 Recovery Organization

13.2.1 Senior Vice President, Nuclear Operations - 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 Senior Vice President Nuclear *Operations.

13.2.2 Plant Manager - Responsible for the onsite recovery effort. May request any needed offsite support through the Site Vice President. Responsible for developing required recovery procedures.

13.2.3 Site Vice President - Responsible for coordinating the onsite *efforts with the overall TVA recovery effort. He will be in charge of the LRC should additional office space be needed.

13.2.4 *Vice President, Engineering and Technical Services - Will manage *needed services to the site in the areas of Engineering, Nuclear *Fuels, Licensing activities, QA activities, Security, and Emergency *Preparedness.

*13.2.5 CECC Public Information Manager - Acts as an interface between TVA and the *news media. They assist the Senior Vice President, Nuclear *Operations, in drafting news releases concerning progress of the recovery operation. They coordinate all news releases with TVA management and State and Federal officials as required. They coordinate all press briefings and interviews concerning the incident.

*13.2.6 *Manager Nuclear Engineering - Will provide needed technical services to the site. Technical services available include specialists on valves and piping, pressure vessels and heat exchangers, auxiliary equipment, turbines, pumps, and engines, power equipment, systems engineering and testing, containment testing, plant performance and analysis, vibration engineering, metallurgical analysis, metallurgical engineering, chemical engineering and chemistry, controls engineering, computer engineering, electrical equipment, and electrical engineering.

*13.2.7 *Manager, Nuclear Fuels - Will provide needed technical services to the site. Technical services available include fuel management and core analysis, core performance, nuclear fuel control and accountability, and startup support.

*13.2.8 *General Manager, Operations Services - Will provide required technical support to the site.

*Revision

*13.2.9 Manager, Radiological Control - Will provide corporate level guidance and needed radiological services as requested. Services include technical support, dose assessment, and environmental monitoring. Will provide technical support and environs sampling assistance as requested by the State.

*13.2.10 Manager, Emergency Preparedness - Will provide assistance in any aspects of emergency preparedness plans, procedures, coordination, and implementation.

*13.2.11 Manager, Nuclear Security - Will provide technical assistance to the site in the area of security.

*13.2.12 Manager, Fire Protection - Will provide technical assistance to the site in the area of fire protection.

*13.2.13 General Manager of Nuclear Assurance and Licensing - Will provide technical assistance in NRC licensing activities.

*13.2.14 Manager, Chemistry and Environmental - Will provide technical *assistance to the site in the areas of chemistry and environmental *issues.

*13.2.15 Other Resources - All other TVA resources plus other governmental and vendor support will be available through the TVA corporate organization to aid the Site Emergency Director in developing, evaluating, and implementing specific site recovery and reentry operations.

13.3 Onsite Recovery

All major post-incident onsite recovery measures shall be performed in accordance with written procedures. Some procedures which may be developed following an incident include the following activities.

1. The first auxiliary/reactor building entry.
2. The first containment building entry.
3. Damage evaluation.
4. Decontamination.
5. Disassembly.
6. Repair.
7. Disposal.
8. Test and startup of restored facilities.

Appropriate personnel protective measures will be taken on initial entries and throughout assessment and recovery operations to limit exposures to that outlined in section 11.0.

Reentry and recovery individual and population dose estimates may be obtained using dose rate measurements or calculations and population distribution (see section 9.2.4). The CECC-EPIPs contain this methodology.

*Revision

13.4 Local Recovery Center (LRC)

The purpose of the LRC is to provide 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 will provide dedicated space for NRC personnel containing adequate supplies, communications, and data necessary for them to carry out appropriate functions. See the site-specific appendix for the description.

13.5 Offsite Recovery

The State has the authority for actions taken offsite; however, TVA will serve 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 Senior *Vice President, Nuclear Operations, or his designee will service as the State's contact for coordination of TVA's efforts in offsite monitoring, sampling, and recovery.

*Revision

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), shall be conducted each *calendar year for each plant. Scenario development, drill activities, and evaluations are jointly conducted and critiqued by *EP and the site.

14.1.2 Radiological Monitoring Drills

*Environmental sampling team drills shall be conducted each calendar year for each plant. These drills include collection and analyses of sample media (water, air, grass, soil), direct radiation measurements, operation of vehicles, communication equipment, sampling equipment, and recordkeeping. The scenario is developed and the drill conducted and critiqued by the site or EP.

14.1.3 RadCon Drills

RadCon drills will be conducted twice each calendar year for each *plant involving response to and analysis of simulated elevated airborne samples and direct radiation readings in the plant. The scenario is developed and the drill conducted and critiqued by the site.

14.1.4 Radiochemistry Drills

*Drills shall be conducted each calendar year at each plant to *collect and analyze inplant liquid and gaseous samples containing *actual or simulated elevated levels, including use of the post *accident sampling system. The scenario is developed and the drill conducted and critiqued by the site.

14.1.5 Radiological Dose Assessment Drills

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 drill conducted and critiqued by EP.

*Revision

14.1.6 Fire Drills

Fire drills are conducted at each plant in accordance with and required by specific procedural requirements.

14.1.7 Communication Drills

Communications drills are conducted at least once each calendar year for each site.

14.2 Exercises

14.2.1 Requirements

Exercises shall be scheduled and conducted such that:

1. A full participation exercise, testing as much of the TVA, State, and local emergency plans as is reasonable without mandating public participation shall be conducted within two years before the issuance of a site's first full power operating license. If the exercise is conducted more than one year prior to licensing an additional exercise testing at least the onsite portion of the emergency plan shall be conducted within one year of the issuance.

2. An exercise shall be conducted for each site, with at least partial participation by the State, to test the REP each calendar year.

3. An exercise shall be conducted for each site, with full participation by State and local authorities, every two years.

4. An exercise shall be conducted for each site such that State and Federal agencies may exercise emergency plans related to *ingestion exposure pathway measures every six years.

5. All major elements of the emergency plans and organizations *shall be tested within a six-year period.

*6. Each site will initiate an exercise between 6:00 pm and *4:00 am at least once every six years.

7. The exact time of the exercise shall be unannounced.

*Revision

14.3 Scenario

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

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

1. The basic objectives of each drill or exercise.

2. The date(s), time period, place(s), and participating organizations.

3. the simulated events.

4. A time schedule of real and simulated initiating events.

5. 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 shall be the responsibility of organization responsible for the specific drill.

Exercise scenario development and implementation shall be the responsibility of Emergency Preparedness (EP). Exercise scenario planning and development will be coordinated with *representatives of appropriate organizations and State agencies. Scenario specifics shall not be released by those representatives prior to the exercise.

Exercise scenarios will be developed to thoroughly test the REP on a five year cycle. The exact time of an exercise shall not be released; however, a time span within which the exercise is to occur may be supplied to the TVA Information Office 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 will be developed to demonstrate corrective measures have been taken regarding the described deficiencies.

14.4 Critiques

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

*Revision

At the conclusion of each exercise a critique shall be conducted where the exercise and its participants will be evaluated for effectiveness, procedural compliance and good practices. EP shall evaluate critique comments, develop a formal written report, coordinate corrective actions for deficiencies or items needing improvement, and follow up to ensure completion of corrective actions.

Drill critiques, critique reports, coordination of corrective action and followup to ensure completion shall be the responsibility of the organization administering the drill. Evaluators will be provided with sufficient material and a briefing prior to the drill to become familiar with the emergency plan and drill scenario.

New page

15.0 TRAINING

Personnel with specific duties and responsibilities in the NP-REP shall receive instruction in the performance of these duties and responsibilities.

15.1 Onsite

Nuclear Training/plant will provide training in emergency procedures to all permanent plant personnel and applicable nonplant personnel *in accordance with plant training procedures.
*
*
*

For personnel with specific duties involving the NP-REP, this training will consist of initial training classes and annual retraining, and drills, to maintain familiarity with the features of the REP. The site EP group provides training to key site responders in the TSC, OSC, and the SED.

All persons having unescorted access to the plant protected area *will have current fitness for duty training and a plant indoctrination and radiation protection course, which includes discussion of plant organization and layout, controlled zones, radiation and contamination hazards, exposure limits and controls, elementary health physics, and pertinent sections of the site emergency plan. When persons who have not completed the above enter the plant protected area, they will be escorted by an employee who has received training in radiation protection and plant emergency procedures.

Periodic retraining of plant personnel, with emphasis on individual actions, will be conducted using the normally scheduled health physics and security training programs.

Medical Services provides emergency medical care training to its medical personnel, and selected Nuclear Power personnel, stationed at the sites. 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

*All CECC personnel will have current fitness for duty training. EP is responsible for ensuring that lesson plans are developed and training is conducted for all CECC personnel. All 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 is 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.

Training shall include procedures for notification, basic radiation protection, expected roles, and site access procedures (as applicable).

*Engineering and Technical Services is responsible for providing agreement hospital and ambulance support training. The sites are responsible for providing fire support training, with assistance *from Engineering and Technical Services as needed. The sites are responsible for providing local law enforcement (security) training.

15.3 Professional Development Training

Persons involved in the emergency preparedness effort shall be afforded formal professional development training commensurate with their duties.

*Revision

16.0 PLAN MAINTENANCE

16.1 NP-REP

16.1.1 Document Identification

Each NP-REP will have a controlled copy number.

Each page of the NP-REP will be printed on yellow paper and will have an identification in an upper corner as in the following example:

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

Documents referenced in appendix E are issued in accordance with appropriate State procedures.

16.1.2 Periodic Review

*The NP-REP and the appendices are reviewed by the sites and EP 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.

16.1.3 Changes

Revisions to the NP-REP may result from the reviews described in section 16.1.2, 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 will be made as expeditiously as possible and will not necessarily be held for submittal with an annual review.

Each line affected by a particular revision will be marked in the margin, or, whenever an entire page has been added or substantially changed, the change will be denoted by a statement at the bottom of the page.

Formal site approval will be obtained on all NP-REP revisions to the site-specific appendices prior to their implementation. Changes to the main body of the NP-REP will be coordinated with responsible site management allowing time for site review (up to 30 days based on the volume and complexity of the change). If comments cannot be

*Revision

resolved by the Manager, EP, and responsible site management, the comment will be escalated to higher line management up to and *including the President, Nuclear Power. All changes to the NP-REP *will be approved by the Vice President, Engineering and Technical *Services, or his designee.

16.1.4 Distribution

Each NP-REP, its additions, and revisions will be authorized by *an approval form and distributed by Administrative Support and Procedures.

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

Administrative Support and Procedures maintains a historical file of all superseded REP material.

To provide REP holders with assurance that the plan is up-to-date, cover pages are distributed with each revision or addition. These cover pages list the latest revision number, the date revised, pages revised, and the reason for the revision.

16.2 EPIPs

16.2.1 Document Identification

Each EPIP manual bears a copy number. Pages of controlled documents are issued on yellow paper or in accordance with approved procedures. Each page has an identification in an upper corner similar to the following example:

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

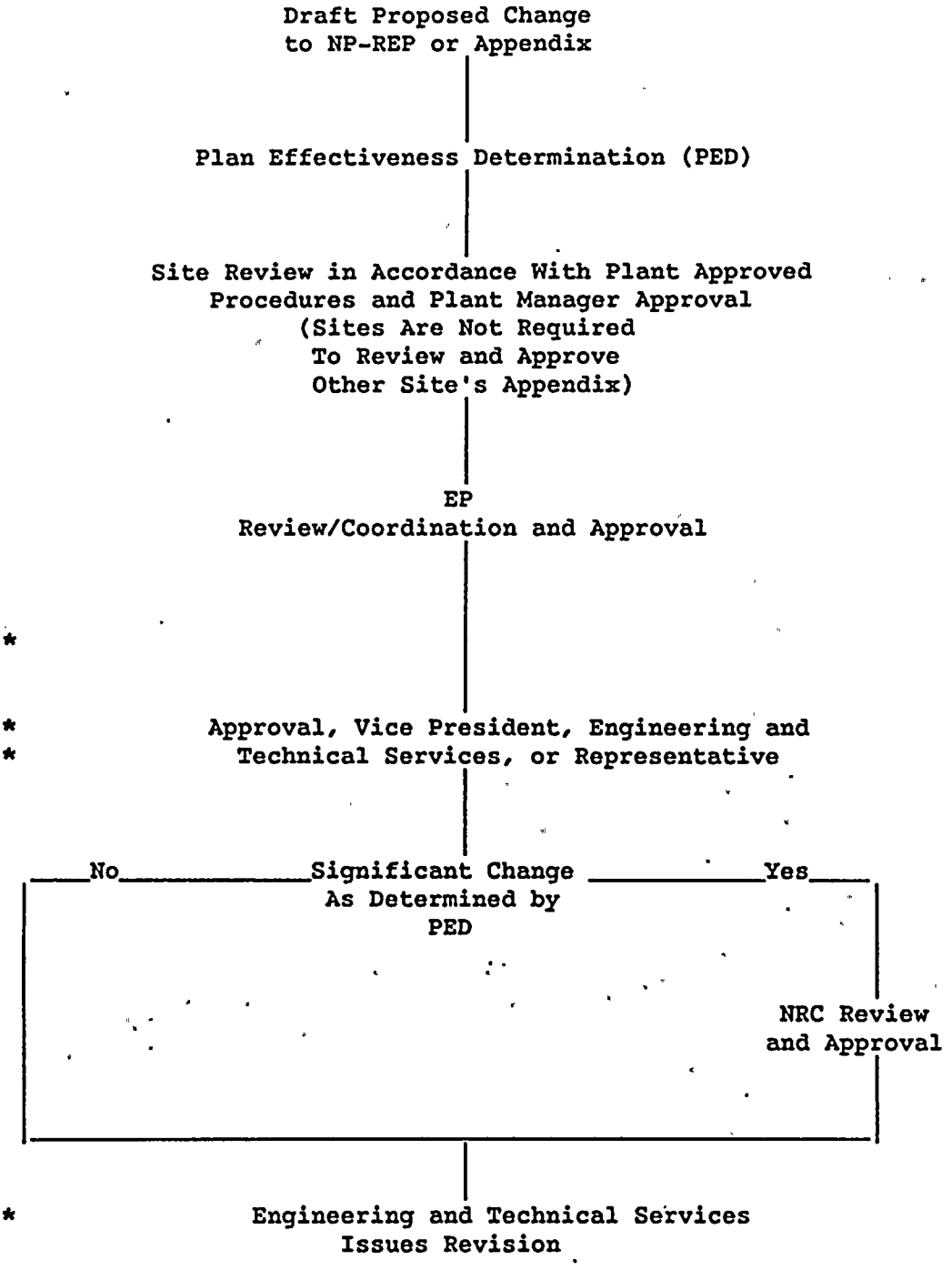
Each procedure in an EPIP will have a cover page listing the revision number and the date revised. Each procedure will also have a revision log or description of the revision. The procedure revision approval form will be signed by the approving authority (or their designee) responsible for that EPIP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

EPIPs	Approving Authority
*CECC	*Vice President, Engineering and Technical Services
BFN	Plant Manager, BFN
SQN	Plant Manager, SQN
WBN	Plant Manager, WBN
BLN	Plant Manager, BLN

*Revision

FIGURE 16-1

UPDATE PROCEDURE FOR NP-REP AND APPENDICES



*Revision

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 Engineering and Technical Services and results are documented.

EPIPs	Organization
CECC	REP Staff
BFN	Browns Ferry Nuclear Plant
SQN	Sequoyah Nuclear Plant
WBN	Watts Bar Nuclear Plant
BLN	Bellefonte Nuclear Plant (Later)

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

16.2.3.1 CECC-EPIP Changes

Revision to an CECC-EPIP may result from the reviews described in section 16.2.2, in drills and exercises, or changes to regulations. Changes are made and distributed according to figure 16-2.

Each line affected by a particular revision will be marked. Whenever an entire page has been added or substantially changed, this is denoted by a statement at the bottom of the page. Whenever an entire procedure is revised, this is denoted by the word "All" under Revised Pages on the cover page.

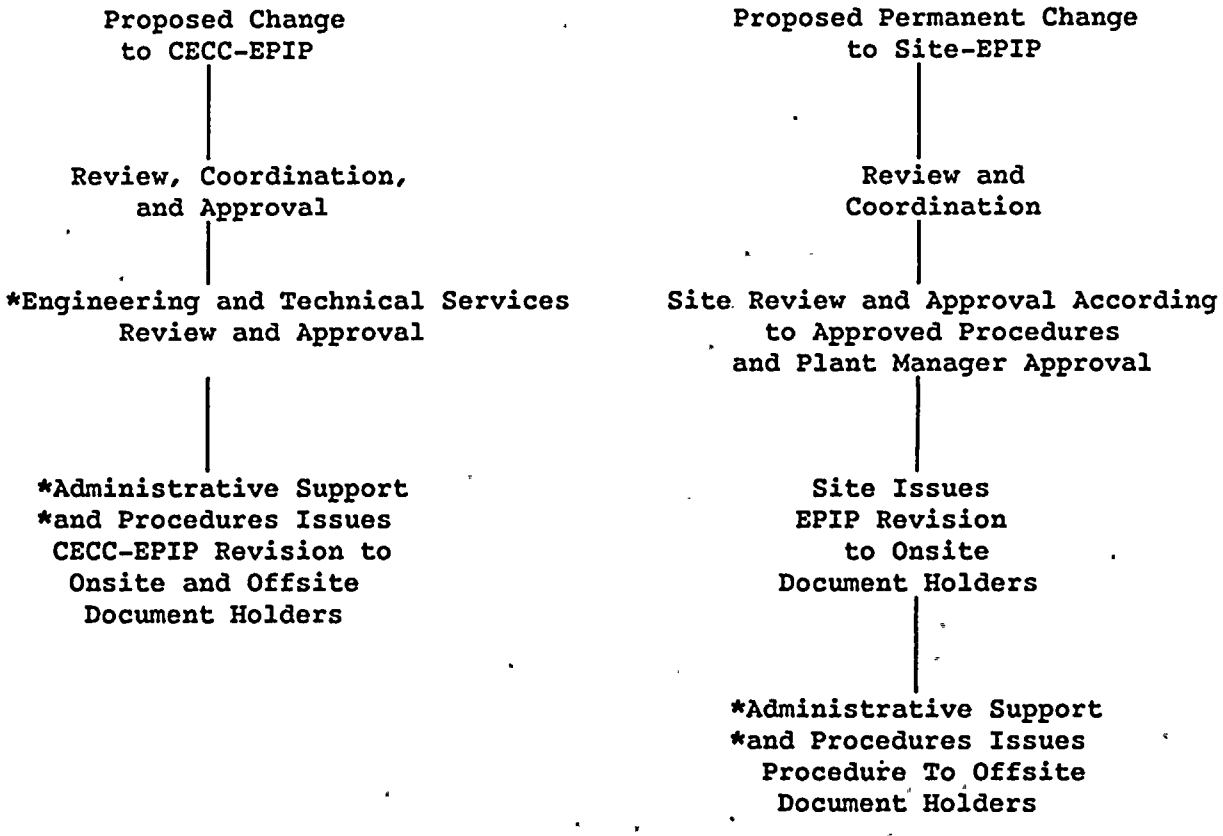
16.2.3.2 Site-EPIP Changes

Permanent, temporary, and emergency site-EPIP changes will be issued as controlled documents to plant document holders in accordance with *site document control practices. Administrative Support and *Procedures will issue the changes to other document holders in *accordance with Administrative Support and Procedures document control practices.

