



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

October 21, 2003
NOC-AE-03001624
STI: 31665347
FILE NO: Z18
ER 20030047
10CFR50.4(b)(5)
10CFR50 App E

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

STP NUCLEAR OPERATING COMPANY
Units 1 and 2
Docket Nos. STN 50-498; STN 50-499
Changes to Emergency Plan Procedures

In accordance with 10CFR50.4(b)(5) and 10CFR50, Appendix E, Section V, the STP Nuclear Operating Company hereby submits the attached Emergency Plan Implementing Procedure revisions.

If there are any questions regarding this matter, please contact Aubrey Morgan at (361) 972-7004.

A handwritten signature in black ink, appearing to be "P. L. Serra", written over a horizontal line.

P. L. Serra
Manager, Plant Protection

ACM/mk

Enclosure:

Letter of Receipt
Description of Changes
0ERP01-ZV-IN01, Emergency Classification, Rev. 6
0ERP01-ZV-IN02, Notifications To Offsite Agencies, Rev. 17
0ERP01-ZV-IN07, Offsite Protective Action Recommendations, Rev. 9
0ERP01-ZV-SH01, Shift Supervisor, Rev. 18
0ERP01-ZV-TP01, Offsite Dose Calculations, Rev. 14

A04

cc:
(paper copy)

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NOC-AE-03001624
STI: 31665347
FILE NO: Z18
ER 20030047
Page 3

To: P. L. Serra
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Wadsworth, TX 77483

From: Emergency Planning Coordinator
Region IV Office of the Regional Administrator
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Subject: Receipt Acknowledgment for Changes to STP
Emergency Plan Implementing Procedure

I hereby acknowledge having received changes to the STP Nuclear Operating Company's
Emergency Plan Implementing Procedures.

Signature

Date

Description of Changes

These revisions do not reduce the effectiveness or change the intent of the Emergency Response Program.

0ERP01-ZV-IN01, Emergency Classification, Rev. 6

NO	CHANGE	REASON
1.	Page 2, step 2.1, added definition of Affecting Safe Shutdown.	Clarification.
2.	Page 3, step 2.11, added definition of Hatch Monitor	Clarification.
3.	Page 3, step 2.12, added definition of Imminent.	Clarification.
4.	Page 3, step 2.16, added definition of Potential Loss.	Clarification.
5.	Page 4, step 2.25, added definition of Transient.	Clarification.
6.	Page 4, step 2.30, added definition of Valid.	Clarification.
7.	Page 5, step 5.2, added Anytime Emergency Operating Procedures (EOPs) or Off-Normal Procedures are initiated, this procedure should be reviewed to determine if an emergency action level has been reached.	Clarification.
8.	Page 6, step 5.6, Added when a declaration of an emergency class is not required (NUREG-1022).	Describes how to handle missed or short duration events.
9.	Page 7, step 6.20, Added Reference 03-ZE-003, RT8050/RT8051 Contingency Conversion Constant for Post-Accident Failed Fuel Monitoring	Added new monitor due to TSC-288.
10.	Page 10, Added "OR Hatch Monitor greater than 222 mR/hr" to Fuel Clad and RCS Barrier	Added new monitor due to TSC-288. Dose rate calculation 03-ZE-003, RT8050/RT8051 Contingency Conversion Constant for Post-Accident Failed Fuel Monitoring
11.	Page 10, Added "OR Hatch Monitor greater than 2,222 mR/hr" to Containment Barrier	Added new monitor due to TSC-288
12.	Page 15, Changed HL&P to Texas Genco LP, and ECDC to STP Coordinator (QSE).	Editorial name change.
13.	Page 23, RG2, Added "OR Valid reading on Hatch Monitor greater than 2,222 mR/hr"	Added new monitor due to TSC-288

14.	Page 23, RS2, Added "OR Valid reading on Hatch Monitor greater than 222 mR/hr"	Added new monitor due to TSC-288
15.	Page 36, EAL-5, Added "OR 222 mR/hr on the Hatch Monitor"	Added new monitor due to TSC-288
16.	Page 38, EAL-5, Added "OR 222 mR/hr on the Hatch Monitor"	Added new monitor due to TSC-288
17.	Page 46, Changed HL&P to Texas Genco LP, and ECDC to STP Coordinator (QSE).	Editorial name change.
18.	Page 81, EAL-1, Added "OR Hatch Monitor greater than 222 mR/hr"	Added new monitor due to TSC-288
19.	Page 81, Bases, Added "OR Valid reading on 222 mR/hr on the Hatch Monitor"	Added new monitor due to TSC-288
20.	Page 84, EAL-1, Added "OR Valid reading on Hatch Monitor greater than 2,222 mR/hr"	Added new monitor due to TSC-288

0ERP01-ZV-IN02, Notifications to Offsite Agencies, Rev. 17

NO	CHANGE	REASON
1	Page 2, Step 1.2, Added missed classification notification method to procedure scope.	Clarification.
2	Page 3, Step 3.4, added notification instructions for missed EALs in accordance with guidance in NUREG-1022.	Clarification.
3	Page 4, Step 4.7, changed TSC communicator requirement to notify the NRC along with the state and county. Instructed the TSC communicator to make contact with the NRC using the bridge line when directed.	Changed from having the TSC Communicator contact NRC, that is done in the Control Room and EOF.
3	Page 6, Step 5.1.1.6, Added direction to include PAR in General Emergency Notification	Clarification.
4	Page 16, New Data Sheet 5, Non-Emergency Offsite Agency Notification Message Form.	Added form to use by the Control Room for informing the state & county.

0ERP01-ZV-IN07, Offsite Protective Action Recommendations, Rev. 9

NO	CHANGE	REASON
1	Page 6, Added Zones to 5 Mile Radius	Clarification
2	Page 8, Added Hatch Monitor and instructions.	Clarification due to TSC-288.