*Revision

FIGURE 16-2

UPDATE PROCEDURE FOR EPIPs



*Revision

16.2.3.3 CECC-EPIP Changes

In addition to the change mechanism depicted in figure 16-2, in order to ensure that minor changes (e.g., personnel changes, phone numbers, etc.) are rapidly implemented, pen-and-ink changes may be made by the responsible organizations to their procedures in documents which they possess. Pen-and-ink changes will be authorized by the approving authority and documented. The initials of the individual making the pen-and ink change and the date of the change will be clearly marked in the margin adjacent to the change. Such changes will be immediately followed by a formal change request.

16.2.4 Distribution

*Each CECC-EPIP or revision will be authorized by an approval form and distributed by Administrative Support and Procedures. Site-EPIP changes will be distributed as discussed in section 16.2.3.2.

Upon receiving revision from EP, those assigned controlled copies of an EPIP sign a receipt, which is provided, and return it with in two weeks to Administrative Support and Procedures.

Each revision will be accompanied by a revised cover page for that procedure. Administrative Support and Procedures maintains a historical file on all superseded CECC-EPIP material and the site maintains a historical file on all superseded site-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:

1. NP-REP
2. CECC-EPIP
3. BFN-EPIP
4. SQN-EPIP
5. WBN-EPIP
6. REND

These documents, along with the state plans referenced in Appendix E, may be issued separately or in combinations as applicable for the individual document holder.

*Revision

16.4 Audits

Nuclear Quality Assurance audits/reviews the NP-REP annually 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 years.

16.5 Agreement Letters

Included in this section is a listing of agreements or contracts maintained for services of outside organizations during an emergency. Agreement letters for offsite law enforcement support are maintained by the site Nuclear Security Services and are updated annually. These agreement letters may be examined upon obtaining approval from the site Nuclear Security Manager. Agreement letters with other offsite organizations are maintained by EP.

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

Hamilton County Emergency Medical Service, Chattanooga, TN
Suburban Ambulance Service, Decatur, AL
Athens-Limestone Ambulance Service, Athens, AL
* Rhea County Ambulance Service, Dayton, TN

b. Agreements maintained with the following medical centers to provide 24-hour availability of medical treatment for patients who may have been exposed to or contaminated with radioactive material:

Erlanger Medical Center, Chattanooga, TN
North Park Hospital, Chattanooga, TN
Huntsville Hospital, Huntsville, AL
Decatur General Hospital, Decatur AL
* Athens Community Hospital, Athens, TN
* Rhea Medical Center, Dayton, TN

c. Agreements maintained with the following fire departments with 24-hour assistance capabilities:

Dayton City Fire Department, TN
Rhea County Fire Department, TN
Soddy Daisy Fire Department, TN
*
*
Clements Fire Department, AL

*Revision

d. John C. Calhoun State Community College agrees to provide facilities for use as a joint Information Center in the event of a major incident at Browns Ferry Nuclear Plant and for drills in preparation for such an event. TVA agrees to provide two-hours notice prior to any such use and to pay the college for facilities and services provided.

e. DOE Radiation Emergency Assistance Center/Training Site (REAC/TS), Oak Ridge, Tennessee - 24-hour availability of backup assistance to TVA for medical/radiological emergencies which exceed in-house and commercially available capabilities.

f. INPO will provide 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.

Revised for page integrity

A.3.3 RadCon Laboratory and Equipment

The RadCon laboratory is located in the service building adjacent to the personnel corridor at elevation 565.0. The portable radiation monitoring and counting equipment normally used by the plant RadCon section is kept in this space and is available for use during an emergency. Sufficient reservices of instruments/equipment are available to replace those removed from service for calibration or repair. Calibration of equipment is carried out at intervals specified by STD-5.1.

A.3.4 Onsite Monitoring Systems and Equipment

A.3.4.1 Natural Phenomena

In the event an emergency is the result of a natural phenomena, there is instrumentation to monitor its severity. The Environmental Data Section is located onsite and contains instruments capable of measuring wind direction, wind speed, and temperatures. Seismic instrumentation is available in the plant to monitor acceleration levels of ground movement. Hydrological monitoring systems are installed to supply flow and level information for each site. Meteorological and seismic instrumentation have readily accessible readout in the main control room. More specific information on these systems can be found in the Browns Ferry FSAR.

A.3.4.2 Radiological Monitors

The installed Radiation Monitoring System consists of process monitors and area monitors which read out on local panels and in the control room.

A.3.4.2.1 Process Monitors (Radiological)

The process system continuously monitors selected lines containing or possible containing radioactive effluents. The system's function is to warn personnel of increasing radiation levels, to give early warning of a system malfunction, and to record and control discharges of radioactive liquids and gases to the environment. The system consists of active and redundant channels. Examples of process monitors are:

1. Reactor Building Ventilation Monitoring System
2. Main Steam Line Radiation Monitoring System
3. Main Stack Radiation Monitoring System
4. Plant Ventilation Exhaust Radiation Monitoring System
5. Liquid Radwaste

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6. Raw Cooling Water

7. Reactor Building Closed Cooling Water

8. Residual Heat Removal Service Water Discharge

A.3.4.2.2 Area Monitors

Area monitors are placed at specific locations in the plant. Examples of area monitor locations are:

1. Reactor Building

2. New and Spent Fuel Storage Area

3. Turbine Building

4. Main Control Room

5. Radwaste Building

6. Off-Gas Stack

A.3.4.2.3 Portable Monitors

Portable radiation detection equipment consists of low- and high-range instruments to measure gamma radiation levels from 0.1 mR/hr to 1000 R/hr. Instruments for alpha, beta-gamma, and neutron radiation measurements are available. Sampling equipment is available to take low- or high-volume air samples. Air samplers can be used to collect low-volume samples either onsite or offsite. The counting room has a multichannel analyzer with shielded GeLi detectors, gas flow proportional counter, liquid scintillation counter, and gamma spectrometer with NaI detector.

A.3.4.2.4 Process Monitors (Nonradiological)

Installed in the main control room are the necessary instrumentation readouts to assess plant systems status including reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, fire detection equipment, and meteorological instrumentation. More specific information on control room instrumentation can be found in the Browns Ferry FSAR.

A.3.4.2.5 Fire Protection

The plant's fire protection system is designed to furnish water and other extinguishing agents with the capability of extinguishing any single or probable combination of simultaneous fires that might occur. The use of combustible materials is minimized, and the

FIGURE A-5

EMERGENCY EQUIPMENT

Location	Description
1. RadCon Laboratory Service Building	Emergency Supplies and Radiological survey meters
2. Control Bay	Emergency SCMBs with additional cylinders
3. Control Building Mechanical Equipment Room	Emergency suppliers and radiological survey meters
5. Emergency Van	General emergency supplies related to environs monitoring
6. Huntsville Hospital & Decatur General Hospital Emergency Rooms	Supplies specific to radiological injuries

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A.3.6.2 Health Stations and Supplies

Emergency medical equipment is strategically located throughout the plant, with trauma kits and other specialized equipment available for use by the MERT.

A first aid station, staffed by an EMT, is located in a separate building near the base of the off-gas stack within the security fence. Medical supplies and treatments for minor injuries are available. First aid treatment is available 24 hours a day.

A medical office, staffed by registered nurses and a physician, is located in the northwest corner of the Personal Services Building outside the east portal to the plant. Medical treatment and examinations (employment, routine, occupational) are available during the day shift, Monday - Friday.

Potassium iodide tablets for onsite personnel are controlled and stored by site RadCon. Specific information including authorizatoin and dispersal of tablets is contained in the site EPIPs.

A.3.6.3 Receiving Hospitals and Supplies

Arrangements have been made with a least one hospital to receive patients from BFN. (See Sections 12.3 and 16.5.)

A.3.6.4 Ambulance Service

A TVA ambulance is available at the site and is maintained and staffed in conjunction with the MERT. Arrangements have been made for offsite ambulance assistance to BFN. (See Sections 12.2 and 16.5.)

A.3.7 Additional Local Support

A.3.7.1 Law Enforcement

Agreements (see section 16.5) are maintained with law enforcement agencies to support TVA when necessary.

A.3.8 Vendor Support

If necessary, the NSSS vendor, General Electric, will be contacted by the CECC Director to provide assistance in the form of manpower, equipment, and technical backup. Other vendors will also be contacted if their assistance is needed.

A.3.9 Emergency Siren

Undulating sirens are provided in strategic plant areas for indicating the assembly of all personnel. Care is exercised in locating the sirens so that they are audible in all plant areas. A three-minute undulating blast on the siren is the signal for assembly. Site evacuation is a steady three-minute blast.

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The sirens are powered by redundant 120V ac supplies. The sirens can be activated from the electrical control desk in the units 1 and 2 control room or the unit 3 control room.

A.3.10 Local Recovery Center

The LRC for Browns Ferry will be a portion of the second floor of the Administration Building outside the protected area of the site.

A.3.10.1 Communications

The LRC has voice communication capabilities to enable personnel to communicate with the CECC and the Browns Ferry TSC. The following voice communication is available in the LRC area:

1. Bell Telephone
2. TVA Microwave Telephone System
3. Long Distance Service

Meteorological information and dose rate calculations are also available to LRC personnel.

Other equipment available for use by LRC personnel include:

1. Facsimile machine
2. Copy machines
3. Hand calculators
4. Tape recorders
5. Plant-specific drawings, manuals, procedures, etc.

A.3.11 REP Implementing Procedures

The following is a listing of the BFN-EPIPs.

A.3.11.1 BFN-EPIP-1--Emergency Plan Classification Logic

This procedure provides guidance to the Shift Operations Supervisor in determining the classification of an accident to ensure that appropriate predetermined actions are implemented. It details initiating conditions and directs shift personnel to appropriate notification and assessment procedures.

A.3.11.2 BFN-EPIP-2--Notification of Unusual Event

This procedure provides for the timely notification of appropriate individuals when the Shift Operations Supervisor has determined by EPIP-1 that an incident has occurred which is classified as a Notification of Unusual Event. It details requirements for periodic reassessment and the implementation of appropriate actions.

A.3.11.3 BFN-EPIP-3--Alert

This procedure provides for the timely notification of appropriate individuals when the Shift Operations Supervisor has determined by EPIP-1 that incident has occurred which is classified as an Alert. It details requirements for periodic reassessment and the implementation of appropriate actions. It also contains information for performing offsite dose assessment.

A.3.11.4 BFN-EPIP-4--Site Area Emergency

This procedure provides for the timely notification of appropriate individuals when the Shift Operations Supervisor has determined by EPIP-1 that an incident has occurred which is classified as a Site Area Emergency. It details requirements for periodic reassessment and the implementation of appropriate actions. It also contains information for performing offsite dose assessment.

A.3.11.5 BFN-EPIP-5--General Emergency

This procedure provides for the timely notification of appropriate individuals when the Shift Operations Supervisor has determined by EPIP-1 that incident has occurred which is classified as a General Emergency.

It details requirements for periodic reassessment and the implementation of appropriate actions. It also contains information for performing offsite dose assessment. It also contains information for determining protective action recommendations for the public.

A.3.11.6 BFN-EPIP-6--Activation and Operation of the TSC

This procedure directs the activation and operation of the TSC during an Alert, Site Area Emergency, or General Emergency. It details notification requirements. Documents issued onsite contain the TSC call-out lists.

A.3.11.7 BFN-EPIP-7--Activation and Operation of the OSC

This procedure directs the activation and operation of the OSC during an Alert, Site Area Emergency, or General Emergency. It details notification requirements. Documents issued onsite contain the OSC call-out lists.

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A.3.11.8 BFN-EPIP-8--Personnel Accountability and Evacuation

This procedure details the requirements for accountability of all personnel and visitors and the orderly evacuation of areas of the plant during a radiological emergency.

A.3.11.9 BFN-EPIP-10--Medical Emergency Procedure

This procedure details actions to be followed during medical emergencies. It provides for the organization and activation of the onsite Medical Emergency Organization. It contains the duties and responsibilities of the onsite Medical Emergency Organization. The procedure provide guidance on the care and handling of patients who may have been exposed to or contaminated with radioactive material, including provisions for the transport of these individuals to offsite medical support facilities. Maps and appropriate instructions are also included.

A.3.11.10 BFN-EPIP-11--Security and Access Control

This procedure details responsibilities and requirements for access control and accountability during a radiological emergency.

A.3.11.11 BFN-EPIP-13--Radiochemical Laboratory Procedure

This procedure provides the instructions to be followed by the lab during an emergency.

A.3.11.12 BFN-EPIP-14--Radiological Control Procedure

This procedure outlines the actions to be followed by RadCon personnel during a plant emergency. It details responsibilities and RadCon assessment actions and recordkeeping requirements. The procedure provides guidance regarding the administration of potassium iodide (KI) to inplant workers.

A.3.11.13 BFN-EPIP-15--Emergency Exposure

This procedure provides guidance on acceptable personnel exposures for various conditions. It specifies absolute exposure and authorizes the Site Emergency Director to permit exposures in excess of 10 CFR 20 limits in order to perform the emergency mission.

Revised for page integrity

A.3.11.14 BFN-EPIP-16--Termination and Recovery

This procedure outlines responsibilities and provides guidance on termination of an event and recovery after an emergency to ensure adequate planning for efficient utilization of resources and radiation exposure.

A.3.11.15 BFN-EPIP-17--Emergency Equipment and Supplies

This procedure details requirements for periodic inspection and maintenance of emergency equipment and supplies. It assigns responsibility and specifies the inspection frequency and documentation requirements.

A.3.11.16 BFN-EPIP-19--Communication System and Emergency Notification List

This procedure provides a ready reference of onsite communication capabilities and key telephone numbers onsite and offsite.

A.3.11.17 BFN-EPIP-20--Plant Data

This procedure provides a system to collect and transfer plant data from the Control Room to the TSC.

A.3.11.18 BFN-EPIP-21--Fire Emergency Procedure

This procedure provides the guidance for the management of the response to fire emergencies.

Revised for page integrity

A.4 PROMPT NOTIFICATION SYSTEM

The prompt notification system network consists of fixed sirens and tone-alert radios. The system is designed to provide warning within 15 minutes to the population within 10 miles of the plant.

A.4.1 Fixed Sirens

The fixed siren component consists of electromechanical sirens. The sirens are radio activated by local authorities within each county.

The siren system is activated on a monthly basis by the local Emergency Management Agencies as a regularly scheduled test. A silent test is conducted every two weeks to test the radio link to the sirens. A growl test is performed by TVA employees on a quarterly basis. This test consists of each siren being activated individually by a portable test unit.

Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturers' recommendations. Unscheduled maintenance is performed on as-needed basis.

A.4.2 Tone-Alert Radios

The tone-alert radio component consists of radios activated by county frequencies. The radios are placed in institutions where there are concentrations of people.

Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturers' recommendations. Unscheduled maintenance is performed on an as-needed basis.

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HAZARDS and SED JUDGEMENT

SQN Reference	NUMARC/NESP-007 Reference
4.1 Fire	HU2, HA2
4.2 Explosion	HU1, HA1
4.3 Flammable Gas	HU3, HA3
4.4 Toxic Gas	HU3, HA3
4.5 Control Room Evacuation	HA5, HS2
4.6 Security	HU4, HA4, HS1, HG1
4.7 SED Judgement	HU5, HA6, HS3, HG2

DESTRUCTIVE PHENOMENON

SQN Reference	NUMARC/NESP-007 Reference
5.1 Earthquake	HU1, HA1
5.2 Tornado	HU1, HA1
5.3 Aircraft/Projectile	HU1, HA1
5.4 River Level High	HU1, HA1
5.5 River Level Low	HU1, HA1
5.6 Watercraft Crash	HU1, HA1

SHUTDOWN SYSTEM DEGRADATION

SQN Reference	NUMARC/NESP-007 Reference
6.1 Loss of Shutdown Systems	SA3, SS5 (expanded)
6.2 Loss of Shutdown Capability	SU2, SA3, SS4
6.3 Loss of RCS Inventory	SU5

ENTIRE PAGE REVISED

RADIOLOGICAL

SQN Reference	NUMARC/NESP-007 Reference
7.1 Gaseous Effluent	AU1, AA1, AS1, AG1
7.2 Liquid Effluent	AU1, AA1
7.3 Radiation Levels	AU2, AA3
7.4 Fuel Handling	AU2, AA2

In each event there exists a set of Initiating Conditions and associated emergency action levels (where required) which initiate the declaration of the emergency and the required level of onsite and offsite emergency response.

In the SQN Methodology, the following operating modes are used in the declaratory scheme:

- Power operations (1)
- Start up (2)
- Hot Standby (3)
- Hot Shutdown (4)
- Cold Shutdown (5)
- Refueling (6)
- Defueled

B.3 Responsibility

The responsibility of declaring an emergency based on the guidance provided in this section belongs to the Shift Operations Supervisor/Site Emergency Director (SOS/SED) or designated Assistant Shift Operations Supervisor (ASOS) when acting as the SOS or the SED. These duties cannot be delegated.

B.4 Classification Determination

To determine the classification of the emergency, the SED reviews the Initiating Conditions of the events described in Emergency Plan Implementing Procedure (EPIP 1) One with the known or suspected conditions.

If a Critical Safety Function (CSF) is listed as an Initiating Condition, the respective status tree criteria will be monitored and used to determine the event classification for the modes listed on the classification matrix in EPIP-1.

Declare the highest emergency class based on events that are in progress at the time that the classification is made. If follow-up investigation show that a higher classification was met then report that, as information only, to the Operation Duty Specialist (ODS) and the NRC. Do not declare or upgrade to a higher emergency class if the conditions do not exist.

ENTIRE PAGE REVISED

B.4 Classification Determination (continued)

Following termination of an emergency declaration, if follow-up investigations show that a higher classification was met then report that, as information only, to the ODS and the NRC. Do not declare or upgrade to a higher emergency class if the conditions do not exist.

During an event when plant conditions have returned to a non-emergency state before any emergency can be classified, the highest emergency class that was appropriate shall be reported and shall not be declared. If follow up investigations show that a higher classification was met then report that, as information only, to the ODS and the NRC. Do not declare, or upgrade to a higher emergency class, if the conditions do not exist.

The NRC shall be notified within one hour of all classifications. Once made and reported, a declaration cannot be canceled or rescinded even if it is later determined to be invalid. If there is reason to doubt that a given condition has occurred the SOS/SED shall follow indications and proceed with classification, as required, until otherwise proven false. The State shall be notified within 15 minutes of the classification. If the State is notified of a declaration that is invalidated before the NRC is notified, terminate the classification, if not already done, and report the declaration to the NRC.

The ACCEPTABLE time frame for notification to the (ODS) is five (5) minutes. This is the time between declaration of the emergency and notifying the ODS.

References:

10 CFR 50	Domestic Licensing of Production and Utilization Facilities
REG GUIDE-1.101	*Emergency Planning and Preparedness For Nuclear Power Reactors endorsing NUMARC NESP-007 Methodology for Development of Emergency Action Levels*

Site Technical Specifications (Tech Specs), Abnormal Operating Instructions (AOIs), Emergency Operating Procedures (EOPs), and the Final Safety Analysis Report (FSAR) are also referenced in Appendix B of the Radiological Emergency Plan to support the Emergency Classification Flow Chart.

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BOMB: An explosive device. (See EXPLOSION)

CIVIL DISTURBANCE: A group of twenty (20) or more persons within the EAB violently protesting onsite operations or activities at the site.

CRITICAL-SAFETY FUNCTION (CSFs): A plant safety function required to prevent significant release of core radioactivity to the environment. There are six CSFs: Subcriticality, Core Cooling, Heat Sink, Pressurized Thermal Shock, Integrity (Containment) and Inventory (RCS).

EVENT: An EVENT commences when recognition is made that one or more of the conditions associated with the event exist. Implicit in this definition is the need for timely assessment within 15 minutes.

EXCLUSION AREA BOUNDARY (EAB): That area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. For purposes of Emergency Action Levels, based on radiological field measurements and dose assessments, and for design calculations, the Site Boundary shall be defined as the EAB.

EXPLOSION: Rapid, violent, unconfined combustion, or a catastrophic failure of pressurized or electrical equipment that imparts energy of sufficient force to potentially damage permanent structures or equipment required for safe operation.

EXTORTION: An attempt to cause an action at the site by threat of force.

FAULTED: (Steam Generator) Existence of secondary side leakage (e.g., steam or feed line break) that results in an uncontrolled decrease in steam generator pressure or the steam generator being completely depressurized.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical components do not constitute a fire. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

FLAMMABLE GAS: Combustible gases at concentrations > than the LOWER EXPLOSIVE LIMIT (LEL).

HOSTAGE: A person(s) held as leverage against the site to ensure that demands will be met by the site.

IMMINENT: Within two hours.

INEFFECTIVE: When the specified restoration action(s) does not result in a reduction in the level of severity of the RED or ORANGE PATH condition within 15 minutes from identification of the Core Cooling CSF Status Tree RED or ORANGE PATH.

INITIATING CONDITIONS: Plant Parameters, radiation monitor readings or personnel observations that identify an Event for purposes of Emergency Plan Classification.

INTRUSION/INTRUDER: Suspected hostile individual present in the protected area without authorization.

ODCM: Offsite Dose Calculation Manual is a supporting document to the Tech. Specs. that contain Rad Effluent Controls, Environs Monitoring controls, and methodology for calculating gaseous and liquid effluent offsite doses and monitor alarm/trip setpoints.

ORANGE PATH: Monitoring of one or more CSFs by FR-0 which indicates that the CSF(s) is under severe challenge; prompt operator action is required.

PROJECTILE: An object ejected, thrown, or launched towards a plant structure resulting in damage sufficient to cause concern regarding the integrity of the affected structure or the operability or reliability of safety equipment contained therein. The source of the projectile may be onsite or offsite.

PROTECTED AREA: The area encompassed by the security fence and to which access is controlled (power block).

RED PATH: Monitoring of one or more CSFs by FR-0 which indicates that the CSF(s) is under extreme challenge; prompt operator action is required.

RUPTURED: (Steam Generator) Existence of primary to secondary leakage of a magnitude greater than the capacity one charging pump.

SABOTAGE: Deliberate damage, misalignment, or misoperation of plant equipment with the intent to render the equipment inoperable.

SIGNIFICANT TRANSIENT: An UNPLANNED event involving one or more of the following: (1) An automatic turbine runback >15% thermal reactor power; (2) Electrical load rejection >25% full electrical load; (3) Reactor Trip; (4) Safety Injection System Activation; (5) Thermal Power Oscillations >10%.

STRIKE ACTION: A work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands made on TVA. The STRIKE ACTION must threaten to interrupt normal plant operations.

TOXIC GAS: A gas that is dangerous to life or limb by reason of inhalation or skin contact (e.g., chlorine, CO2, etc.).

UNPLANNED: An event or action that is not the expected result of normal operations, testing, or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.

UNPLANNED RELEASE: A release of radioactivity is UNPLANNED if the release has not been authorized by a Discharge Permit (DP). Implicit in this definition are unintentional releases, unmonitored releases, or planned releases that exceed a condition specified on the DP, (e.g., alarm setpoints, minimum dilution flow, minimum release times, maximum release rates, and/or discharge of incorrect tank).

VALID: An indication, report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment within 15 minutes.

VISIBLE DAMAGE: Damage to equipment that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage includes deformation due to heat or impact, denting, penetration, rupture, cracking, or paint blistering. Surface blemishes (e.g., paint chipping, scratches, etc.) should NOT be included as visible damage.

VITAL AREA: Any area within the PROTECTED AREA which contains equipment, systems, devices, or material which the failure, destruction, or release of, could directly or indirectly endanger the public health and safety by exposure to radiation.

Section 1.0	FISSION PRODUCT BARRIER MATRIX
Event 1.2	RCS BARRIER
IC 1,2,3	Steam Generator Tube Rupture
Mode	1,2,3,4
Description	LOSS: SGTR that results in a safety injection actuation. OR Entry into E-3. Potential LOSS: Not Applicable.
Basis	LOSS: The "Loss" IC addresses conditions where the SGTR exists and the RCS flow into the steam generator is such that pressurizer level and pressure cannot be maintained. The inability to maintain level via the normal charging header, with CVCS letdown in service requires a safety injection by procedure. If a manual safety injection is not initiated an auto SI will occur due to a low pressurizer pressure. Any event that results in significant RCS inventory shrinkage or loss (e.g., events leading to reactor trip and ECCS actuation) will result in no lower than an "Alert" emergency classification. This IC also addresses the entry into EOP, E-3, Steam Generator Tube Rupture, under any circumstance. This "Loss" IC in conjunction with the containment barrier "Loss" IC 1.3.4 addresses the situation where the S/G that is ruptured and is also faulted. This "Loss" of two barriers requires an event classification of Site Area Emergency. Potential LOSS: There is no "Potential Loss" IC associated with this item.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92 per REG GUIDE 1.101 AOI-33 Steam Generator Tube Leak E-3 Steam Generator Tube Rupture

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Section 1.0	FISSION PRODUCT BARRIER MATRIX
Event 1.2	RCS BARRIER
IC 1,2,4	Reactor Vessel Water Level
Mode	1,2,3,4
Description	**LOSS:** VALID RVLIS level <40% on LI-68-368 or 371 with no RCP running. **Potential LOSS:** Not Applicable.
Basis	**LOSS:** The "Loss" IC is defined by an orange path on the core cooling status tree (CSF). The numeric value used is 40% level with no reactor coolant pumps running. Inability to maintain reactor vessel water level is the fundamental indication that the RCS barrier has been lost. This "Loss" EAL in conjunction with the fuel clad barrier "Potential Loss" IC 1.1.4 requires an event classification of Site Area Emergency. A RVLIS reading of 40% is equivalent to a reactor vessel level 3.5' above the bottom of the fuel. This is also equivalent to 8.5' of uncovered fuel. **Potential LOSS:** There is no "Potential Loss" IC associated with this item.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92 per REG GUIDE 1.101

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Section 1.0	FISSION PRODUCT BARRIER MATRIX
Event 1.3	CNTMT BARRIER
IC 1.3.2	Containment Pressure/Hydrogen
Mode	1,2,3,4
Description	**LOSS:** Rapid unexplained pressure decrease following initial increase on PdI 30-44 or 45. OR Containment pressure or sump level not increasing on LI-63-178 or 179 with a LOCA in progress. **Potential LOSS:** Containment hydrogen increases to >4% by volume on H_2I-43-200 or 210. OR Pressure >2.81 PSID (Ø B) with no containment spray operating (FR-Z.1).
Basis	**LOSS:** The first "Loss" IC address a rapid unexplained loss of pressure, (i.e. not attributable to containment spray or condensation effects), following an initial pressure increase, indicating a loss of containment integrity. The second"Loss" IC addresses the situation where containment pressure or sump level increasing with a LOCA in progress. This could indicate containment bypass and loss of containment integrity. This IC, in conjunction with RCS barrier IC #2, results in an event classification of Site Area Emergency. **Potential LOSS:** The condition of high containment pressure, > 12 psid, is addressed by the CSF, containment red, "Potential Loss", IC #1.3.1. The first "Potential Loss" IC addresses the existence of an explosive mixture of hydrogen and oxygen in the containment, which if ignited, would be a challenge to the containment barrier. The second "Potential Loss" IC represents a potential loss of containment in that the containment heat removal/depressurization system (e.g., containment sprays, ice condenser, etc.) are either lost or performing in a degraded manner. This is indicated by containment pressure greater than the ØB setpoint of 2.81 psid where the equipment should actuate. These "Potential Loss" ICs are primarily a discrimination between the Site Area Emergency and General Emergency representing a potential loss of the third barrier.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92 per REG GUIDE 1.101 FR-Z.1 High Containment Pressure

Section 1.0	FISSION PRODUCT BARRIER MATRIX
Event 1.3	CNTMT BARRIER
IC 1.3.3	Containment Isolation Status
Mode	1,2,3,4
Description	**LOSS:** Containment isolation, when required, is incomplete and a release path to the environment exists. **Potential LOSS:** Not Applicable.
Basis	**LOSS:** The Loss IC is intended to address incomplete containment isolation that allows a direct release to the environment. It represents a loss of the containment barrier. **Potential LOSS:** There is no "Potential Loss" IC associated with this item.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92 per REG GUIDE 1.101

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Section 7.0	FISSION PRODUCT BARRIER MATRIX
Event 1.3	CNTMT BARRIER
IC 1.3.4	Containment Bypass
Mode	1,2,3,4
Description	**LOSS:** Secondary side release outside CNTMT from a RUPTURED S/G that cannot be terminated in < 15 Minutes (E-2 and E-3). OR > 4 hours secondary side release outside CNTMT from a S/G with a S/G tube leak > T/S limits (AOI-24, App A). **POTENTIAL LOSS:** Unexplained VALID increase in area or ventilation RAD monitors adjacent to containment (with LOCA in progress).
Basis	**LOSS:** The first "Loss" IC addresses a non-isolatable secondary side release from a ruptured steam generator. This allows a direct release of radioactive fission and activation products to the environment. Resultant offsite dose rates are a function of many variables. Examples include: coolant activity, actual leak rate, S/G carry over, iodine partitioning, and meteorology. Therefore, dose assessment in accordance with event Gaseous Effluent (Section 7.1) General Emergency, "Exclusion area boundary dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 1 Rem TEDE or 5 Rem CDE For the actual or projected duration of the release", is required when there is indication that the fuel clad barrier is potentially lost. This IC would exist in conjunction with the RCS barrier "Loss" IC 1.2.3 and results in an event classification of a Site Area Emergency. Escalation to General Emergency would be based on "Potential Loss" of the fuel clad barrier. The second "Loss" IC addresses a prolonged, greater than four (4) hour, secondary side release outside of the containment from a steam generator having primary to secondary leakage greater than Tech. Spec. limits, (LCO 3.4.6.2). This IC results in an event classification of Unusual Event. This indicator's intent addresses non-isolatable main steam line breaks outside containment, feedwater line breaks, failed open relief valves, atmospheric dump valves or plant cooldown via atmospheric steam dump due to loss of offsite power or the main condenser. However, it is not the intent of this indicator to address transient events such as: (1) MSLB downstream of the MSIV if the MSIV isolates the break, (2) affected S/G isolation in accordance with procedures, or for other similar events. Prolonged steam releases via the main condenser air ejectors or steam driven auxiliary feed pumps exhaust should be classified on the basis of dose assessment rather than the fission product barrier matrix.

Section 1.0	FISSION PRODUCT BARRIER MATRIX
Event 1.3	CNTMT BARRIER
IC 1.3.4	Containment Bypass (continued)
Mode	1,2,3,4
Basis (continued)	Potential LOSS: The "Potential Loss" IC addresses an increase in area or ventilation radiation monitors adjacent to containment, with a LOCA in progress, which is indicative of a potential loss of the containment barrier. The SED must take into consideration events in progress to determine if the increase in rad. monitors is expected or explained. Events such as ECCS initiation and recirculation of contaminated water from the containment sump through the RHR, containment spray, and SI systems are expected and may result in an initial increase in area or ventilation rad. monitors. The concern is for potential loss of the containment barrier and not for specific monitor readings. Indications of containment bypass should be derived from unexpected or unexplained trends in rad. monitor readings. Events such as an unexpected increasing trend or lack of an expected decreasing trend on an area or ventilation rad. monitors adjacent to containment would indicate further investigation and validation is warranted. Trends like these may indicate loss, or bypass, of containment that is not readily observable from other indications. This IC in conjunction with the RCS barrier IC 1.2.2 results in an event classification of Site Area Emergency.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92 per REG GUIDE 1.101 E-2 Faulted Steam Generator Isolation

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Section 2.0	SYSTEM DEGRADATION
Event 2.1	LOSS OF INSTRUMENTATION
Classification	SITE AREA EMERGENCY (continued)
Mode	1,2,3,4
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SS6, Rev. 2, 1/92 T.S. 3.3.1 Reactor Trip System Instrumentation T.S. 3.3.2 Engineering Safety Features Actuation System Instrumentation AOI-26 Loss of Main Control Room Annunciators

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Section 2.0	SYSTEM DEGRADATION
Event 2.1	LOSS OF INSTRUMENTATION
Classification	ALERT
Mode	1,2,3,4
Description	On either unit UNPLANNED loss of >75% of MCR annunciators and annunciator printer or safety system indications >15 minutes with a SIGNIFICANT TRANSIENT in progress or P-250 computer and SPDS unavailable (1 and 2 and 3): 1. UNPLANNED loss of >75% of MCR annunciators and annunciator printer for >15 minutes or >75% of safety system indications for >15 minutes. 2. SOS/SED judgement that increased surveillance is required (beyond shift compliment) to safely operate the unit. 3. (a or b) a. SIGNIFICANT TRANSIENT in progress. OR b. Loss of P-250 computer and SPDS.
Basis	This IC indicates that when the loss of safety system annunciators is complicated with the loss of the SPDS, and plant computer, or a plant transient is in progress a deterioration of the level of plant safety has occurred and an Alert should be declared. The loss of annunciators excludes scheduled maintenance and testing activities. Fifteen minutes was selected as a threshold value to exclude momentary transients or power losses. For the purposes of quantification, it is estimated that if 75% of the annunciators are lost there is an increased risk that a degraded plant condition could go undetected. It is not intended that a detailed count of the instrumentation be performed but only a rough approximation be used to determine the severity of the condition. The declaration will ensure that adequate resources are available to monitor and control plant systems so that any further degraded condition can be detected and responded to. SIGNIFICANT TRANSIENT involves an unplanned event involving one or more of the following: (1) an automatic turbine runback > 15% thermal reactor power; (2) electrical load rejection >25% full electrical load; (3) reactor trip; or (4) safety injection system activation; or (5) thermal power oscillations $\geq$ 10%.