0ERP01-ZV-SH01, Shift Supervisor, Rev. 18

NO	CHANGE	REASON
1	Page 6, Added Zones to 5 Mile Radius	Clarification
2	Page 7, Added Hatch Monitor and instructions.	Clarification due to TSC-288.

0ERP01-ZV-TP01, Offsite Dose Calculations, Rev. 14

NO	CHANGE	REASON
1	Page 3, step 2.6, Added definition of Hatch Monitor.	Clarification due to TSC-288.
2	Page 12, step 1, added Hatch Monitor.	Clarification due to TSC-288.

STI: 31663159	0ERP01-ZV-IN01		Rev. 6	Page 1 of 104
Emergency Classification				
Quality	Non Safety-Related	Usage: IN HAND	Effective Date: 10/16/03	
Max Keyes	Name	Name	Emergency Response Division	
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION	

Table of ContentsPage

1.0	Purpose and Scope	2
2.0	Definitions.....	2
3.0	Precautions and Limitations.....	5
4.0	Responsibilities	5
5.0	Procedure	5
6.0	References.....	7
7.0	Support Documents.....	7
	Addendum 1, Emergency Classification Tables	8
	Addendum 2, Bases for Emergency Action Levels.....	33
	Addendum 3, Exclusion Area Boundary.....	104

	0ERP01-ZV-IN01	Rev. 6	Page 2 of 104
Emergency Classification			

1.0 Purpose and Scope

- 1.1 This procedure provides guidance to the Emergency Director for determination of the appropriate Emergency Classification.
- 1.2 This procedure implements the requirements of the South Texas Project Electric Generating Station (STPEGS) Emergency Plan specific to Emergency Classification.

2.0 Definitions

- 2.1 **Affecting Safe Shutdown:** An event in progress has adversely affected functions that are necessary to bring the plant to and maintain it in the applicable HOT or COLD SHUTDOWN condition. Plant condition applicability is determined by Technical Specification LCOs in effect.
- 2.2 **Alert:** Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any radioactive releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) exposure levels.
- 2.3 **Emergency Action Level (EAL):** A pre-determined, site specific, observable threshold for a plant Initiating Condition that is used to place the plant in a given emergency class. [EALs can be in the form of: instrument readings, measurable parameters (on or off site), a discrete observable event, equipment status, certain natural phenomena or via Emergency Operating Procedure guidance.]
- 2.4 **Emergency Classification:** One of a set of four titles established by the Nuclear Regulatory Commission (NRC) for grouping off-normal nuclear power plant conditions according to: (1) their relative radiological consequences; and (2) the time sensitive onsite and offsite radiological emergency preparedness actions necessary to respond to such conditions. The existing radiological emergency classifications in ascending order of seriousness are Unusual Event, Alert, Site Area Emergency, and General Emergency.
- 2.5 **EPA PAG:** Environmental Protection Agency Protective Action Guidelines for exposure to a release of radioactive material.
- 2.6 **Exclusion Area Boundary:** The boundary of the Exclusion Area, as shown in Addendum 3. The Exclusion Area is oval shaped such that any point on the Exclusion Area Boundary is at least 1430 meters from the center of either containment building. The licensee has control over all activities within the Exclusion Area.
- 2.7 **Facility:** The area and buildings within the Protected Area and the switchyard.

	0ERP01-ZV-IN01	Rev. 6	Page 3 of 104
Emergency Classification			

- 2.8 Fission Product Barrier: The three boundaries for preventing the release of fission products to the environment. They are:
- Fuel Cladding
 - Reactor Coolant System
 - Reactor Containment Building
- 2.9 Functional: A component is fully capable of meeting its design function. It would be declared inoperable if unable to meet Technical Specifications.
- 2.10 General Emergency (GE): Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Radioactive releases can reasonably be expected to exceed EPA Protective Action Guidelines exposure levels offsite beyond the exclusion area boundary.
- 2.11 Hatch Monitor: Temporary monitor installed when Containment Monitors RT-8050 and RT-8051 are out of service. A correction factor has been calculated to relate Hatch Monitor dose rate to the dose rate inside Containment. (CR 01-3566)
- 2.12 Imminent: Mitigation actions have been ineffective and trended information indicates that the event or condition will occur within 1 or 2 hours.
- 2.13 Initiating Condition: One of a predetermined subset of nuclear power plant conditions where either the potential exists for a radiological emergency, or such an emergency has occurred.
- 2.14 Inoperable: A component does not meet Technical Specifications. The component may be functional, capable of meeting its design function.
- 2.15 Loss: A component is inoperable and not functional.
- 2.16 Potential Loss: Mitigation actions are not effective and trended information indicates that the parameters are outside desirable bands and not stable or improving.
- 2.17 Protected Area: That area inside the physical security boundary of the site that includes the nuclear reactor plant.
- 2.18 Radiological Release: Any radiological release from the plant that exceeds the EAL limits established for an Unusual Event.
- 2.19 Recovery: That phase of an emergency when the emergency condition no longer exists and the plant is in a stable, shutdown, and safe condition; major repairs, if required, have been identified in order to return the plant to operation; and the potential for uncontrolled releases of radioactive material to the environment no longer exists.