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Section 2.0	SYSTEM DEGRADATION
Event 2.1	LOSS OF INSTRUMENTATION
Classification	ALERT (continued)
Mode	1,2,3,4
Basis (continued)	Due to the limited number of safety systems in operation during cold shutdown and refueling modes, no initiating conditions are indicated during these modes of operation.
Escalation	Escalation will be based on the inability of the operating crew to monitor a transient in progress.
References	NUMARC/NESP-007, SA4, Rev. 2, 1/92 T.S. 3.3.1 Reactor Trip System Instrumentation T.S. 3.3.2 Engineering Safety Features Activation System Instrument T.S. 3.3.3 Monitoring Instrumentation AOI-26 Loss of Main Control Room Annunciators

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Section 2.0	SYSTEM DEGRADATION
Event 2.1	LOSS OF INSTRUMENTATION
Classification	UNUSUAL EVENT
Mode	1,2,3,4
Description	On either unit UNPLANNED loss of >75% of MCR annunciators and annunciator printer or safety system indications for >15 minutes and P-250 computer or SPDS unavailable (1 and 2 and 3): 1. UNPLANNED loss of >75% of MCR annunciators and annunciator printer for >15 minutes or >75% of safety system indications for >15 minutes. 2. SOS/SED judgement that increased surveillance is required (beyond shift compliment) to safely operate the unit. 3. Either the P-250 computer or the SPDS is capable of displaying data requested.
Basis	For this IC, if annunciators are partially or completely lost it is still possible to use other systems to indicate plant conditions (e.g., SPDS or plant computer). However, it is prudent to declare an Unusual Event since there is a greater risk that a degraded condition could go undetected. The loss of annunciators excludes scheduled maintenance and testing activities. Fifteen minutes was selected as a threshold value to exclude momentary power losses or transients. For the purposes of quantification, it is estimated that if 75% of the annunciators are lost there is an increased risk that a degraded plant condition could go undetected. It is not intended that a detailed count of the instrumentation be performed but only a rough approximation be used to determine the severity of the condition. The declaration will ensure that adequate resources are available to monitor and control plant systems. Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no initiating conditions are indicated during these modes of operation.

Section 2.0	SYSTEM DEGRADATION
Event 2.1	LOSS OF INSTRUMENTATION
Classification	UNUSUAL EVENT (continued)
Mode	1,2,3,4
Escalation	Escalation will be based on loss of annunciators complicated by the loss of SPDS and plant computer or a transient in progress.
References	NUMARC/NESP-007, SU3, Rev. 2, 1/92 T.S. 3.3.1 Reactor Trip System Instrumentation T.S. 3.3.2 Engineering Safety Features Actuation System Instrumentation AOI-26 Loss of Main Control Room Annunciators

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Section 2.0	SYSTEM DEGRADATION
Event 2.2	LOSS OF COMMUNICATION
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Not Applicable.
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.2	LOSS OF COMMUNICATION
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Not Applicable.
Basis	The basis for a Site Area Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

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Section 2.0	SYSTEM DEGRADATION
Event 2.3	FAILURE OF RX PROTECTION
Classification	ALERT
Mode	1,2
Description	Reactor power >5% and not decreasing after VALID auto trip signal but manual trip is successful (1 and 2): 1. Reactor power >5% and not decreasing following auto. trip signal. 2. Manual trip from the MCR is successful.
Basis	This IC indicates a failure of the automatic protection system to trip the reactor with a successful manual trip being initiated. The Alert declaration will ensure that adequate resources, through staffing of the technical support center, are available to monitor and control plant systems such that any further degraded condition can be detected and responded to. An indication or report or condition is considered to be VALID when it is conclusively verified by: (1) an instrument channel check, (2) indications on related or redundant indicators or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.
Escalation	Escalation will be based on the reactor power not being reduced to less than five percent by a successful manual trip.
References	NUMARC/NESP-007, SA2 (Modified), Rev. 2, 1/92 T.S. 3.3.1 Reactor Trip System (RTS) Instrumentation FR-S.1 Nuclear Power Generation/ATWS WOG Background Document for FR-S.1, Rev. 1B, 2/92

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Section 2.0	SYSTEM DEGRADATION
Event 2.3	FAILURE OF RX PROTECTION
Classification	UNUSUAL EVENT
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for an Unusual Event in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on a failure to manually scram the reactor from the main control room.
References	NUMARC/NESP-007, SA2 (Modified), Rev. 2, 1/92

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Section 2.0	SYSTEM DEGRADATION
Event 2.4	FUEL CLAD DEGRADATION
Classification	UNUSUAL EVENT
Mode	1,2,3
Description	Reactor coolant system specific activity exceeds Tech. Spec. 3.4.8 LCO: 1. Radiochemistry analysis indicates (a or b): a. Dose equivalent iodine (I-131) >1.0 μCi/gm for >48 hours or in excess of T/S figure 3.4-1 with Tave $\geq$ 500°F. OR b. Specific activity $>100/\bar{E}$ μCi/gm with Tave $\geq$ 500°F.
Basis	This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. The RCS specific activity LCO limits the allowable concentration level of radionuclides in the reactor coolant. The LCO limits are established to minimize the offsite radioactivity dose consequences in the event of a steam generator tube rupture (SGTR) accident. The LCO contains specific activity limits for both dose equivalent I-131 and gross specific activity. The allowable levels are intended to limit the 2-hour dose at the exclusion area boundary to a small fraction of the 10 CFR 100 dose guideline values. The limits in the LCO are standardized and based on parametric evaluations of offsite radioactivity dose consequences for typical site locations. These parametric evaluations showed the potential offsite dose levels for a SGTR accident were an appropriately small fraction of the 10 CFR 100 guideline dose limits. Each evaluation assumes a broad range of site applicable atmospheric dispersion factors in a parametric evaluation.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SU4, Rev. 2, 1/92 T.S. 3.4.8 RCS Specific Activity AOI-28 High Activity in Reactor Coolant

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Section 2.0	SYSTEM DEGRADATION
Event 2.5	RCS UNIDENTIFIED LEAKAGE
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.5	RCS UNIDENTIFIED LEAKAGE
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

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Section 2.0	SYSTEM DEGRADATION
Event 2.5	RCS UNIDENTIFIED LEAKAGE
Classification	ALERT
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for an Alert for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.5	RCS UNIDENTIFIED LEAKAGE
Classification	UNUSUAL EVENT
Mode	1,2,3,4
Description	Unidentified or pressure boundary RCS leakage > 10 GPM: 1. Unidentified or pressure boundary leakage (as defined by Tech. Specs.) > 10 GPM as indicated by (a or b): a. SI-OPS-068-137.0 results. OR b. With RCS temperature and pressurizer level stable, the VCT level on LI-62-129 is dropping at a rate > 10 GPM. NOTE: Refer to "Shutdown System Degradation" (Section 6.3).
Basis	This IC is included as an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Only operating modes in which there is fuel in the reactor coolant system and the system is pressurized are specified.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SU5, Rev. 2, 1/92 T.S. 3.4.6.2 RCS Operational Leakage AOI-6 Small Reactor System Leak S-SI-OPS-068-137.0 RCS Leakage

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Section 2.0	SYSTEM DEGRADATION
Event 2.6	RCS IDENTIFIED LEAKAGE
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.6	RCS IDENTIFIED LEAKAGE
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

ENTIRE PAGE REVISED

Section 2.0	SYSTEM DEGRADATION
Event 2.6	RCS IDENTIFIED LEAKAGE
Classification	ALERT
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for an Alert for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.6	RCS IDENTIFIED LEAKAGE
Classification	UNUSUAL EVENT
Mode	1,2,3,4
Description	Identified RCS leakage >25 GPM: 1. Identified RCS leakage (as defined by Tech. Specs.) >25 GPM as indicated by (a or b): a. SI-OPS-068-137.0 results. OR b. Level rise in excess of 25 GPM total into PRT, RCDT or CVCS holdup tank (Refer to TI-28). NOTE: Refer to "Shutdown System Degradation" (Section 6.3).
Basis	This IC is included as an Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. The 25 gpm value for the identified leakage was selected as measurable. This IC is set at a higher value than unidentified due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. Only operating modes in which there is fuel in the reactor coolant system and the system is pressurized are specified.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SU5, Rev. 2, 1/92 T.S. 3.4.6.2 RCS Operational Leakage AOI-6 Small Reactor System Leak

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Section 2.0	SYSTEM DEGRADATION
Event 2.7	UNCONTROLLED COOLDOWN
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 2.0	SYSTEM DEGRADATION
Event 2.7	UNCONTROLLED COOLDOWN
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation of this event will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 3.0	LOSS OF POWER
Event 3.1	LOSS OF AC (Power Ops)
Classification	GENERAL EMERGENCY
Mode	1,2,3,4
Description	Prolonged loss of all offsite and all onsite AC power to EITHER UNIT (1 and 2): 1. Both unit related 6.9KV shutdown boards de-energized for >15 minutes. 2. (a or b) a. Core cooling status tree red or orange path. OR b. Restoration of either a 6.9KV shutdown board or a 6.9KV unit board is not likely within 4 hours of the loss.
Basis	Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, containment heat removal, and the ultimate heat sink. Prolonged loss of all AC power will lead to loss of fuel clad, RCS, and containment. The four hours to restore AC power is based on a site blackout coping analysis performed to conform with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout", as available, with appropriate allowance for offsite emergency response. Although this IC is redundant to the fission product barrier degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event. The 15 minute time duration was selected to exclude transient or momentary power losses. In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Site Emergency Director a reasonable idea of how quickly he may need to declare a General Emergency based on two major considerations: 1. Are there any present indications that core cooling is already degraded to the point that loss or potential loss of fission product barriers is imminent?

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Section 3.0	LOSS OF POWER
Event 3.1	LOSS OF AC (Power Ops)
Classification	GENERAL EMERGENCY (continued)
Mode	1,2,3,4
Basis (continued)	2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented? The indication of continuing core cooling degradation is based on fission product barrier monitoring with particular emphasis on Site Emergency Director judgement as it relates to imminent loss or potential loss of fission product barriers and degraded ability to monitor fission product barriers.
Escalation	Not Applicable.
Reference	NUMARC/NESP-007, SG1, Rev 2, 1/92 FSAR 15.2.9 Loss of Offsite Power to the Station Auxiliaries FSAR 15.5.1 Environmental Consequences of a Postulated Loss of AC Power to Plant Auxiliaries T.S. 3.8.1 AC Sources, Operating T.S. 3.8.2 Onsite Power Distribution Systems, Operating AOI-35 Loss of Offsite Power General Design Criteria 17, App. A, 10 CFR 50 NUREG 1.155 Station Blackout

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Section 3.0	LOSS OF POWER
Event 3.1	LOSS OF AC (Power Ops)
Classification	SITE AREA EMERGENCY
Mode	1,2,3,4
Description	Loss of all offsite and all onsite AC power to EITHER UNIT for >15 Minutes: Both unit related 6.9KV shutdown boards de-energized for >15 minutes.
Basis	Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, containment heat removal and the ultimate heat sink. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity. This event can escalate to a General Emergency. The 15 minute time duration was selected to exclude transient or momentary power losses.
Escalation	Escalation of this event is based on prolonged loss of all offsite power and prolonged loss of all onsite power when combined with inadequate core cooling, and "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007 SS1, Rev. 2, 1/92 AOI-35 Loss of Offsite Power FSAR 15.2.9 Loss of Offsite Power to the Station Auxiliaries General Design Criteria 17, App. A, 10 CFR 50 FSAR 15.5.1 Environmental Consequences of a Postulated Loss of AC Power to Plant Auxiliaries T.S. 3.8.1 AC Sources, Operating T.S. 3.8.2 Onsite Power Distribution Systems, Operating

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Section 3.0	LOSS OF POWER
Event 3.1	LOSS OF AC (Power Ops)
Classification	ALERT
Mode	1,2,3,4
Description	Loss of offsite power to EITHER UNIT with degraded onsite AC power for >15 minutes (1 and 2 or 3): 1. All four (4) 6.9KV unit boards de-energized for >15 minutes. 2. One (1) unit related 6.9KV shutdown board de-energized for >15 minutes. OR 3. Any AC power condition lasting >15 minutes where an additional single failure will result in a unit blackout.
Basis	The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of one emergency diesel generator to supply power to its emergency busses. The 15 minute time duration was selected to exclude transient or momentary power losses.
Escalation	Escalation will be based on prolonged loss of all offsite power and prolonged loss of all onsite power.
References	NUMARC/NESP-007,SA5, Rev. 2, 1/92 AOI-35 Loss of Offsite Power General Design Criterion 17 of App. A, 10 CFR 50 FSAR 15.2.9 Loss of Offsite Power to the Station Auxiliaries FSAR 15.5.1 Environmental Consequences of a Postulated Loss of AC Power to Plant Auxiliaries T.S. 3.8.1 AC Sources, Operating T.S. 3.8.2 Onsite Power Distribution Systems, Operating

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Section 3.0	LOSS OF POWER
Event 3.1	LOSS OF AC (Power Ops)
Classification	UNUSUAL EVENT
Mode	1,2,3,4
Description	Loss of offsite power to EITHER UNIT for >15 minutes (1 and 2): 1. All four (4) 6.9KV unit boards de-energized for >15 minutes. 2. Both unit related 6.9KV shutdown boards are energized.
Basis	Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of AC power (station blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.
Escalation	Loss of one additional power supply to the shutdown boards will escalate this event.
References	NUMARC/NESP-007 SU1, Rev. 2, 1/92 AOI-35 Loss of Offsite Power FSAR 15.2.9 Loss of Offsite Power to the Station Auxiliaries FSAR 15.5.1 Environmental Consequences of a Postulated Loss of AC Power to Plant Auxiliaries General Design Criterion 17 of App. A, 10 CFR 50 T.S. 3.8.1 AC Sources, Operating T.S. 3.8.2 Onsite Power Distribution Systems, Operating

ENTIRE PAGE REVISED

Section 3.0	LOSS OF POWER
Event 3.2	LOSS OF AC (Shutdown)
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Not Applicable.
Basis	Loss of AC power in Mode 5 and 6 will not cause a declaration of a General Emergency.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92

Section 3.0	LOSS OF POWER
Event 3.2	LOSS OF AC (Shutdown)
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Not Applicable.
Basis	Loss of AC power in Mode 5 and 6 will not cause a declaration of a Site Area Emergency.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92

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Section 3.0	LOSS OF POWER
Event 3.3	LOSS OF DC
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to "Fission Product Barrier Matrix" (Section 1) and "Loss of Function" (Section 2.2).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92

ENTIRE PAGE REVISED

Section 3.0	LOSS OF POWER
Event 3.3	LOSS OF DC
Classification	SITE AREA EMERGENCY
Mode	1,2,3,4
Description	Loss of all vital DC power for > 15 minutes: Voltage < 105V DC on 125V DC vital battery board buses I and II and III and IV for > 15 minutes. Also refer to the "Fission Product Barrier Matrix" (Section 1), "Loss of Function" (Section 2.2), and "Loss of Instrumentation" (Section 2.1).
Basis	Loss of all DC power compromises the ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. The minimum specified independent and redundant DC power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1) or "Loss of Function" (Section 2.2).
References	NUMARC/NESP-007, SS3, Rev. 2, 1/92 General Design Criteria 17, App. A, 10 CFR 50 FSAR 8.3.2 DC Power System T.S. 3.8.2 DC Sources - Operating AOI - 21 Loss of 125V DC Battery Board

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Section 3.0	LOSS OF POWER
Event 3.3	LOSS OF DC
Classification	ALERT
Mode	Not Applicable.
Description	Refer to "Fission Product Barrier Matrix" (Section 1), "Loss of Function" (Section 2.2), and "Loss of Instrumentation" (Section 2.1).
Basis	There is no Alert classification for this event. Reference should be made to the "Fission Product Barrier Matrix" (Section 1), "Loss of Function" (Section 2.2), or "Loss of Instrumentation" (Section 2.1) for possible Alert or higher classifications.
Escalation	Escalation will be based on loss of or the inability to monitor a significant transient in progress.
References	NUMARC/NESP-007, Rev. 2, 1/92

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Section 3.0	LOSS OF POWER
Event 3.3	LOSS OF DC
Classification	UNUSUAL EVENT
Mode	5,6
Description	UNPLANNED loss of a required train of DC power for > 15 minutes: Voltage < 105 VDC on 125V DC vital battery board buses I and II and III and IV for > 15 Minutes.
Basis	The purpose of this IC is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations. This IC is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss. Unplanned is included in the IC to preclude the declaration of an emergency as a result of planned maintenance activities. The 105 volt bus voltage is the minimum bus voltage necessary for the operation of safety related equipment. This voltage value should incorporate a margin of at least 15 minutes of operation before the onset of inability to operate those loads. This voltage is usually near the minimum voltage selected when battery sizing is performed. Typically the value for the entire battery set is approximately 105 VDC. For a 60-cell string of batteries the cell voltage is 1.75 volts per cell. For a 58-string battery set the minimum voltage is typically 1.81 volts per cell. The fifteen minute threshold is utilized to exclude a transient or momentary power losses.
Escalation	The event will escalate if the DC loss results in an inability to maintain cold shutdown.
References	NUMARC/NESP-007, SU7, Rev. 2, 1/92 FSAR 8.3.2 DC Power Sources T.S. 3.8.5 DC Sources, Operating T.S. 3.8.2 Onsite Power Distribution Systems Shutdown AOI-21 Loss of 125V DC Vital Battery Boards