	0ERP01-ZV-IN01	Rev. 6	Page 4 of 104
Emergency Classification			

- 2.20 **Security Alert:** A security related situation that requires an increased level of readiness on the part of the Security Force.
- 2.21 **Security Emergency:** A security related emergency situation for which prompt response by the Security Force, immediate action by plant personnel, and/or assistance from offsite agencies may be required to apprehend intruders and mitigate the effects of or prevent radiological sabotage.
- 2.22 **Site Boundary:** The edge of the plant property whose access may be controlled by the licensee. This boundary is congruent with the Exclusion Area Boundary for the purpose of dose assessment.
- 2.23 **Site Area Emergency (SAE):** Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any radioactive releases are not expected to result in exposure levels that exceed EPA Protective Action Guidelines exposure levels outside the Exclusion Area Boundary.
- 2.24 **Steam Generator Tube Rupture:** A Steam Generator tube leak greater than the capacity of the Chemical and Volume Control System (CVCS) to maintain pressurizer level.
- 2.25 **Transient:** A planned reactor trip in which the expected post-trip response did not occur.
- 2.26 **Termination:** Exiting the emergency condition.
- 2.27 **Thyroid Committed Dose Equivalent (CDE):** Total committed dose from internally deposited radionuclide over subsequent 50 year period to the Thyroid.
- 2.28 **Total Effective Dose Equivalent (TEDE):** The sum of external dose exposure to radioactive plume, to radionuclides deposited on the ground by the plume, and the internal exposure due to inhaled radionuclides deposited in the body.
- 2.29 **Unusual Event:** Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
- 2.30 **Valid:** An Indication, report or condition is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.
- 2.31 **Vital Area:** Locations within the Protected Area as defined by security procedures which contain equipment that directly affect the safety of the plant.

	0ERP01-ZV-IN01	Rev. 6	Page 5 of 104
Emergency Classification			

3.0 Precautions and Limitations

3.1 The Emergency Director is the only individual who can declare an emergency or change an Emergency Classification. The normal progression for Emergency Director is:

3.1.1 Shift Supervisor to

3.1.2 TSC Manager to

3.1.3 EOF Director

4.0 Responsibilities

4.1 The Emergency Director is responsible for declaring or changing an Emergency Classification based on the EALs contained in Addendum 1, Emergency Classification Tables.

4.2 Emergency Response personnel are responsible for alerting the Emergency Director of conditions which may change the emergency classification.

5.0 Procedure

NOTE

Addendum 1, Emergency Classification Tables, may be removed from the basic procedure for use in classifying emergencies.

5.1 Upon recognition of the potential for an event or plant condition to represent an emergency OR as directed from other procedures, refer to Addendum 1, Emergency Classification Tables.

5.2 Anytime Emergency Operating Procedures (EOPs) or Off-Normal Procedures are initiated, this procedure should be reviewed to determine if an emergency action level has been reached.

5.3 IF the event or condition meets EALs applicable to more than one Emergency Classification, THEN declare the highest Emergency Classification and implement the appropriate procedure.

	0ERP01-ZV-IN01	Rev. 6	Page 6 of 104
Emergency Classification			

- 5.4 Based on the judgement of the Emergency Director, an emergency can be declared at any level even if it is not specifically covered in Addendum 1.
- 5.5 Any person recognizing an emergency or potential emergency condition should notify the Emergency Director and/or Shift Supervisor.
- 5.6 Declaration of an emergency class is not required if:
- 5.6.1 The event or condition which met an EAL threshold no longer exists at the time of discovery.
- AND**
- 5.6.2 The event or condition was due to a rapidly concluded event or an oversight in the emergency classification.
- 5.6.3 Reporting requirements of 10CFR50.72 are applicable and the guidance of NUREG-1022 should be applied.
- 5.7 The classification of an emergency may be downgraded by the Emergency Director if appropriate for the conditions.
- 5.8 Use the following criteria/guidance to determine entry into Recovery or Termination:
- 5.8.1 Recovery
- A Site Area or General Emergency has been declared;
 - the emergency condition no longer exists and the plant is in a stable, shutdown, and safe condition;
 - major repairs, if required, have been identified in order to return the plant to operation;
 - the potential for uncontrolled release of radioactive material to the environment no longer exists; and
 - concurrence from the NRC, State, and County has been obtained.
- 5.8.2 Termination: One of the following applicable conditions exists
- 5.8.2.1 From Recovery
- Repairs identified during the recovery phase are complete and the plant is ready to return to normal operations.
- 5.8.2.2 From Alert or Unusual Event
- The emergency condition no longer exists and the plant is ready to return to normal operations; or
 - The emergency condition no longer exists, repair activities are minor, and the plant is in a stable shutdown mode.

	0ERP01-ZV-IN01	Rev. 6	Page 7 of 104
Emergency Classification			

5.9 Addendum 2, Bases for Emergency Action Levels may be used in explanation of why a particular EAL was selected in classifying an emergency.

6.0 References

- 6.1 STPEGS Emergency Plan
- 6.2 UFSAR
- 6.3 OPOP05-EO-EC00, Loss of All AC Power
- 6.4 OPOP05-EO-FO02, Core Cooling Critical Safety Function Status Tree
- 6.5 OPOP05-EO-FO04, Integrity Critical Safety Function Status Tree
- 6.6 OPOP05-EO-FO05, Containment Critical Safety Function Status Tree
- 6.7 OPOP05-EO-FRC1, Response to Inadequate Core Cooling
- 6.8 OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink
- 6.9 OPOP05-EO-FRS1, Response to Nuclear Power Generation - ATWS
- 6.10 OPOP04-ZO-0002, Natural and Destructive Phenomena Guidelines
- 6.11 OPOP04-SY-0001, Seismic Event
- 6.12 OPOP04-ZO-0001, Control Room Evacuation.
- 6.13 Regulatory Guide 1.101, Emergency Planning and Preparedness for Nuclear Power Reactors.
- 6.14 NUMARC/NESP-007. Methodology for Development of Emergency Action Levels, January, 1992
- 6.15 OPOP01-ZA-0018, Emergency Operating Procedure User's Guide
- 6.16 Safeguards Contingency Plan
- 6.17 OSDP01-ZS-0011, Implementing Procedures for Safeguards Contingency Events
- 6.18 Calculation No. 91-RA-0001
- 6.19 Calculation No. 01-RA-001, Radiation Monitor Calculations for Emergency Action Levels
- 6.20 03-ZE-003, RT8050/RT8051 Contingency Conversion Constant for Post-Accident Failed Fuel Monitoring

7.0 Support Documents

- 7.1 Addendum 1, Emergency Classification Tables
- 7.2 Addendum 2, Bases for Emergency Action Levels
- 7.3 Addendum 3, Exclusion Area Boundary

	0ERP01-ZV-IN01	Rev. 6	Page 8 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 1 of 25

TABLE OF CONTENTS

<u>Category</u>	<u>Page</u>
<u>Fission Product Barriers</u>	
- Fission Product Barrier Degradation	3
<u>Systems</u>	
- Electrical	4
- Reactor Protection/Technical Specification Shutdowns	6
- Communications/Alarms/Assessment	7
- Shutdown Maintenance	9
- Fission Product Barrier - Threshold Levels	11
<u>Radiological</u>	
- Radiological Release	12
- Radiation Levels	16
<u>Hazards</u>	
- Security	18
- Fire/Explosion	19
- Toxic/Flammable Gas	21
- Natural or Destructive Phenomena	22
- Control Room Evacuation	24
- Miscellaneous Events	25

	0ERP01-ZV-IN01	Rev. 6	Page 9 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 2 of 25

RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

Determine which combination of the three barriers are lost or have a potential loss and use the following matrix to classify the event. Also, an event (or multiple events) could occur which result in the conclusion that the loss or potential loss is IMMEDIATE (within 1 to 2 hours). In this IMMEDIATE loss situation use judgement and classify as if the thresholds are exceeded.

UNUSUAL EVENT (1-2)	ALERT (3-4)	SITE AREA EMERGENCY (5-8)	GENERAL EMERGENCY (9-10)
FU1 ANY Loss or ANY Potential Loss of Containment FU2 Fuel Clad Degradation See SU6 FU3 RCS Leakage - See SU7	FA1 ANY Loss or ANY Potential Loss of Fuel Clad or RCS	FS1 Loss of BOTH Fuel Clad and RCS OR Potential Loss of BOTH Fuel Clad and RCS <p style="text-align: center;">OR</p> Potential Loss of EITHER Fuel Clad or RCS <p style="text-align: center;">AND</p> Loss of ANY Additional Barrier	FG1 Loss of ANY Two Barriers AND Potential Loss or Loss of Third Barrier

Operating Modes 1 through 4

- Note:
1. At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from General Emergency.
 2. The ability to escalate to higher emergency classes as an event degrades must be maintained. RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Determination of Emergency Classification Level

Select values from the top of the columns on the next page, which describe specific Fission Product Barrier degradation. Select the higher value that applies from each barrier. Add the values to arrive at the total challenge to the Fission Product Barriers. The emergency classification is determined from the range of values shown in parentheses in the table above.

	0ERP01-ZV-IN01	Rev. 6	Page 10 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 3 of 25

RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

EAL	FUEL CLAD		RCS		CONTAINMENT	
	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (1)	LOSS (2)
1	CSF Core Cooling - Orange OR Heat Sink - Red ²	CSF Core Cooling - Red	CSF RCS Integrity - Red OR Heat Sink - Red ²	CSF Core Cooling - Yellow with subcooling < 0 °F	CSF Containment - Red OR Core Cooling - Orange > 15 min.	—
2	RCS Activity Failed Fuel Monitor, RT-8039, equal to or greater than 870 µCi/ml	RCS Activity Dose Equivalent Iodine greater than 300 µCi/gm	RCS Leak Rate Unisolable leak exceeding the capacity of one centrifugal charging pump in the normal charging mode.	RCS Leak Rate Leak rate greater than CVCS System's ability to maintain RCS inventory as indicated by loss of RCS subcooling.	Containment Pressure Greater than 6% hydrogen concentration in containment OR Containment pressure greater than 9.5 psig with neither containment spray nor RCFC running.	Containment Pressure Initial increase followed by rapid unexplained decrease OR containment pressure or sump level not increasing as expected with LOCA conditions.
3	Core Exit Thermocouple ≥ 708°F	Core Exit Thermocouple 1200°F	SG Tube Rupture SG Tube has ruptured and the primary to secondary leak rate is greater than the capacity of one centrifugal charging pump.	SG Tube Rupture SG Tube is ruptured and has a non-isolable secondary steam release	—	SG Tube Leak Primary to secondary leakage greater than 150 gpd through any one steam generator with direct secondary side leakage to atmosphere
4	Reactor Vessel Water Level Plenum level less than 20%	—	—	—	Containment Bypass VALID increase in reading on area or ventilation monitors in areas adjacent to the containment boundary with a known LOCA inside containment.	Containment Isolation Containment isolation signal AND Valves not closed AND A pathway to the environment exists.
5	—	RCB Rad Monitor RT-8050 or RT-8051 greater than 100 R/hr OR Hatch Monitor greater than 222 mR/hr	—	RCB Rad Monitor RT-8050 or RT-8051 greater than 100 R/hr OR Hatch Monitor greater than 222 mR/hr	RCB Rad Monitor RT-8050 or RT-8051 greater than 1,000 R/hr OR Hatch Monitor greater than 2,222 mR/hr	—

Note: 1. The Fuel Clad barriers and the RCS barrier are weighted more heavily than the Containment Barrier. Unusual Event Initiating Conditions (ICs) associated with RCS and Fuel Clad barriers are addressed under SU6 and SU7.