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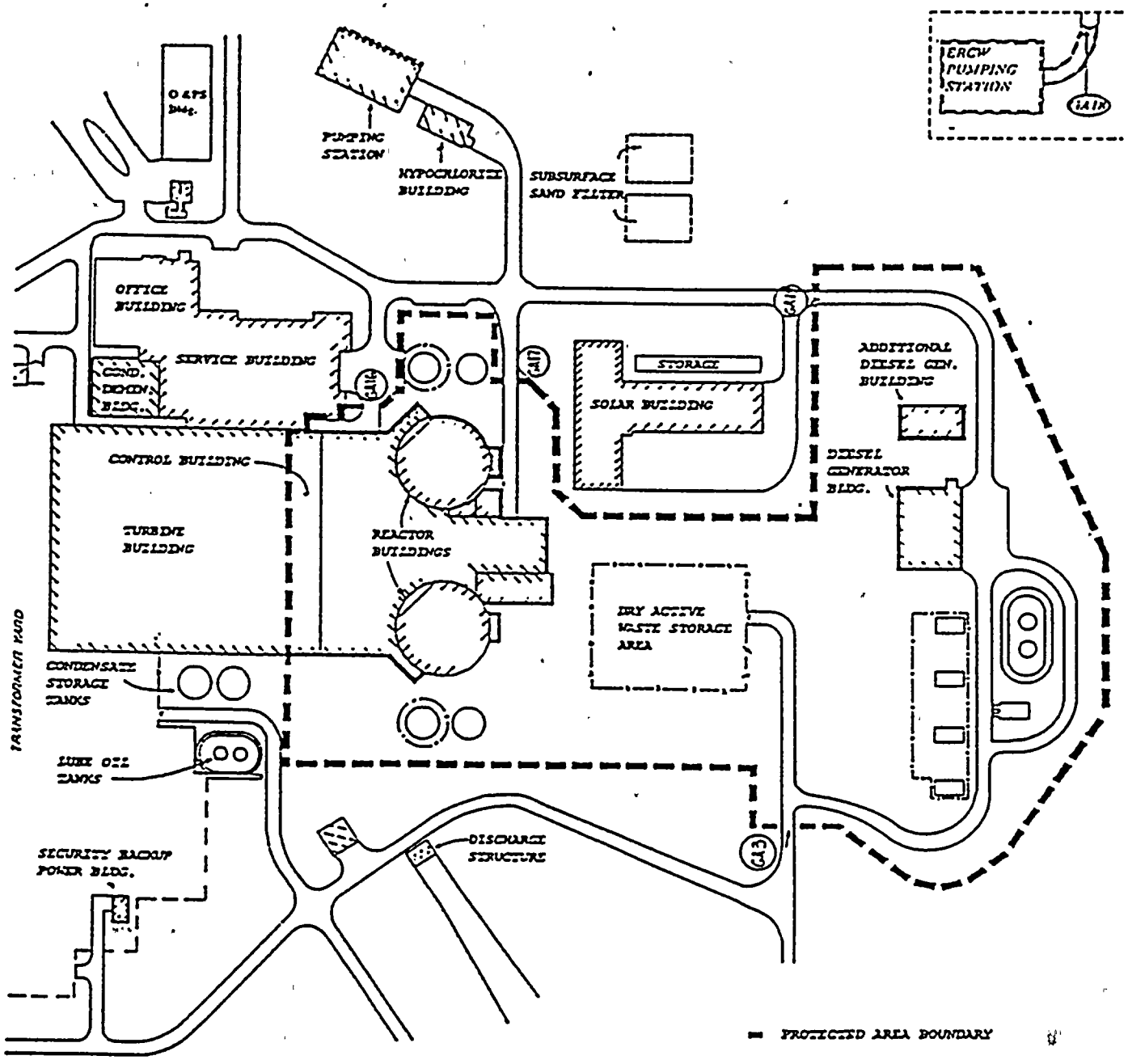
Figure 4-A

SEQUOYAH PROTECTED AREA



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Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.1	FIRE
Classification	UNUSUAL EVENT (continued)
Mode	All
Basis (continued)	FIRE is combustion characterized by heat and light. Source of smoke such as slipping drive belts or overheated electrical components do not constitute fires. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed.
Escalation	Escalation will be based on the fire affecting plant safety related equipment required to establish or maintain safe shutdown.
References	NUMARC/NESP-007, HU2, Rev. 2, 1/92 SQN Protected Area Figure 4-A

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Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.2	EXPLOSIONS
Classification	UNUSUAL EVENT (continued)
Mode	All
Escalation	Escalation will be based on explosion damage to a structure or equipment causing a degradation in the performance of equipment required to shutdown or maintain shutdown.
References	NUMARC/NESP-007, HU1, Rev 2, 1/92 FSAR 2.2 Nearby Industrial, Transportation and Military Facilities

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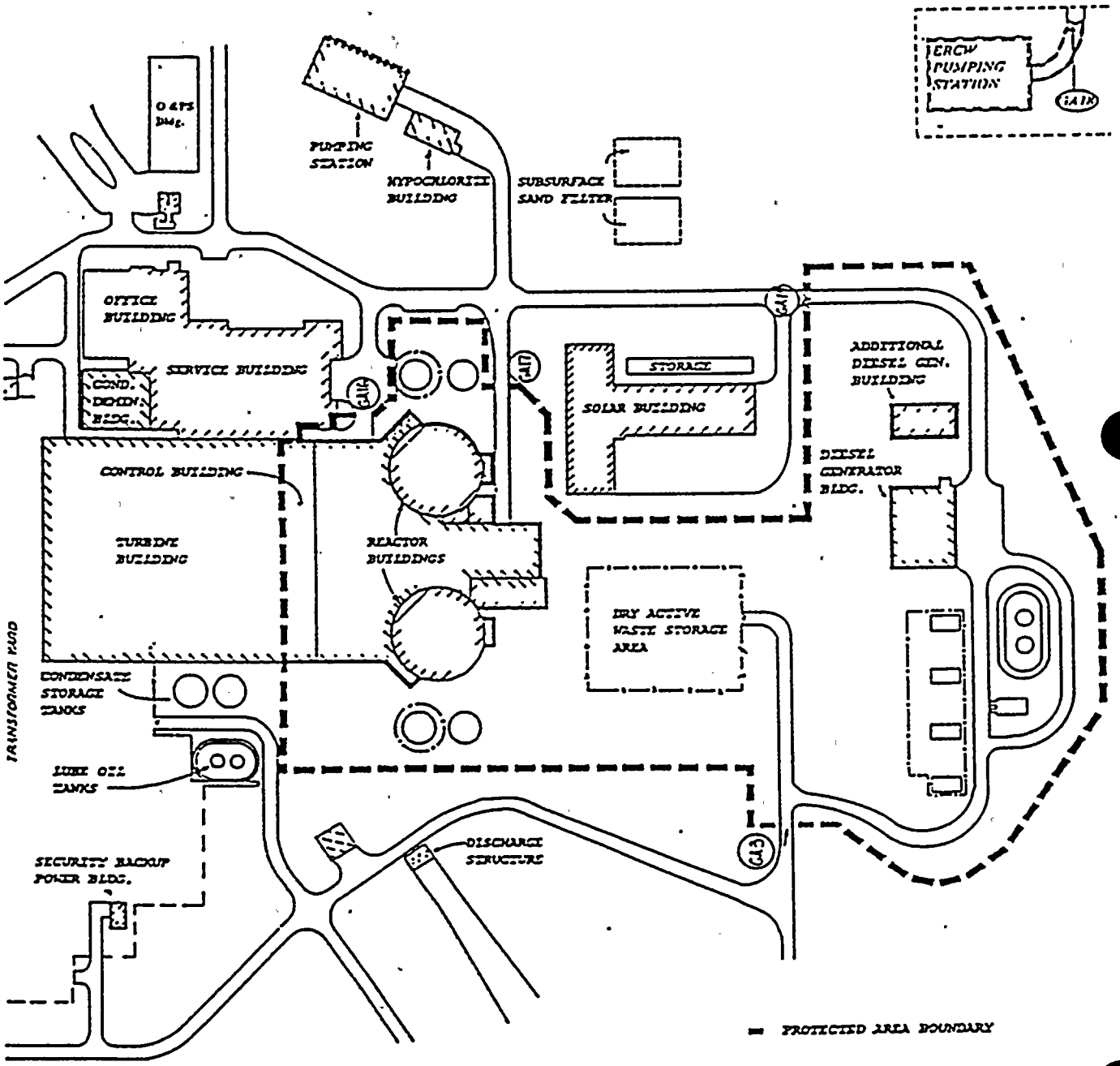
Figure 4-A

SEQUOYAH PROTECTED AREA



Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.4	TOXIC GAS OR SMOKE
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.4	TOXIC GAS OR SMOKE
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev 2, 1/92

ENTIRE PAGE REVISED

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.4	TOXIC GAS OR SMOKE
Classification	ALERT
Mode	All
Description	Release of TOXIC GAS or SMOKE within a facility structure which prohibits safe operation of systems required to establish or maintain cold S/D (1 and 2 and 3): 1. Plant personnel report toxic gas or smoke within any building listed in Table 4-2. 2. (a or b): a. Plant personnel report severe adverse health reactions due to toxic gas or smoke (i.e., burning eyes, nose, throat, dizziness). OR b. Sampling indicates > Lower Toxicity Limit. 3. Plant personnel unable to perform actions necessary to establish and maintain cold shutdown while utilizing appropriate personnel protection equipment. Note: Refer to the Material Safety Data Sheet for the LTL.
Basis	Report or detection of toxic gases or smoke within plant structures in concentrations that are life threatening to plant personnel or affect the ability to achieve or maintain the plant in a cold shutdown condition is a degradation of the level of safety of the plant and warrants the declaration of an Alert. Table 4-2 Plant structures associated with toxic or flammable gas or smoke EALs: Control Building Auxiliary Building Unit #1 Containment Unit #2 Containment ERCW Pumping Station Diesel Generator Building Intake Pumping Station CDWE Building Turbine Building TOXIC GAS or SMOKE is a gas that is dangerous to life or limb by reason of inhalation or skin contact (e.g., chlorine, CO_2, etc.).
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, HA2, Rev 2, 1/92 AOI-32 Chlorine Release

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.4	TOXIC GAS OR SMOKE
Classification	UNUSUAL EVENT
Mode	All
Description	**A. Safe operations impeded due to access restrictions caused by TOXIC GAS or SMOKE concentrations within a facility structure listed in Table 4-2.** **OR** **B. Confirmed report by Local, County, or State officials that an offsite TOXIC GAS release has occurred within one mile of the site (Figure 4-C) with potential to enter the EXCLUSION AREA BOUNDARY (Figure 4-B) in concentrations greater than the Lower Toxicity Limit thus causing a site evacuation.** Note: Refer to the Material Safety Data Sheet for the LTL.
Basis	Report or detection of a release of toxic gases or smoke in concentrations within the exclusion area boundary or within the evacuation area of an offsite event (i.e., tanker truck accident releasing toxic gases, etc.) that will affect the health of plant personnel or affect the safe operation of the plant constitutes an Unusual Event. The evacuation area is as determined from the DOT evacuation tables for selected hazardous materials, in the DOT Emergency Response Guide for Hazardous Materials. In addition, it should be noted that there are no industrial or military facilities where large quantities of flammable or toxic chemicals are stored within a five mile radius of the plant. The shipping on the Tennessee River consists mainly of fuel oils, wood products, and minerals. Chemicals represent only a minor percentage of the barge shipping by the Sequoyah Nuclear Plant. The release of flammable or toxic materials on the river in the vicinity of the plant will have minimal effect on the plant safety features. The main control room habitability during a postulated hazardous chemical release at or near the plant has been evaluated. This evaluation utilizes the approach outlined in Regulatory Guide 1.78 and concludes that the main control room habitability is not jeopardized by an accidental release of chemicals. In addition, plant procedures maintain a list of onsite hazardous materials, their storage facilities, and quantities they are stored in. TOXIC GAS or SMOKE is a gas that is dangerous to life or limb by reason of inhalation or skin contact (e.g., chlorine, CO_2, etc.). Exclusion Area Boundary encompasses all areas in the immediate site environs as shown on Figure 4-B.

ENTIRE PAGE REVISED

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.4	TOXIC GAS OR SMOKE
Classification	UNUSUAL EVENT (continued)
Mode	All
Basis (continued)	Table 4-2 Plant Structures Associated with Toxic or Flammable Gas or Smoke EALs: Control Building Auxiliary Building Unit #1 Containment Unit #2 Containment ERCW Pumping Station Diesel Generator Building Intake Pumping Station CDWE Building Turbine Building
Escalation	Escalation will be based on toxic gases or smoke entering a plant area that jeopardizes life or impacts cold shutdown capability.
References	NUMARC/NESP-007, HU3, Rev 2, 1/92 FSAR 2.2 Nearby Industrial, Transportation and Military Facilities AOI-32 Chlorine Release DOT Emergency Response Guide for Hazardous Materials Figure 4-C One Mile Radius

99Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.5	CONTROL ROOM EVACUATION
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency in this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev 2, 1/92

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.5	CONTROL ROOM EVACUATION
Classification	SITE AREA EMERGENCY
Mode	All
Description	Evacuation of the main control room has been initiated and control of all necessary equipment has not been established within 15 minutes of staffing the auxiliary control room (1 and 2): 1. AOI-27 "Main Control Room Inaccessibility" entered. 2. Control has not been established at the remote shutdown panel within 15 minutes of staffing the auxiliary control room and transferring of switches, listed on Checklist AOI-27-1, on Panels L11A and L11B to the Aux. position.
Basis	Transfer of safety system control has not been performed in an expeditious manner and it is unknown if any damage has occurred to the fission product barriers. This condition warrants the declaration of a Site Area Emergency. The 15 minute time limit for transfer of control is based on a reasonable time period for personnel to leave the control room, arrive at the auxiliary control room area, and re-establish plant control to preclude core uncovery and/or core damage per (AOI-27) Main Control Room Inaccessibility.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, HS2, Rev 2, 1/92 AOI-27 Main Control Room Inaccessibility

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Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.5	CONTROL ROOM EVACUATION
Classification	ALERT
Mode	All
Description	Evacuation of the control room is required : 1. AOI-27 "Main Control Room Inaccessibility" has been entered.
Basis	Main Control Room evacuation requires establishment of plant control from outside the main control room (auxiliary control room) and support from the Technical Support Center and/or other Emergency Operating Centers and, for this potential substantial degradation, an Alert is warranted. A main control room evacuation represents a serious plant situation since the level of control is not as complete as it would be without the evacuation.
Escalation	Escalation will be based on the inability to establish plant control from outside the Main Control Room within 15 minutes.
References	NUMARC/NESP-007, HA5, Rev 2, 1/92 AOI-27 Main Control Room Inaccessibility

Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.5	CONTROL ROOM EVACUATIONS
Classification	UNUSUAL EVENT
Mode	Not Applicable.
Description	An Unusual Event for this event is "Not Applicable".
Basis	Not Applicable.
Escalation	Escalation will be based on evacuation of the main control room.
References	NUMARC/NESP-007, Rev 2, 1/92

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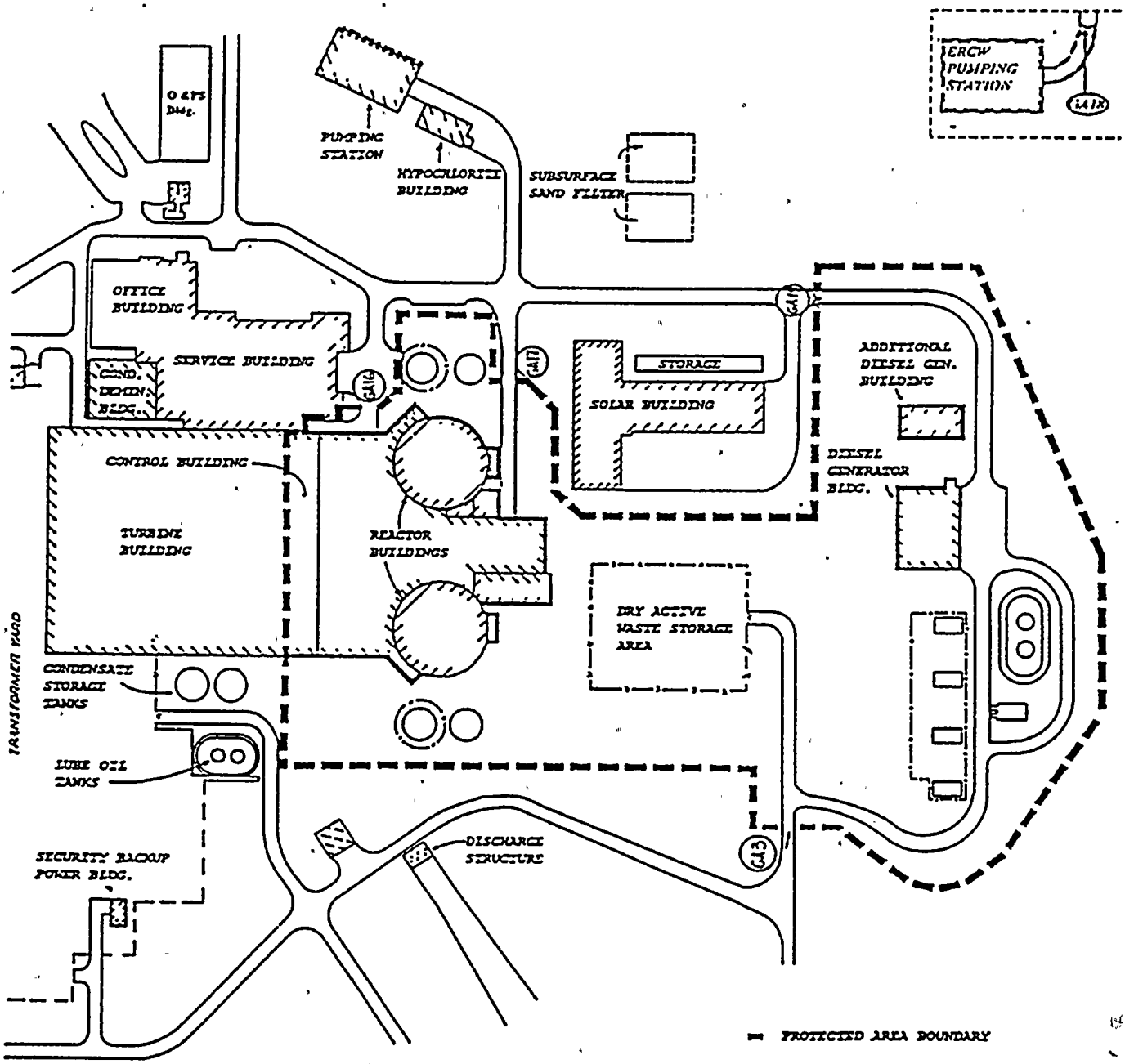
Figure 4-A

SEQUOYAH PROTECTED AREA



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Section 4.0	HAZARDS AND SED JUDGEMENT
Event 4.6	SECURITY
Classification	UNUSUAL EVENT
Mode	All
Description	Confirmed security event which indicates a potential degradation in the level of safety of the plant (1 or 2): 1. BOMB discovered within the protected area (Figure 4-A). OR 2. Security Shift Supervisor reports any of the events listed in Table 4-3.
Basis	A security threat that is identified as being directed towards SQN which represents a potential degradation in the level of safety of the plant warrants declaration of an Unusual Event. A confirmed report is satisfied if physical evidence supporting the threat exists, information independent from the actual threat message exists or a specific group claims responsibility for the threat. In addition, Sequoyah uses a trained security organization and an approved physical security plan and procedures. External events which may result in a security threat would be reported to the duty Shift Operations Supervisor (SOS) by the Nuclear Security Supervisor. If in the SOS's judgment these events constitute an actual threat, they would be reported and a declaration made. BOMB refers to an explosive device. A HOSTAGE is a person(s) held as leverage against the station to ensure that demands will be met by the station. PROTECTED AREA encompasses all areas within the security protected area fence as shown on Figure 4-A. EXCLUSION AREA BOUNDARY is within the area shown on Figure 4-B.

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.2	TORNADO
Classification	ALERT
Mode	All
Description	Tornado or high winds strikes any structure listed in Table 5-1 and results in VISIBLE DAMAGE (1 and 2): 1.Tornado or high winds (sustained >80 mph >one minute on 0-XR-90-181) strikes any structure listed in Table 5-1. 2. (a or b) a. Confirmed report of any visible damage. OR b. Control room indications of degraded safety system or component response due to the event. *Note: 0-XR-90-181 returns to 0 mph at 70 mph to begin measuring >70 mph. National Weather Service Chatt. 855-6493, Knox. 970-2690 can provide additional information if needed.*
Basis	Tornados or high winds striking the structures listed in Table 5-1 can cause damage to plant structures or systems needed for safe shutdown of the plant. At Sequoyah, tornadoes are a phenomena whose occurrence cannot be specifically predicted. The FSAR estimates the probability of a tornado occurrence onsite as one in 6,000 years. Windstorms are relatively infrequent, but may occur several times a year. The records show the highest wind speed recorded in Chattanooga was 82 mph in March 1947. The records show the highest wind speed recorded in Knoxville was 73 mph in July 1961. Table 5-1 Plant Structures Associated With Tornado/Hi Wind EALs Control Building Auxiliary Building Unit #1 Containment Unit #2 Containment ERCW Pumping Station Diesel Generator Building Refuel Water Storage Tank Intake Pumping Station Common Station Service Transformers's CDWE Building Turbine Building

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.2	TORNADO
Classification	ALERT (continued)
Mode	All
Basis (continued)	VISIBLE DAMAGE is intended to be indicative of observed physical degradation. This damage has to affect plant safety systems or functions required to establish or maintain cold shutdown.
Escalation	Escalation of this event will be based on" Fission Product Barriers Matrix" (Section 1).
References	NUMARC/NESP-007, HAI, Rev. 2, 1/92 FSAR 1.2 General Plant Description FSAR 2.3 Meteorology

Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.2	TORNADO
Classification	UNUSUAL EVENT
Mode	All
Description	Tornado within the Exclusion Area Boundary: Plant personnel report a tornado has been sighted within the exclusion area boundary (Figure 5-A).
Basis	A tornado touchdown near or within the exclusion area boundary may have the potential to damage plant structures containing systems required for safe shutdown of the plant. At Sequoyah, tornadoes are a phenomena whose occurrence cannot be specifically predicted. The FSAR estimates the probability of a tornado occurrence onsite as one in 6,000 years. EXCLUSION AREA BOUNDARY is the boundary shown on Figure 5-A.
Escalation	Escalation will be based on the tornado striking plant structures or high sustained winds within the protected area.
References	NUMARC/NESP-007, HA1, Rev. 2, 1/92 FSAR 1.2 General Plant Description

Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.4	RIVER LEVEL HIGH
Classification	ALERT
Mode	All
Description	River reservoir level is at Stage II Flood Warning as reported by the TVA Load Dispatcher or Water Resources.
Basis	The requirements for flood protection ensures that facility protective actions will be taken and operation will be terminated in the event of flood conditions. A Stage 1 flood warning is issued when the water in the forebay is predicted to exceed 697 feet Mean Sea Level USGS datum during October 1 through April 15, or 703 feet Mean Sea Level USGS datum during April 16 through September 30. A Stage II flood warning is issued when the water in the forebay is predicted to exceed 703 feet Mean Sea Level USGS datum. A maximum allowed water level of 703 feet Mean Sea Level USGS datum provides sufficient margin to ensure waves due to high winds cannot disrupt the flood mode preparation. A Stage I or Stage II flood warning requires the implementation of procedures which include plant shutdown. Further, in the event of a loss of communications simultaneous with a critical combination flood, headwaters, and/or seismically induced dam failure the plant will be shutdown and flood protection measures implemented. Chickamauga Lake level during nonflood conditions should be no higher than elevation 685.44 feet, top of gates, and is not likely to exceed elevation 682.5 feet, normal summer level, for any significant time. No conceivable hurricane or cyclonic-type winds could produce the some 20 feet of wave height required to reach plant grade elevation 705 feet.
Escalation	Escalation of this event will be based on "Fission Product Barriers Matrix" (Section 1).
References	NUMARC/NESP-007, HA1, Rev. 2, 1/92 FSAR 2.4 Hydrologic Engineering AOI-7 Flood Protection Plan

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.4	RIVER LEVEL HIGH
Classification	UNUSUAL EVENT
Mode	All
Description	River reservoir level is at Stage I Flood Warning as reported by the TVA Load Dispatcher or Water Resources.
Basis	The requirements for flood protection ensures that facility protective actions will be taken and operation will be terminated in the event of flood conditions. A Stage 1 flood warning is issued when the water in the forebay is predicted to exceed 697 feet Mean Sea Level USGS datum during October 1 through April 15, or 703 feet Mean Sea Level USGS datum during April 16 through September 30. A Stage II flood warning is issued when the water in the forebay is predicted to exceed 703 feet Mean Sea Level USGS datum. A maximum allowed water level of 703 feet Mean Sea Level USGS datum provides sufficient margin to ensure waves due to high winds cannot disrupt the flood mode preparation. A Stage I or Stage II flood warning requires the implementation of procedures which include plant shutdown. Further, in the event of a loss of communications simultaneous with a critical combination flood, headwaters, and/or seismically induced dam failure the plant will be shutdown and flood protection measures implemented. Chickamauga Lake level during nonflood conditions should be no higher than elevation 685.44 feet, top of gates, and is not likely to exceed elevation 682.5 feet, normal summer level, for any significant time. No conceivable hurricane or cyclonic-type winds could produce the some 20 feet of wave height required to reach plant grade elevation 705 feet. Because of its inland location, the Sequoyah plant is not endangered by tsunami flooding.
Escalation	Escalation of this event will be based on "Fission Product Barriers Matrix" (Section 1).
References	NUMARC/NESP-007, HU1, Rev. 2, 1/92 FSAR 2.4 Hydrologic Engineering AOI-7 Probable Maximum Flood

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.5	RIVER LEVEL LOW
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.5	RIVER LEVEL LOW
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

ENTIRE PAGE REVISED

Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.5	RIVER LEVEL LOW
Classification	ALERT
Mode	All
Description	River reservoir level is <670 feet as reported by the TVA Load Dispatcher or Water Resources.
Basis	The ERCW pumping station is located within the plant intake structure, and has direct communication with the main river channel for all reservoir levels including loss of downstream dam. The minimum required reservoir level for normal operation is 670 feet. This level applies for ERCW supply temperature less than or equal to 83°F. The limitations on minimum water level are based on providing sufficient flow to the ERCW heat loads after a postulated event assuming a time-dependent drawdown of reservoir level. Flow to the major transient heat loads (CCS and CS heat exchangers) is balanced assuming a reservoir level of elevation 670 feet. The time-dependent heatloads (ESF room coolers, etc.) are balanced assuming a reservoir level of elevation 636 feet. Since January 1940, water levels at the plant have been controlled by Chickamauga Reservoir. Since then, the minimum level at the dam was 673.3 feet on January 21, 1942. Because of its inland location on a relatively small, narrow lake, low water levels resulting from surges, seiches, or tsunamis are not a potential problem.
Escalation	Escalation to this event will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SA7, Rev. 2, 1/92 FSAR 2.4 Hydrologic Engineering FSAR 9.2. Essential Raw Cooling Water T.S. 3.7.5 Ultimate Heat Sink AOI-22 Break of Down Stream Dam

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.5	RIVER LEVEL LOW
Classification	UNUSUAL EVENT
Mode	All
Description	River reservoir level is <673 feet as reported by the TVA Load Dispatcher or Water Resources.
Basis	The ERCW pumping station is located within the plant intake structure, and has direct communication with the main river channel for all reservoir levels including loss of downstream dam. The minimum required reservoir level for normal operation is 670 feet. This level applies for ERCW supply temperature less than or equal to 83° F. Since January 1940, water levels at the plant have been controlled by Chickamauga Reservoir. Since then, the minimum level at the dam was 673.3 feet on January 21, 1942. Because of its location on Chickamauga Reservoir, maintaining minimum water levels at the Sequoyah plant does not represent a problem. The high rainfall and runoff of the watershed and the regulation afforded by upstream dams assure minimum flows for plant cooling. Because of its inland location on a relatively small, narrow lake, low water levels resulting from surges, seiches, or tsunamis are not a potential problem.
Escalation	Escalation to this event will be based on reduced river levels.
References	NUMARC/NESP-007, SU7, Rev. 2, 1/92 FSAR 2.4 Hydrologic Engineering FSAR 9.2. Essential Raw Cooling Water T.S. 3.7.5 Ultimate Heat Sink AOI-22 Break of Down Stream Dam

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Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.6	WATERCRAFT CRASH
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 5.0	DESTRUCTIVE PHENOMENON
Event 5.6	WATERCRAFT CRASH
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a Site Area Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, Rev. 2, 1/92

ENTIRE PAGE REVISED

Section 6.0	SHUTDOWN DEGRADATION
Event 6.1	LOSS OF SHUTDOWN SYSTEMS
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to "Gaseous Effluents" (Section 7.1).
Basis	The basis for a General Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

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Section 6.0	SHUTDOWN DEGRADATION
Event 6.1	LOSS OF SHUTDOWN SYSTEMS
Classification	SITE AREA EMERGENCY
Mode	5,6
Description	Loss of water level in the reactor vessel that has or will uncover active fuel in the reactor vessel with CNTMT closure established (1 and 2 and 3 and 4): 1. Loss of RHR capability. 2. Reactor vessel water level < elevation 695' on LR-68-402. 3. Incore TCs (if available) indicate RCS temperature > 200°F. 4. Containment closure is established. Note: If containment is open, refer to "Gaseous Effluents" (Section 7.1).
Basis	For Sequoyah, this IC is based on concerns raised by Generic Letter 88-17, "Loss of Decay Heat Removal ", SECY-91-283, "Evaluation of Shutdown and Low Power Risk Issues." A number of variables such as initial vessel level (e.g., mid-loop, reduced level/flange level, normal, or cavity filled), RCS venting strategy, decay heat removal system design, vortexing pre-disposition, steam generator U-tube draining, and level instrumentation problems can have a significant impact in causing or degrading a loss of decay heat removal. NRC analyses show that specific sequences can result in core uncovery in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost. This EAL is intended to establish the escalation threshold for the declaration of a Site Area Emergency. This Site Area Emergency declaration is consistent with the need to rapidly correct the problem through the augmentation of onsite personnel and the need to inform offsite authorities. Continued degradation can rapidly result in fuel uncovery and severe damage with resultant releases of a significant fraction of the gap activity. In the situation where the RCS is vented/opened to containment, the potential exists (if reactor vessel water level is not reestablished) to release radioactivity to the environment. The reactor vessel level indication of elevation 695' represents the water level at the hot leg center line.
Escalation	Escalation to this event will be based on "Gaseous Effluent" (Section 7.1).
References	NUMARC/NESP-007, SS5 (expanded), Rev. 2, 1/92 AOI-14 Loss of RHR T.S. 3.9.8.2 Low Water Level T.S. 3.9.4 Containment Penetrations

Section 6.0	SHUTDOWN DEGRADATION
Event 6.1	LOSS OF SHUTDOWN SYSTEMS
Classification	ALERT
Mode	5,6
Description	Inability to maintain unit in cold shutdown when required with containment closure established (1 and 2 and 3): 1. Cold shutdown required by technical specifications. 2. Incore TCs (if available) indicate core exit temperature is >200° F. 3. Containment closure is established. NOTE: If containment is open, refer to "Gaseous Effluents" (Section 7.1).
Basis	Inability to maintain cold shutdown refers to unplanned actions resulting from either equipment malfunctions or operator error that results in an increasing trend in reactor coolant temperature and possible entry into Mode 4. This condition could result from the loss of cooling water to the RHR heat exchanger or equipment failures within the RHR system or AC/DC power loss to the RHR and/or service water components (i.e., CCS, ERCW). Should this condition occur, the first line of defense is to maintain heat sink capability and remove heat via the steam generators. For Sequoyah, this IC and its associated EAL are based on concerns raised by Generic Letter 88-17, "Loss of Decay Heat Removal." A number of phenomena such as pressurization, vortexing, steam generator U-tube draining, RCS level differences when operating at a mid-loop condition, decay heat removal system design, and level instrumentation problems which can lead to conditions where decay heat removal is lost and core uncovery can occur. NRC analyses show that these sequences can cause core uncovery in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost. This IC and associated EALs are intended to establish the escalation threshold for an Alert. This threshold is intentionally anticipatory in that offsite doses are not expected to be affected by reaching 200° F or at the point of boiling provided the containment barrier is in place. This Alert declaration is consistent with the need to rapidly correct the problem through augmentation of onsite personnel and the need to inform offsite authorities

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Section 6.0	SHUTDOWN DEGRADATION
Event 6.1	LOSS OF SHUTDOWN SYSTEMS
Classification	ALERT (continued)
Mode	5,6
Escalation	Loss of water level in the reactor vessel that has or will uncover fuel in the vessel will escalate this event.
References	NUMARC/NESP - 007, SA3, Rev. 2, 1/92 AOI -14 Loss of RHR Cooling TS 3.1.1.2 Shutdown Margin - Tavg. $\leq$ 200° F

Section 6.0	SHUTDOWN DEGRADATION
Event 6.1	LOSS OF SHUTDOWN SYSTEMS
Classification	UNUSUAL EVENT
Mode	Not Applicable.
Description	An Unusual Event for this event is "Not Applicable".
Basis	Not Applicable.
Escalation	Escalation will be based on inability to maintain cold shutdown.
References	NUMARC/NESP - 007, Rev. 2, 1/92

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Section 6.0	SHUTDOWN SYSTEM DEGRADATION
Event 6.2	LOSS OF SHUTDOWN CAPABILITY
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to "Fission Product Barrier Matrix" (Section 1).
Basis	The basis for a General Emergency for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 6.0	SHUTDOWN SYSTEM DEGRADATION
Event 6.2	LOSS OF SHUTDOWN CAPABILITY
Classification	SITE AREA EMERGENCY
Mode	1,2,3,4
Description	Complete loss of function needed to achieve or maintain hot shutdown (1 and 2 or 3): 1. Hot shutdown required. 2. CSF status tree indicates Core Cooling Red (FR-C.1). OR 3. CSF status tree indicates Heat Sink Red (FR-H.1) (RHR shutdown cooling not in service). Note: Also refer to "Failure of Rx Protection" (Section 2.3).
Basis	This IC addresses complete loss of functions, including ultimate heat sink and reactivity control, required for hot shutdown with the reactor at pressure and temperature. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. If RHR cooling is in service then the CSF status tree for Heat Sink Red is not applicable. Therefore, this comment has been added to the IC.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SS4, Rev. 2,1/92 T.S. 3.4 RCS FR-C.1 Inadequate Core Cooling, FR-H.1 Loss of Heat Sink

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Section 6.0	SHUTDOWN SYSTEM DEGRADATION
Event 6.2	LOSS OF SHUTDOWN CAPABILITY
Classification	ALERT
Mode	1,2,3,4
Description	Complete loss of function needed to achieve cold shutdown when shutdown required by Tech. Specs.(1 and 2 and 3): 1. Shutdown is required by technical specifications. 2. Loss of RHR capability 3. Loss of secondary heat sink and condenser.
Basis	For this IC the inability to achieve cold shutdown when it is required refers to unplanned actions resulting in either equipment malfunctions or operator error that prevents achievement of cold shutdown. This condition could result from a loss of RHR capability, service water to the RHR heat exchanger, equipment failure within the RHR system, or AC/DC loss power to the RHR equipment or service water components (i.e., CCS, ERCW). The combination of this and the loss of the secondary heat sink for cooldown indicates a degradation of the level of safety and warrants the declaration of an Alert.
Escalation	Escalation will be based on complete loss of functions needed to achieve or maintain hot shutdown.
References	NUMARC/NESP-007, SA3, Rev. 2,1/92 T.S. 3.4 RCS FR-C.1 Inadequate Core Cooling FR-H.1 Loss of Heat Sink