2. CSF indicators must be valid; outside the immediate control of the operator.

	0ERP01-ZV-IN01	Rev. 6	Page 11 of 104
Procedure Title			
Addendum 1	Emergency Classification Tables	Page 4 of 25	

**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

ELECTRICAL

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SG1 Prolonged Loss of Offsite and Onsite Power to All Three 4160V AC ESF Busses. Modes: 1-4	<u>EAL-1</u> Entry into 0POP05-EO-EC00, Loss of <u>ALL</u> AC Power, for greater than 15 minutes. AND Either of the following conditions exists: a. Restoration of at least one 4160V AC ESF Bus within 4 hours is not likely. OR b. Degradation of core cooling is indicated by a valid Red or Orange path on the Core Cooling Critical Safety Function Status Tree.	GE
SS1 Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses. Modes: 1-4	<u>EAL-1</u> No voltage on all 4160 VAC ESF busses for greater than 15 minutes.	SAE
SS3 Loss of All Class 1E DC Power. Modes: 1-4	<u>EAL-1</u> Less than 107 volts DC on <u>ALL</u> four (4) ESF DC battery busses for greater than 15 minutes.	SAE
SA1 Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling. Modes: 5, 6, and Defueled	<u>EAL-1</u> No voltage on all 4160 VAC ESF busses for greater than 15 minutes.	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 12 of 104
Procedure Title			
Addendum 1	Emergency Classification Tables	Page 5 of 25	

**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

ELECTRICAL

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA5 AC Power Capability to the Three 4160V AC ESF Busses is Reduced to a Single Power Source for Greater than 15 Minutes Such that Any Additional Single Failure Would Result in loss of ALL AC power. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes. <p style="text-align: center;">AND</p> b. Onsite power capability has been degraded to a single ESF diesel generator capable of supplying power to at least one ESF bus. <u>EAL-2</u> The following conditions exist: a. One of the following offsite power supplies is providing power to <u>ALL</u> of the energized 4160 ESF busses: - STBY 1 XFMR - STBY 2 XFMR - UAT - 13.8 KV Emergency bus 1(2)L <p style="text-align: center;">AND</p> b. ESF DGs 11(21), 12(22), AND 13(23) are not capable of providing power to their respective bus.	ALERT
SU1 Loss of Offsite Power to ESF Busses for Greater than 15 Minutes. Modes: 1-6, Defueled	<u>EAL-1</u> The following conditions exist: a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes. <p style="text-align: center;">AND</p> b. At least 2 ESF DGs are supplying power to their respective busses.	UE
SU5 Unplanned Loss of Class 1E DC Power During Cold Shutdown or Refueling for Greater than 15 Minutes. Modes: 5 and 6	<u>EAL-1</u> Loss of ESF DC Power to Channel 1 and Channel 4 based on Battery Bus Voltage less than 107 volts DC for greater than 15 minutes.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 14 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 7 of 25

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX
COMMUNICATIONS/ALARMS/ASSESSMENT

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SS6 Inability to Monitor a Significant Transient in Progress. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of Control Room Indicators and Annunciators associated with Safety Systems. AND b. Compensatory Non-Alarming Indications are Unavailable (e.g. QDPS, ICS, ERFDADS, Control Board, or Local Alarms). AND c. Significant transient in progress.	SAE
SA4 Unplanned Loss of Most Control Room Safety System Annunciation or Indication with Either (1) a Significant Transient In Progress, or (2) Compensatory Indicators are Unavailable. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes. AND b. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indicators (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit. AND c. Annunciator or Indicator Loss does not result from planned action. AND d. Either of the following conditions exist: 1. A significant plant transient is in progress. OR 2. Compensatory indications are unavailable or cannot be adequately monitored with on-shift personnel.	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 15 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 8 of 25	

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

COMMUNICATIONS/ALARMS/ASSESSMENT

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SU3 Unplanned Loss of Most Control Room Safety System Annunciation or Indication for Greater than 15 Minutes. Modes: 1-4	<u>EAL-1</u> The following conditions exist: a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes. <p style="text-align: center;">AND</p> b. Compensatory indications are available and can be adequately monitored with on-shift personnel. <p style="text-align: center;">AND</p> c. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indications (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit. <p style="text-align: center;">AND</p> d. Annunciator or indicator loss is not the result of planned action.	UE
SU4 Unplanned Loss of All Onsite or Offsite Communications Capabilities. Modes: At all times	<u>EAL-1</u> Unplanned loss of <u>ALL</u> onsite telephone, radio and headset communications capability affecting the ability to perform routine operations. <u>EAL 2</u> Unplanned loss of <u>ALL</u> onsite to offsite telephone and FAX communications capability: Plant telephone system, DPS/MCSO Ringdown Line, Texas Genco LP Line, STP Communicator (QSE) Ringdown Line, NRC ENS Line.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 16 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 9 of 25

**RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX**

SHUTDOWN MAINTENANCE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SS4 Complete Loss of Any Function Needed to Achieve or Maintain Hot Shutdown. Modes: 1-4	<u>EAL-1</u> Modes 1-3 - Loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in <u>ALL</u> SGs <u>AND</u> total feedwater flow less than 576 gpm. <u>EAL-2</u> Mode 4 - Loss of RHR function indicated by entry into OPOP04-RH-0001, Loss of Residual Heat Removal, <u>AND</u> loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in <u>ALL</u> SGs <u>AND</u> total feedwater flow less than 576 gpm.	SAE
SS5 Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel. Modes: 5 and 6	<u>EAL-1</u> Loss of Reactor Vessel Water Level as indicated by: <ul style="list-style-type: none"> a. Loss of all Decay Heat Removal Cooling as determined by entry into, OPOP04-RH-0001, Loss of Residual Heat Removal. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> b. The Core is or will be uncovered as indicated by: <p style="text-align: center;">RCS Narrow Range Hot Leg Level less than -2 inches (Elev. 32'-1").</p>	SAE

	0ERP01-ZV-IN01	Rev. 6	Page 17 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 10 of 25

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

SHUTDOWN MAINTENANCE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA1 Loss of Offsite and Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling. Modes: 5, 6, and Defueled	<u>EAL-1</u> Loss of <u>ALL ONSITE AND OFFSITE</u> power to <u>ALL</u> three 4160 V AC ESF Busses for greater than 15 minutes.	ALERT
SA3 Inability to Maintain Plant in Cold Shutdown. Modes: 5 and 6	<u>EAL-1</u> The following conditions exist: a. Less than 2 RHR loops are functional. AND b. Temperature increase that either: Results in Tavg exceeding 200°F. OR Results in uncontrolled temperature rise, causing Tavg to approach 200°F.	ALERT
SU5 Unplanned Loss of Class 1E DC Power during Cold Shutdown or Refueling for Greater than 15 Minutes. Modes: 5 and 6	<u>EAL 1</u> Loss of ESF DC Power to Channel 1 and Channel 4 based on Battery Bus Voltage less than 107 volts DC for greater than 15 minutes.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 18 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 11 of 25

**RECOGNITION CATEGORY S
SYSTEMS**

INITIATING CONDITION MATRIX

FISSION PRODUCT BARRIER - THRESHOLD LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SA6 Fuel Clad Degradation. Modes: 1-6	<u>EAL-1</u> Failed Fuel Monitor, RT-8039, indicates greater than or equal to 870 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample. <u>EAL-2</u> Dose Equivalent Iodine (DEI) sample greater than 300 $\mu\text{Ci/gm}$.	ALERT
SU6 Fuel Clad Degradation. Modes: 1-6	<u>EAL-1</u> Failed Fuel Monitor, RT-8039, indicates greater than or equal to 300 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample. <u>EAL-2</u> Dose Equivalent Iodine (DEI) sample greater than Technical Specification limitations.	UE
SU7 RCS Leakage. Modes: 1-4	<u>EAL-1</u> Unidentified or pressure boundary leakage greater than 10 gpm. <u>EAL-2</u> Identified leakage greater than 25 gpm.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 19 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 12 of 25	

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. Modes: At all times	<u>EAL 1</u> A valid reading on one or more of the following monitors that exceeds the value shown. <p style="text-align: center;">AND</p> An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes. If an offsite dose assessment is completed, refer to EAL-2. <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 2.00 E+8 µCi/sec</p> <p style="text-align: center;">*MAIN STEAM LINE</p> <p style="text-align: center;">RT-8046 > 50 µCi/ml RT-8047 > 50 µCi/ml RT-8048 > 50 µCi/ml RT-8049 > 50 µCi/ml</p> <u>EAL-2</u> Dose assessment indicates dose consequences greater than 1,000 mrem TEDE and/or 5,000 mrem thyroid CDE. <u>EAL-3</u> Field survey results indicate site boundary dose rates exceeding 1,000 mrem/hr expected to continue for more than one hour; <p style="text-align: center;">OR</p> Analysis of field survey samples indicate thyroid dose commitment of 5,000 mrem for one hour of inhalation.	GE

*Main Steam Line Monitors RT-8046 thru RT-8049 assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr.

	0ERP01-ZV-IN01	Rev. 6	Page 20 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 13 of 25	

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RS1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release. Modes: At all times	<u>EAL-1</u> A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown. <p style="text-align: center;">AND</p> An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes. If an offsite dose assessment is completed, refer to EAL-2. <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 2.00 E+7 µCi/sec</p> <p style="text-align: center;">*MAIN STEAM LINE</p> <p style="text-align: center;">RT-8046 > 5 µCi/ml RT-8047 > 5 µCi/ml RT-8048 > 5 µCi/ml RT-8049 > 5 µCi/ml</p> <u>EAL-2</u> Dose assessment indicates dose consequences greater than 100 mrem TEDE and/or 500 mrem thyroid CDE. <u>EAL-3</u> Field survey results indicate site boundary dose rates exceeding 100 mrem/hr expected to continue for more than one hour; <p style="text-align: center;">OR</p> Analysis of field survey samples indicate thyroid dose commitment of 500 mrem for one hour of inhalation.	SAE

*Main Steam Line Monitors RT-8046 thru RT-8049 assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr.

	0ERP01-ZV-IN01	Rev. 6	Page 21 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 14 of 25	

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RA1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 25 Times the Unusual Event EALs at the site boundary for 15 Minutes or Longer. Modes: At all times	<u>EAL-1</u> A valid reading on one or more of the following monitors that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0PSP07-VE-0005, Unit Vent Effluent Permit. <p style="text-align: center;">UNIT VENT</p> RT-8010B > 2.50 E+6 µCi/sec for 15 minutes <u>EAL-2</u> Confirmed sample analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 2.50 E-5 µCi/ml at the site boundary. <u>EAL-3</u> Confirmed sample analysis of liquid releases indicates concentration or release rates in excess of 25 times the Effluent Concentration Limit at the site boundary. <u>EAL-4</u> Site boundary radiation dose rate ≥ 3 mrem/hr for greater than 15 minutes based on dose projections or field team measurements.	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 22 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 15 of 25	

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>RU1</p> <p>Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two (2) Times the ODCM Limit at the site boundary for expected duration of 60 Minutes or Longer.</p> <p>Modes: At all times</p>	<p><u>EAL-1</u></p> <p>A valid reading on one or more of the following monitors that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0PSP07-VE-0005, Unit Vent Effluent Permit.</p> <p style="text-align: center;">UNIT VENT</p> <p style="text-align: center;">RT-8010B > 1.00 E+5 µCi/sec for 60 minutes</p> <p><u>EAL-2</u></p> <p>Confirmed sample analyses for gaseous releases indicates concentrations or release rates with a release duration of 60 minutes or longer in excess of 1.00 E-6 µCi/ml (two times the Effluent Concentration Limit*) at the site boundary.</p> <p><u>EAL-3</u></p> <p>Confirmed sample analysis for liquid releases indicates concentration or release rates with a release duration of 60 minutes or longer in excess of two (2) times the Effluent Concentration Limit at the site boundary.</p> <p><u>EAL-4</u></p> <p>Valid dose rate projection ≥ 0.1 mrem/hr at the site boundary for 60 minutes or longer.</p>	<p>UE</p>

* The Effluent Concentration Limit for Xe-133 is 5.00 E-7 µCi/ml.