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Section 6.0	SHUTDOWN SYSTEM DEGRADATION
Event 6.3	LOSS OF RCS INVENTORY
Classification	ALERT
Mode	Not Applicable.
Description	Refer to "Gaseous Effluents" (Section 7.1).
Basis	The basis for an Alert for this event is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007 Rev. 2, 1/92

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Section 6.0	SHUTDOWN SYSTEM DEGRADATION
Event 6.3	LOSS OF RCS INVENTORY
Classification	UNUSUAL EVENT
Mode	5,6
Description	Loss of reactor coolant system inventory with inadequate makeup (1 and 2 and 3): 1. RCS is pressurized above atmospheric pressure. 2. Unplanned decrease in pressurizer level requiring initiation of makeup to the RCS. 3. With RCS temperature stable, the pressurizer level continues to decrease following initiation of RCS makeup.
Basis	The purpose of this IC is to recognize a loss of RCS inventory compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations. The RCS level continuing to decrease after initiation of inventory makeup will eventually lead to loss of decay heat removal due to pump suction vortexing, or manual pump shutdown. Accumulation of leaking RCS water can cause water-induced damage to required equipment, can increase in-plant radiation levels, and challenge the capacity of the waste processing systems. Such a condition is a potential precursor to the loss of decay heat removal and warrants a declaration of an Unusual Event. This IC inherently addresses concerns regarding interfacing systems LOCAs, and freeze seal failures on RCS piping. This IC is intended to be anticipatory in as much as the operating crew may not have necessary equipment needed to respond to the loss. Unplanned is included in the IC to preclude the declaration of an emergency as a result of planned maintenance activities.
Escalation	Escalation will be based on "Fission Product Barrier Matrix" (Section 1).
References	NUMARC/NESP-007, SU7, Rev. 2, 1/92

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	GENERAL EMERGENCY
Mode	All
Description	Exclusion Area Boundary dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 1000 mrem TEDE or 5000 mrem Thyroid CDE for the actual or projected duration of the release (1 or 2 or 3): 1. A VALID rad monitor reading exceeds the values under General Emergency in Table 7-1 (page 159) for >15 minutes, unless assessment within that 15 minutes confirms that the criterion is not exceeded. OR 2. Field surveys indicate >1000 mrem/hr β-γ or an I-131 concentration of 3.9E-06 $\mu Ci/cm^3$ at exclusion area boundary (Figure 7-A). OR 3. Dose assessment results indicate exclusion area boundary dose >1000 mrem TEDE or >5000 mrem thyroid CDE for the actual or projected duration of the release (Figure 7-A). NOTE: TEDE =Total Effective Dose Equivalent and CDE = Committed Does Equivalent
Basis	If the monitor values in Table 7-1 are met or exceeded the required assessment must be performed. The assessment method is the P-250 process computer or TI-CEM-030-030.0. If the assessment cannot be completed within 15 minutes the appropriate emergency classification will be made based on the valid reading. Calculation To calculate the General Emergency gaseous effluent monitor values for Table 7-1, the release rates for the determination of General Emergency from monitor readings are calculated in the same manner as for the Site Area Emergency. The General Emergency site release rate will be equal to 10 times the release rate used for the Site Area Emergency (8.94E+08 $\mu Ci/s$ x 10 = 8.94E+09 $\mu Ci/s$). This release rate must then be used to determine corresponding monitor readings. The release rate is first allocated among the various release points as follows:

Monitor	Site Total Release Rate Limit ($\mu Ci/s$)	Monitor Allocation Factor	Monitor Allocated Rate Limit ($\mu Ci/s$)
Shield Bldg. 1-,2-RM-90-400	8.94E+09	0.30	2.68E+09
Auxiliary Bldg. 0-RM-90-101B	8.94E+09	0.10	8.94E+08

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	GENERAL EMERGENCY (continued)
Mode	All
Basis (continued)	Service Bldg. 0-RM-90-132B 8.94E+09 0.10 8.94E+08 Condenser Vac. Exhaust 1-,2-RM-90-119 8.94E+09 0.10 8.94E+08 The monitor specific allowable release rates are then converted into actual monitor readings which are presented in Table 7-1 (page 158). The General Emergency limits are a factor of 10 greater than the Site Area Emergency values, therefore, the monitor values for a General Emergency are: Monitor — SAE Monitor Reading — GE Monitor Reading Shield Bldg 1-,2-RM-90-400 — 2.68E+08 μCi/s — 2.68E+09 μCi/s Auxiliary Bldg 0-RM-90-101B — 1.89E+07 cpm — 1.89E+08 cpm Service Bldg 0-RM-90-132B — 4.10E+08 cpm — 4.10E+09 cpm Condenser Vac Exhaust 1-,2-RM-90-119 — 4.30E+10 cpm — 4.30E+11 cpm An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment. The EXCLUSION AREA BOUNDARY is that line beyond which the land or property is not owned, leased or otherwise controlled by the licensee. Refer to Figure 7-A.
Escalation	Not Applicable.
References	NUMARC/NESP-007, AGI, Rev. 2, 1/92 TI-CEM-030-030.0 Manual Calc. of Plant Gas, Iodine and Particulate Release Rates For ODCM Compliance (ODCM) Offsite Dose Calculation Manual

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	SITE AREA EMERGENCY
Mode	All
Description	Exclusion Area Boundary β-γ dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 100 mrem TEDE or 500 mrem Thyroid CDE for the actual or projected duration of the release (1 or 2 or 3): 1. A valid rad monitor reading exceeds values under Site Area in (Table 7-1, page 158) for >15 minutes unless assessment within that 15 minutes confirms that the criterion is not exceeded. OR 2. Field surveys indicate >100 mrem/hr β-γ or an I-131 concentration of 3.9E-07 $\mu Ci/cm^3$ at the exclusion area boundary (Figure 7-A). OR 3. Dose assessment results indicate exclusion area boundary (Figure 7-A) dose >100 mrem TEDE or > 500 mrem thyroid CDE for the actual or projected duration of the release.
Basis	If the monitor values in Table 7-1 are met or exceeded the required assessment must be performed. The assessment method is the P-250 process computer or TI-CEM-030-030.0. If the assessment cannot be completed within 60 minutes the appropriate emergency classification will be made based on the valid reading. Calculation To calculate the SAE gaseous effluent monitor values for table 7-1 the release rates that are calculated to determine monitor readings are those required to deliver the EAL dose in 60 minutes. To perform the calculation, the mixed fractions in the SQN FSAR Table 11.6.3-4 and the dose factors taken from the EPA-400 tables 5-1 and 5-2 are used with the annual average meteorological data found in the SQN ODCM that were generated in the analysis of the NOUE and the Alert. EAL release rates are back calculated from both the 100 mrem TEDE and 500 mrem CDE (thyroid) criteria separately. The most conservative of these rates will be used in the determination of monitor readings. First, an EAL release rate is back calculated from a 100 mrem dose as follows:

Nuclide	EPA-400 EDE (rem/hr per $\mu Ci/cc$)	SQN FSAR Ci/yr/unit	Mix Fraction	Mix x EDE (rem/hr per $\mu Ci/cc$)
Kr-85	9.3	6.1	1.74E-03	1.62E-01
Kr-85	1.3	510	1.46E-01	1.89E-01
Kr-87	510	2.8	7.99E-04	4.08E-01
Kr-88	1300	10	2.85E-03	3.71+00
Kr-89	1200	0.099	2.83E-05	3.39E-02
Xe-131m	4.9	29	8.28E-03	4.06E-02
Xe-133m	17	22	6.28E-03	1.07E-01
Xe-133	20	2900	8.28E-01	1.66E+01
Xe-135m	250	0.46	1.31E-04	3.28E-02

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	SITE AREA EMERGENCY (continued)
Mode	All

Basis (continued)

Nuclide	EPA-400 EDE (rem/hr per μCi/cc)	SQN FSAR Ci/yr/unit	Mix Fraction	Mix x EDE (rem/hr per μCi/cc)
Xe-135	140	21	5.99E-03	8.39E-01
Xe-137	110	0.19	5.42E-05	5.97E-03
Xe-138	720	1.5	4.28E-04	3.08E-01
I-131	5300	0.074	2.11E-05	1.12E+00
I-132	4900	0.022	6.28E-06	3.08E-02
I-133	1500	0.092	2.63E-05	3.94E-01
I-134	3100	0.0081	2.31E-06	7.17E-03
I-135	8100	0.043	1.23E-05	9.94E+02
Total	3503.39			29.04

EAL (μCi/s) = 0.1 rem/(24.04 rem/h/μCi/cc x 4.65E-6 sec/m^3 x 1E-6 m^3/cc)
= 8.94E+08.

A second calculation is performed to determine a noble gas release rate which will correspond to the associated iodine release rate resulting in 500 mrem CDE thyroid.

The EAL release rate is back calculated from 500 mrem CDE (thyroid) as follows:

Nuclide	EPA-400 EDE (rem/hr per μCi/cc)	SQN FSAR Ci/yr/unit	Mix Fraction	Mix x EDE (rem/hr per μCi/cc)
I-131	1.3E+06	0.074	2.11E-05	2.75E+01
I-132	7.7E+03	0.022	6.28E-06	4.84E-02
I-133	2.2E-05	0.092	2.63E-05	5.78E+00
I-134	1.3E+03	0.0081	2.31E-06	3.01E-03
I-135	3.8E+04	0.043	1.23E-05	4.66E-01
Total		0. 24		33.75

EAL (μCi/s) = 0.5 rem/(33.75 rem/h/μCi/cc x 4.65E-6 sec/m^3 x 1E-6 m^3/cc)
= 3.19E+09.

To determine the associated noble gas release rate, the iodine release rate is divided by a factor of 0,001. This is the standard ratio of iodine to noble gas release rate used in CECC procedures for dose assessment and is very conservative with respect to the SQN FSAR nuclide distribution. Thus, the corresponding noble gas release is:

EAL = 3.19E+09/0.001 = 3.19E+12μCi/s.

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	ALERT
Mode	All
Description	Any UNPLANNED release of gaseous radioactivity that exceeds 200 times the ODCM section 1.2.2.1 limit for >15 minutes (1 or 2 or 3): 1. A VALID rad monitor reading exceeds values under Alert in Table 7-1(page 158) for >15 minutes, unless assessment within that 15 minutes confirms that the criterion is not exceeded. OR 2. Field surveys indicate >10 mrem/hr β-γ at the exclusion area boundary (Figure 7-A) >15 minutes. OR 3. Dose assessment results indicate exclusion area boundary (Figure 7-A) dose >10 mrem TEDE for the duration of the release. NOTE: TEDE =Total Effective Dose Equivalent
Basis	If the monitor values in Table 7-1 are met or exceeded the required assessment must be performed. The assessment method is the P-250 process computer or TI-CEM-030-030.0. If the assessment cannot be completed within 15 minutes the appropriate emergency classification will be made based on the valid reading. Calculation To calculate the gaseous effluent monitor values for Table 7.1, (Effluent Radiation Monitor EALs), the release rates corresponding to the ODCM limit as determined for the Unusual Event are used. For gaseous releases, the EAL value can be determined by multiplying the Unusual Event noble gas monitor readings by a factor of 100.

Monitor	NOUE Release Rate Limit	Alert Release Rate Limit	Allocation Factor	Allocated Release Rate
Shield Bldg 1-,2-RM-90-400	6.6E+05	6.6E+07	0.3	2.0E+07
Auxiliary Bldg 0-RM-90-101B	6.6E+05	6.6E+07	0.1	6.6E+06
Service Bldg 0-RM-90-132B	6.6E+05	6.6E+07	0.1	6.6E+06
Condenser Vac Exhaust 1-,2-RM-90-119	6.6E+05	6.6E+07	0.1	6.6E+06

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	ALERT (continued)
Mode	All
Basis (continued)	The NOUE monitor value readings are also multiplied by a factor of 100:

Monitor	NOUE Monitor Reading	Alert Monitor Reading
Shield Bldg 1-,2-RM-90-400	N/A	N/A
Auxiliary Bldg 0-RM-90-101B	1.4E+04 cpm	1.4E+06 cpm
Service Bldg 0-RM-90-132B	3.0E+05 cpm	3.0E+07 cpm
Condenser Vac Exhaust 1-,2-RM-90-119	3.2E+07 cpm	3.2E+09 cpm

An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

A release of radioactivity is UNPLANNED if the release has not been authorized by a Discharge Permit (DP). Implicit in this definition are unintentional releases, unmonitored releases, or planned releases that exceed a condition specified on the DP, e.g. alarm setpoints, minimum dilution flow, minimum release times, maximum release rates, and/or discharge of incorrect tank.

The significance of the time factor to this criterion is primarily related to loss of control of radioactive material that has allowed the release to continue unabated for 60 minutes. It is this aspect rather than the magnitude of the release that establishes "...a potential substantial degradation in the level of safety of the plant..." the fundamental definition of an Alert.

Escalation	Escalation will be based on dose rates greater than 100 mrem TEDE or 500 mrem thyroid CDE.
References	NUMARC/NESP-007, AAI, Rev. 2, 1/92 TI-CEM-030-030.0 Manual Calc. of Plant Gas, Iodine and Particulate Release Rates For ODCM Compliance (ODCM) Offsite Dose Calculation Manual

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Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	UNUSUAL EVENT
Mode	All
Description	Any UNPLANNED release of Gaseous Radioactivity that exceeds 2 times the ODCM Section 1.2.2.1 limit for >60 minutes (1 or 2 or 3): 1. A VALID rad monitor reading exceeds the values under Unusual Event in Table 7-1 (Page 158) for >60 minutes, unless assessment within that 60 minutes confirms that the criterion is not exceeded. OR 2. Field surveys indicate >0.1 mrem/hr β-γ at the exclusion area boundary (Figure 7-A) >60 minutes. OR 3. Dose assessment results indicate exclusion area boundary (Figure 7-A) dose >0.1 mrem TEDE for the duration of the release. NOTE: TEDE = Total Effective Dose Equivalent
Basis	If the monitor values in Table 7-1 are met or exceeded the required assessment must be performed. The assessment method is the P-250 process computer or TI-CEM-030-030.0. If the assessment cannot be completed within 60 minutes the appropriate emergency classification will be made based on the valid reading. Calculation To calculate the gaseous effluent monitor values for Table 7.1 (Effluent Radiation Monitor EALs), the first step is to determine release rates which correspond to the ODCM limit. To do this, the annual average meteorology data from the period of 1972 - 1988, and the design annual releases (noble gas only) from the SQN FSAR were input to the Gaseous Effluent Licensing Code (GELC) computer code. The resulting calculated dose rates are used below. The site boundary sector with the highest resulting concentration was chosen for the analysis. This was the North sector at 950 meters downwind from the plant. The resulting dose rates at this location from these releases are: Total Body: 1.45E-01 mrem/year Skin: 4.14E-01 mrem/year

NEW PAGE

Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.1	GASEOUS EFFLUENTS
Classification	UNUSUAL EVENT (continued)
Mode	All
Basis (continued)	If these dose rates are divided into the ODCM limits of 500 and 3000 mrem/year, respectively, a factor is obtained which can be multiplied by the total release rate to determine a release rate corresponding to the ODCM limit: Total Body: 500 mrem/yr/1.45E-01 mrem/year =3448 Skin: 3000 mrem/yr/4.14E-01 mrem/year =7246 The total body value will be used since its ratio will yield the most conservative release rate. The total source term from the FSAR is: 2.99E+03 Ci/yr / 3.15E+07 s/yr x 10^6 μCi/Ci = 95 μCi/s The noble gas release rate corresponding to the ODCM limit is equal to: 95 μCi/s x 3448 = 3.28E+05 μCi/s The Unusual Event site total gaseous release rate value is then equal to : 2 x 3.28E+05 μCi/s = 6.56E+05 μCi/s This release rate is then used to determine corresponding monitor readings. For the gases, the release rate is first allocated among the various release points as follows:

Monitor	Release Rate Limit	Allocation Factor	Allocated Release Rate
Shield Bldg. 1-,2-RM-90-400	6.5E+05	0.30	2.0E+05
Auxiliary Bldg. 0-RM-90-101B	6.5E+05	0.10	6.6E+04
Service Bldg. 0-RM-90-132B	6.5E+05	0.10	6.6E+04
Condenser Vac. Exhaust 1-,2-RM-90-119	6.5E+05	0.10	6.6E+04

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Table 7-1

EFFLUENT RADIATION MONITOR EAL's

The monitor values below, if met or exceeded, indicated the need to perform the required assessment using the P-250 Process computer or TI-CEM-030-030.0. If the assessment cannot be completed within 15 minutes (60 Minutes for UE), the appropriate emergency classification shall be made based on the valid reading.

GASEOUS MONITORS	Units[2]	Unusual Event	Alert	Site Area Emergency	General Emergency
RELEASE DURATION	**Mins.**	**60**	**15**	**15**	**15**
Site Total Release Limit	µCi/s	6.5E+05	6.5E+07	8.94E+08	8.94E+09
U-1 Shield Building					
1-RM-90-400 Limit	µCi/s	2.0E+05	2.0E+07	2.68E+08	2.68E+09
U-2 Shield Building					
2-RM-90-400 Limit	µCi/s	2.0E+05	2.0E+07	2.68E+08	2.68E+09
Auxiliary Building	µCi/s	6.6E+04	6.6E+06	8.94E+07	8.94E+08
0-RM-90-101B Limit	cpm	1.4E+04	1.4E+06	1.89E+07	1.89E+08[1]
Service Building	µCi/s	6.6E+04	6.6E+06	8.94E+07	8.94E+08
0-RM-90-132B Limit	cpm	3.0E+05	3.0E+07[1]	4.1E+08[1]	4.1E+09[1]
U-1 Condenser Vacuum Exhaust	µCi/s	6.6E+04	6.6E+06	8.94E+07	8.94E+08
1-RE-90-119 Limit	cpm	3.2E+07[1]	3.2E+09[1]	4.3E+10[1]	4.3E+11[1]
U-2 Condenser Vacuum Exhaust	µCi/s	6.6E+04	6.6E+06	8.94E+07	8.94E+08
2-RE-90-119 Limit	cpm	3.2E+07[1]	3.2E+09[1]	4.3E+10[1]	4.3E+11[1]
LIQUID MONITORS	**Units**	**UE**	**Alert**	**SAE**	**GE**
Site Total Release Limit	*µCi/ml*	*2.0E - 05*	*2.0E - 07*	*N/A*	*N/A*
RM-90-122-Rad Waste	cpm	8.2E+04	8.2E+06	N/A	N/A
RM-90-120/121-S/G Blowdown	cpm	3.9E+05	3.9E+07[1]	N/A	N/A
RM-90-225-Cond. Demin.	cpm	6.8E+05	6.8E+07[1]	N/A	N/A
RM-90-212-Turb. Bldg. Sump	cpm	1.8E+04	1.8E+06	N/A	N/A

(1) This value is a calculated value. The maximum monitor output that can be read is 1.0E+07 cpm.

(2) The release rates given in µCi/s for the Aux. Bldg., Service Bldg. and Cond. Vac. Exh. are calculated values based on ODCM limits. The values correspond to the emergency classification Initiating Condition values. Use the values that correspond to the monitor readout, in either µCi/s or cpm, to determine the emergency classification. If the monitor is offscale then use the ASSESSMENT METHOD to determine the release rate.

NEW PAGE

Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.3	RADIATION LEVELS
Classification	GENERAL EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1) or "Gaseous Effluents"(Section 7.1).
Basis	Not Applicable.
Escalation	Not Applicable.
References	NUMARC/NESP-007, Rev. 2, 1/92

Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.3	RADIATION LEVELS
Classification	SITE AREA EMERGENCY
Mode	Not Applicable.
Description	Refer to the "Fission Product Barrier Matrix" (Section 1) or "Gaseous Effluents"(Section 7.1).
Basis	Not Applicable.
Escalation	Escalation may be based on "Fission Product Barrier Matrix" (Section 1) or "Gaseous Effluent Levels" (Section 7).
References	NUMARC/NESP-007, Rev. 2, 1/92

NEW PAGE

Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.4	FUEL HANDLING
Classification	ALERT
Mode	All
Description	Major damage to irradiated fuel or loss of water level that has or will uncover irradiated fuel outside the reactor vessel (1 and 2): 1. Valid alarm on RM-90-101 or RM-90-102 or RM-90-103 or RM-90-130/131 or RM-90-112. 2. (a or b) a. Plant personnel report damage of irradiated fuel sufficient to rupture fuel rods. OR b. Plant personnel report water level drop has or will exceed makeup capacity such that irradiated fuel will be uncovered in the spent fuel pool or fuel transfer canal.
Basis	The major concern of the EAL is a fuel handling accident or loss of water covering spent fuel. Events of this type could cause an increase in radioactivity readings and potentially a release to the environment. Offsite doses during these accidents would be below the EPA Protective Action Guidelines and the classification of an Alert is therefore appropriate. Monitoring radiation on the refueling floor and containment is by particulate, iodine, gas monitors and area monitors. Values for these monitors are set to not exceed safety limits and to ensure that the design basis does not exceed limits referenced in 10 CFR 20. An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.
Escalation	Escalation will occur by offsite dose rates. Refer to "Gaseous Effluents" (Section 7.1).
References	NUMARC/NESP-007, AA2, Rev. 2, 1/92 AOI-29 Dropped or Damaged Fuel or Refueling Cavity Seal Failure NRC IEN 90-08 Kr-85 Hazards from Decayed Fuel EPA-520/1-75-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, September 1975 FSAR 15.5.6 Environmental Consequences of a Postulated Fuel Handling Accident T.S. 3.9.4 Containment Penetrations T.S. 3.7.12 Auxiliary Building Gas Treatment System

NEW PAGE

Section 7.0	RADIOLOGICAL EFFLUENTS
Event 7.4	FUEL HANDLING
Classification	UNUSUAL EVENT
Mode	All
Description	UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with fuel remaining covered (1 and 2 and 3): 1. Plant personnel report water level drop in spent fuel pool or reactor cavity or transfer canal. 2. Valid alarm on RM-90-101 or RM-90-102 or RM-90-103. 3. Fuel remains covered with water.
Basis	The term unplanned refers to unplanned actions resulting from either equipment malfunctions or operator error that results in a decreasing water level in the spent fuel pool, reactor cavity or transfer canal. Unplanned is included in the IC to preclude the declaration of an emergency as a result of planned maintenance activities. The main concern of this EAL is the loss of water covering spent fuel and the potential of increased doses to plant staff. This event has a long lead time relative to the potential for a radiological release outside the exclusion area boundary, thus the impact to public health and safety is very low. Classification of an Unusual Event is warranted as a precursor to a more serious event. An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment.
Escalation	Escalation will be based on uncovering an irradiated fuel assembly or indications of high radiation levels on the refueling floor.
References	NUMARC/NESP-007, AU2, Rev. 2, 1/92 AOI-29 Dropped or Damaged Fuel or Refueling Cavity Seal Failure NRC IEN No. 90-08 Kr-85 Hazards from Decayed Fuel EPA-520/1-75-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, September 1975 FSAR 15.5.6 Environmental Consequences of a Postulated Fuel Handling Accident T.S. 3.9.4 Containment Penetrations T.S. 3.7.12 Auxiliary Building Gas Treatment System

NEW PAGE

B.7 SQN EMERGENCY PLAN IMPLEMENTING PROCEDURES

The following is a listing of the SQN-EPIPs:

B.7.1 SQN EPIP-1 Emergency Plan Classification Matrix

This procedure provides guidance to the Shift Operations Supervisor (SOS)/Site Emergency Director (SED) or TSC SED in determining the classification of an accident to ensure that appropriate predetermined actions are implemented. It details initiating conditions and directs shift personnel to appropriate notification and assessment procedures.

B.7.2 SQN EPIP-2 Notification of Unusual Event

This procedure provides for the timely notification of appropriate individuals when the SOS/SED has determined by SQN EPIP-1 that an incident has occurred which is classified as a Notification of Unusual Event. It details requirements for periodic reassessment and the implementation of appropriate actions.

B.7.3 SQN EPIP-3 Alert

This procedure provides for the timely notification of appropriate individuals when the SOS/SED has determined by SQN EPIP-1 that an incident has occurred which is classified as an Alert. It details requirements for periodic reassessment and the implementation of appropriate actions.

B.7.4 SQN EPIP-4 Site Area Emergency

This procedure provides for the timely notification of appropriate individuals when the SOS/ SED has determined by SQN EPIP-1 that an incident has occurred which is classified as a Site Area Emergency. It details requirements for periodic reassessment and the implementation of appropriate actions.

B.7.5 SQN EPIP-5 General Emergency

This procedure provides for the timely notification of appropriate individuals when the SOS/SED has determined by SQN EPIP-1 that an incident has occurred which is classified as a General Emergency. It details requirements for periodic reassessment and the implementation of appropriate actions. It also provides for determination of an initial protective action recommendation to State and local agencies.

NEW PAGE

B.7.6 SQN EPIP-6 Activation and Operation of the TSC

This procedure directs the activation and operation of the TSC during an Alert, Site Area Emergency, or General Emergency or at the discretion of the SED. It details notification requirements and responsibility for supervision of the TSC.

B.7.7 SQN EPIP-7 Activation and Operation of the OSC

This procedure directs the activation and operation of the OSC during an Alert, Site Area Emergency, or General Emergency or at the discretion of the SED.

B.7.8 SQN EPIP-8 Personnel Accountability and Evacuation

This procedure details the requirements for accountability of all personnel and visitors and the orderly evacuation of areas of the plant during a radiological emergency.

B.7.9 SQN EPIP-9 Accountability And Evacuation of the Sequoyah Training Center

This procedure also details the requirements for accountability of personnel and visitors at auxiliary facilities and their orderly evacuation during a radiological emergency.

B.7.10 SQN EPIP-10 Medical Emergency Response

This procedure details actions to be followed during medical emergencies. It provides for the organization and activation of the onsite Medical Emergency Response Team. It contains the duties and responsibilities of the onsite Medical Emergency Response Team. The procedure provides guidance on the care and handling of patients who may have been exposed to or contaminated with radioactive material, including provision for the transport of these individuals to offsite medical support facilities. Maps and appropriate instructions are included.

B.7.11 SQN EPIP-11 Security and Access Control

This procedure details responsibilities and requirements for access control and accountability during a radiological emergency.

B.7.12 SQN EPIP-12

This procedure has not been issued.

B.7.13 SQN EPIP-13 Call Lists

This procedure has not been issued.

NEW PAGE

B.7.14 SQN EPIP-14 Radiological Control Response

This procedure outlines the actions to be followed by health physics personnel during a plant emergency. It details responsibilities, RadCon assessment actions and record keeping requirements. The procedure provides guidance regarding the administration of potassium iodide (KI).

B.7.15 SQN EPIP-15 Emergency Exposure Guidelines

This procedure provides guidance on acceptable personnel exposures for various conditions. It specifies absolute exposure and authorizes the Site Emergency Director to permit exposures in excess of 10 CFR 20 limits in order to perform an emergency mission.

B.7.16 SQN EPIP-16 De-Escalation and Recovery Procedure

This procedure outlines responsibilities and provides guidance on recovery after an emergency to assure adequate planning or efficient utilization of resources and radiation exposure.

B.7.17 SQN EPIP-17 Emergency Equipment and Supplies

This procedure details requirements for periodic inspection and maintenance of emergency equipment and supplies. It assigns responsibility and specifies the inspection frequency and documentation requirements.

B.7.18 EPIP-18

This procedure has not been issued.

B.7.19 EPIP-19 Radiological Emergency Preparedness Training and Drills

This procedure specifies the training provided to plant personnel who are required to respond and have specific duties as outlined in the NP-REP and describes the required EP drills or exercises.

NEW PAGE

B.8 PROMPT NOTIFICATION SYSTEM

The prompt notification system network consists of fixed sirens and tone-alert radios. The system is designed to provide warning within 15 minutes, to the population, within 10 miles of the plant.

B.8.1 Fixed Sirens

The fixed-siren component consists of electromechanical sirens. The sirens are activated by the Tennessee Emergency Management Agency (TEMA). A backup activation system is located in Hamilton County.

The siren system is activated on a monthly basis by TEMA as a regularly scheduled test. A silent test is conducted every two weeks to test the radio link to the sirens. A growl test is performed by TVA employees on a quarterly basis. This test consists of each siren being activated individually by a portable test unit.

Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturer's recommendations. Unscheduled maintenance is performed on an as-needed basis.

B.8.2 Tone-Alert Radios

The tone-alert radio component consists of radios activated by county frequencies. The radios are placed in institutions where there are concentrations of people. Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturer's recommendations. Unscheduled maintenance is performed on an as-needed basis.

B.9 TRAINING AND DRILLS

B.9.1 Training Personnel

Personnel with specific duties and responsibilities in the SQN REP program receive instruction in the performance of their duties and responsibilities per the Nuclear Power Training Manual, Section TRN-30 (Radiological Emergency Preparedness Training), and as required in REP Section 15.0, (Training).

B.9.2 Drills and Exercises

Drills and exercises are conducted regularly to develop and maintain the key skills that are required for emergency response. The drills identified in REP Section 14.0 (Drills and Exercises) may be conducted individually or as part of a REP exercise.

NEW PAGE

Section 7.0	RADIOLOGICAL
Event 7.2	LIQUID EFFLUENTS
Classification	UNUSUAL EVENT (continued)
Mode	All
Basis (continued)	Turbine Building Sump Radiation Monitor (RE-90-212) Since the flow from this release point is not diluted prior to being released, the undiluted Cs-134 concentration is inserted into the ODCM equation 6.3: * R = 500 cpm + (9.21E+08 cpm/μCi/ml * 9E-06 μCi/ml) * R = 7.79E+03 cpm The Unusual Event value is then: * 2 * 7.79E+03 cpm = 1.56E+04 cpm A release of radioactivity is UNPLANNED if the release has not been authorized by a Discharge Permit (DP). Implicit in this definition are unintentional releases, unmonitored releases, or planned releases that exceed a condition specified on the DP, e.g. alarm setpoints, minimum dilution flow, minimum release times, maximum release rates, and/or discharge of incorrect tank. An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel.. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes. The significance of the time factor to this CRITERION is primarily related to loss of control of radioactive material that has allowed the release to continue unabated for 60 minutes. It is this aspect rather than the magnitude of the release that establishes "...a potential degradation in the level of safety of the plant..."--the fundamental definition of an UNUSUAL EVENT.
Escalation	Escalation would be based on an UNPLANNED release exceeding 200 times the ODCM limit for greater than 15 minutes.
References	NUMARC/NESP-007, AU2, Rev 2, 1/92 (ODCM) Offsite Dose Calculation Manual 10 CFR 20 *TI-18 Calculation Methods for Effluent Radiation Monitors

*Revision

TABLE 7-1
EFFLUENT RADIATION MONITOR EALS

NOTE: The values below, if exceeded, indicate the need to perform the specified assessment. If the assessment can not be completed within 15 minutes (60 minutes for UE), the declaration shall be made based on the VALID reading.

Monitor	Units	UE	Alert	Site	General
*Total Site	µCi/s (2)	1.5E+05	1.5E+07	2.5E+08	2.5E+09
U1 Shield Building *1-RE-90-400	µCi/s	6.7E+04	6.7E+06	1.0E+08	1.0E+09
U2 Shield Building *2-RE-90-400	µCi/s	1.5E+04	1.5E+06	2.5E+07	2.6E+08
*Auxiliary Building *0-RE-90-101B	cpm	1.2E+04	1.2E+06	*****(1)	*****(1)
*Service Building *0-RE-90-132B	cpm	4.3E+03	4.3E+05	9.8E+06	****(1)
*U1 Condenser Vacuum Exhaust					
*1-RE-90-404A	µCi/cc	5.5E-02	5.5E+00	8.83E+01	8.83E+02
*1-RE-90-404B	µCi/cc	5.5E-02	5.5E+00	8.83E+01	8.83E+02
Liquid Monitors	µCi/ml (2)	1.8E+05	1.8E-03	N/A	N/A
0-RE-90-122	cpm	1.1E+06	*****(1)	N/A	N/A
1-RE-90-120,121	cpm	1.0E+06	*****(1)	N/A	N/A
*0-RE-90-225	cpm	9.2E+05	*****(1)	N/A	N/A
*0-RE-90-212	cpm	1.5E+04	1.5E+06	N/A	N/A
RELEASE DURATION	minutes	60	15	15	15
ASSESSMENT METHOD	ERFDS or P-2500 or TI-30 Radiological Gaseous Effluent Evaluation Procedure				

Monitor	Units	UE	Alert	Site	General
S/G Discharge Monitors 1-RE-90-421 thru 424 (B)	mR/hr (3)	NA	3.5E+02	3.5E+03	3.5E+04
RELEASE DURATION	minutes	60	15	15	15
ASSESSMENT METHOD	ERFDS				

NOTE:

(1) Table values are calculated values. The ***** indicates the monitor is off scale.

(2) These release rate values in µCi/s and µCi/ml are provided on the gaseous and liquid release points for Information Only. Actual monitor readings are giveni n the table corresponding to the monitor for the four emergency classifications.

(3) These unit values are based on flow rates through one [1] PORV of 970,000 lb/hr at 1,185 psig, 600 °F. Before using these values, ensure a release to the environment is ongoing, (e.g. PORV).

*Revision

C.7.14 WBN EPIP-14 Radiological Control Response

This procedure outlines the actions to be followed by health physics personnel during a plant emergency. It details responsibilities, RadCon assessment actions and recordkeeping requirements. The procedure provides guidance regarding the administration of potassium iodide (KI).

C.7.15 WBN EPIP-15 Emergency Exposure Guidelines

This procedure provides guidance on acceptable personnel exposures for various conditions. It specifies absolute dose rates and authorizes the Site Emergency Director to permit dose rates in excess of 10 CFR 20 limits in order to perform an emergency mission.

*C.7.16 WBN EPIP-16 Initial Dose Assessment for Radiological Emergencies

* This procedure provides initial guidance to support site activities concerning dose assessment
* for an actual or exercise airborne release situation.

C.8 PROMPT NOTIFICATION SYSTEM

The prompt notification system network consists of fixed sirens and tone-alert radios. The system is designed to provide warning within 15 minutes to the population within 10 miles of the plant.

C.8.1 Fixed Sirens

The fixed-siren component consists of electromechanical sirens. The sirens are activated by the Tennessee Emergency Management Agency (TEMA). A backup activation system is located in Rhea County.

The siren system is activated on a monthly basis by TEMA as a regularly scheduled test. A silent test is conducted every two weeks to test the radio link to the sirens. A growl test is performed by TVA employees on a quarterly basis. This test consists of each siren being activated individually by a portable test unit.

Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturer's recommendations. Unscheduled maintenance is performed on an as-needed basis.

C.8.2 Tone-Alert Radios

The tone-alert radio component consists of radios activated by county frequencies. The radios are placed in institutions where there are concentrations of people. Preventive maintenance is performed by TVA on an annual basis commensurate with the manufacturer's recommendations. Unscheduled maintenance is performed on an as-needed basis.

*Revision

C.9 Training and Drills

C.9.1 Training Personnel

Personnel with specific duties and responsibilities in the WBN REP program receive instructic in the performance of their duties and responsibilities per the Nuclear Power Training Manual Section TRN-30 (Radiological Emergency Preparedness Training), and as required in REP Section 15.0, (Training).

C.9.2 Drills and Exercises

Drills and exercises are conducted regularly to develop and maintain the key skills that are required for emergency response. The drills identified in Section 14.0 (Drills and Exercises) may be conducted individually or as part of a REP exercise.