	0ERP01-ZV-IN01	Rev. 6	Page 23 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 16 of 25

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG2 Unexpected Increase in Containment Radiation. Modes: 1-4	<u>EAL-1</u> Valid reading on RCB High Range Monitors, RT-8050 or RT-8051 greater than 1,000 R/hr. OR Valid reading on Hatch Monitor greater than 2,222 mR/hr.	GE
RS2 Unexpected Increase in Containment Radiation Levels. Modes: 1-4	<u>EAL-1</u> Valid reading on RCB High Range Monitors, RT-8050 or RT-8051 greater than 100 R/hr. OR Valid reading on Hatch Monitor greater than 222 mR/hr.	SAE
RA2 Major Damage to Irradiated Fuel or Loss of Water Level that has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. Modes: At all times	<u>EAL-1</u> Valid readings on one or more of the following monitors: FHB Exhaust, RT-8035 > 5.00 E-2 µCi/ml FHB Exhaust, RT-8036 > 5.00 E-2 µCi/ml Area Monitor (68' FHB), RT-8090 > 5,000 mR/hr Area Monitor (68' RCB), RT-8099 > 5,000 mR/hr <u>EAL-2</u> Irradiated fuel uncovered (actual or potential) based on observation OR water level below top of fuel storage racks.	ALERT
RA3 Release of Radioactive Material or Increases in Radiation Levels that Impedes Operation of Systems Required to Maintain Safe Operation or to Establish or Maintain Cold Shutdown. Modes: At all times	Valid Readings on any of the following Area Monitors: <u>EAL-1</u> RT-8066 > 15 mR/hr (35' EAB) <u>EAL-2</u> RT-8058 > 5.00 E+3 mR/hr (10' MAB) RT-8060 > 5.00 E+3 mR/hr (10' MAB) RT-8061 > 5.00 E+3 mR/hr (10' MAB) RT-8062 > 5.00 E+3 mR/hr (10' MAB) RT-8063 > 5.00 E+3 mR/hr (29' MAB) RT-8077 > 5.00 E+3 mR/hr (60' MAB) RT-8084 > 5.00 E+3 mR/hr (-21' FHB) RT-8085 > 5.00 E+3 mR/hr (-21' FHB) RT-8086 > 5.00 E+3 mR/hr (-21' FHB) RT-8087 > 5.00 E+3 mR/hr (-21' FHB) RT-8090 > 5.00 E+3 mR/hr (68' FHB)	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 24 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 17 of 25

**RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX**

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RU2	<u>EAL-1</u>	UE
Unexpected Increase in Plant Radiation Levels or Airborne Concentrations.	Valid Readings on any of the following Area Monitors greater than 1,000 Times 24 hr. average.	
Modes: At all times	RT-8052, (-11' RCB) RT-8069, (41' MAB) RT-8086, (-21' FHB) RT-8053, (-11' RCB) RT-8070, (41' MAB) RT-8087, (-21' FHB) RT-8054, (19' RCB) RT-8071, (41' MAB) RT-8088, (30' FHB) RT-8055, (68' RCB) RT-8072, (41' MAB) RT-8089, (68' FHB) RT-8056, (52' RCB) RT-8073, (41' MAB) RT-8090, (68' FHB) RT-8057, (10' EAB) RT-8074, (41' MAB) RT-8091, (68' FHB) RT-8058, (10' MAB) RT-8075, (41' MAB) RT-8092, (29' TGB) RT-8059, (10' MAB) RT-8076, (60' EAB) RT-8093, (29' TGB) RT-8060, (10' MAB) RT-8077, (60' MAB) RT-8094, (72' EAB) RT-8061, (10' MAB) RT-8078, (60' MAB) RT-8095, (OSC) RT-8062, (10' MAB) RT-8079, (60' MAB) RT-8096, (EOF) RT-8063, (29' MAB) RT-8080, (41' MAB) RT-8097, (68' FHB) RT-8064, (29' MAB) RT-8081, (68' FHB) RT-8098, (60' MAB) RT-8065, (29' MAB) RT-8082, (60' MAB) RT-8099, (60' RCB) RT-8066, (35' EAB) RT-8083, (41' MAB) RT-8100, (35' EAB) RT-8067, (35' EAB) RT-8084, (-21' FHB) RT-8101, (35' EAB) RT-8068, (41' MAB) RT-8085, (-21' FHB)	
	<u>EAL-2</u>	
	*Uncontrolled loss of water level in the Spent Fuel Pool and Fuel Transfer Canal with all irradiated fuel assemblies remaining covered by water.	
	<u>EAL-3</u>	
	*Uncontrolled decrease of water level in the Refueling Cavity/ICSA with all irradiated fuel assemblies remaining covered with water. (Mode 6 Only).	

*Outside the immediate control of the operator

	0ERP01-ZV-IN01	Rev. 6	Page 25 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 18 of 25

**RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX**

SECURITY

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG1 Security Event Resulting in Loss of Ability to Reach and Maintain Cold Shutdown. Modes: 1-6	<u>EAL-1</u> Loss of physical control of the Control Room due to security event. <u>EAL-2</u> Loss of physical control of the remote shutdown capability due to security event.	GE
HS1 Security Event in a Plant Vital Area. Modes: At all times	<u>EAL-1</u> Intrusion into a Vital Area by a hostile force. <u>EAL-2</u> Security Emergency that in the judgement of the Emergency Director could prevent safe shutdown or interfere with maintaining safe shutdown conditions. <u>EAL-3</u> Confirmed presence of an explosive device in a Vital Area.	SAE
HA1 Security Event in the Protected Area. Modes: At all times	<u>EAL-1</u> Intrusion into the Protected Area by a hostile force. <u>EAL-2</u> Security Emergency as defined by the Safeguards Contingency Plan.	ALERT
HU1 Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant. Modes: At all times	<u>EAL-1</u> Security Alert as defined by the Safeguards Contingency Plan. <u>EAL-2</u> Bomb device discovered inside the plant Protected Area, but outside the Vital Area.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 26 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 19 of 25	

**RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX**

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA2 Fire or Explosion in a Vital Area Potentially Affecting Safe Shutdown or Decay Heat Removal. Modes: See specific EAL	<u>EAL-1</u> Fire or Explosion potentially affecting Safe Shutdown Equipment or systems required for decay heat removal. (Modes: 1-6) The following conditions exist: a. Fire or explosion in any of the following areas: <ul style="list-style-type: none"> • Mechanical/Electrical Auxiliary Building • Reactor Containment Building • Isolation Valve Cubicle • Diesel Generator Building • Essential Cooling Water Intake Structure <p style="text-align: center;">AND</p> b. Affected system parameter indications show degraded performance or plant personnel report visible damage to systems structures or components within the specified area required for safe shutdown. <u>EAL-2</u> Fire or explosion in one or more of the areas listed below which impacts ability to maintain cooling for spent fuel. <ul style="list-style-type: none"> • Fuel Handling Building • Mechanical/Electrical Auxiliary Building (Modes: At all times)	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 27 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 20 of 25

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU2 Fire or Explosion in the Protected Area or Switchyard which Affects Normal Operation. Modes: At all times	<u>EAL-1</u> Fire within the areas below which is not under control within 15 minutes of initial notification. <u>EAL-2</u> Explosion in or adjacent to any of the following areas which damages equipment necessary for normal plant operation. Areas considered for EAL-1 and EAL-2: <ul style="list-style-type: none"> • Switchyard • Turbine Generator Building • Mechanical/Electrical Auxiliary Building • Fuel Handling Building • Reactor Containment Building • Essential Cooling Water Intake Structure • Isolation Valve Cubicle • Diesel Generator Building • Circulating Water Intake Structure 	UE

	0ERP01-ZV-IN01	Rev. 6	Page 28 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 21 of 25

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

TOXIC/FLAMMABLE GAS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA3 Toxic/Flammable Gases Potentially Affecting Safe Operation. Modes: At all times	<u>EAL-1</u> Confirmed entry of toxic gas into Control Room envelope. <u>EAL-2</u> Uncontrolled entry of flammable gas into a Vital Area. <u>EAL-3</u> Uncontrolled entry of toxic gas into the facility in life threatening concentration or into a Vital Area where lack of access constitutes a safety problem.	ALERT
HU3 Toxic/Flammable Gases Affecting Plant Operation. Modes: At all times	<u>EAL-1</u> Onsite toxic or flammable gas release which requires evacuation of areas within the Protected Area. <u>EAL-2</u> Report by Local, County or State Officials for potential evacuation of site personnel based on offsite event.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 29 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 22 of 25

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX
NATURAL OR DESTRUCTIVE PHENOMENA

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA4 Natural or Destructive Phenomena Potentially Affecting Safe Operation. Modes: At all times	<u>EAL-1</u> Seismic motion exceeding Operating Basis Earthquake (OBE) as indicated by Seismic monitor alarm and confirmed by 0POP04-SY-0001. <u>EAL-2</u> Tornado or high wind causing visible structural damage to any of the following plant structures: <ul style="list-style-type: none"> • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building <u>EAL-3</u> Entry of floodwater into safety related structures such that the function of safety related equipment is jeopardized. <u>EAL-4</u> Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall. <u>EAL-5</u> Vehicle crash affecting a plant Vital Area. <u>EAL-6</u> Turbine failure generated missiles result in any visible structural damage to or penetration of any of the following plant areas: <ul style="list-style-type: none"> • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building 	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 30 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 23 of 25

RECOGNITION CATEGORY H

HAZARDS

INITIATING CONDITION MATRIX

NATURAL OR DESTRUCTIVE PHENOMENA

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU4 Natural or Destructive Phenomena Affecting Plant Operations. Modes: At all times	<u>EAL-1</u> Earthquake detected by seismic monitoring system and confirmed by 0POP04-SY-0001, Seismic Event. <u>EAL-2</u> Tornado striking facilities within the Protected Area. <u>EAL-3</u> Shutdown of the facility required due to actual or predicted natural phenomenon in accordance with 0POP04-ZO-0002, Natural or Destructive Phenomena Guidelines. <u>EAL-4</u> Vehicle crash into plant structures or systems within the Protected Area. <u>EAL-5</u> Report of main turbine failure resulting in casing penetration. <p align="center">OR</p> damage to turbine or generator seals.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 31 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables	Page 24 of 25	

**RECOGNITION CATEGORY H
HAZARDS**

INITIATING CONDITION MATRIX

CONTROL ROOM EVACUATION

INITIATING CONDITIONS	EMERGENCY ACTION LEVEL	CLASS
HS2 Control Room Evacuation and Plant Control Cannot be Established. Modes: 1-6	<u>EAL-1</u> 1. The following conditions exist: a. Control Room evacuation has been initiated per 0POP04-ZO-0001, Control Room Evacuation. <p style="text-align: center;">AND</p> b. Control of the plant cannot be established by completion of step 12 of 0POP04-ZO-0001 within 15 minutes.	SAE
HA5 Control Room Evacuation. Modes: 1-6	<u>EAL-1</u> The Control Room is evacuated and the plant is being controlled per 0POP04-ZO-0001, Control Room Evacuation.	ALERT

	0ERP01-ZV-IN01	Rev. 6	Page 32 of 104
Emergency Classification			
Addendum 1	Emergency Classification Tables		Page 25 of 25

**RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX**

MISCELLANEOUS EVENTS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG2 Miscellaneous Events which May Potentially Result in a Hazard to the Public. Modes: At all times	<u>EAL-1</u> Other conditions exist which in the judgement of the Emergency Director indicate: a. Actual or imminent substantial core degradation with potential for loss of containment. OR b. Potential for uncontrolled radionuclide releases. These releases can reasonably be expected to exceed EPA PAG plume exposure levels outside the site boundary.	GE
HS3 Miscellaneous Events Affect the Ability to Shutdown the Plant or Maintain it in a Safe Shutdown Condition. Modes: At all times	<u>EAL-1</u> Other conditions exist which in the judgement of the Emergency Director indicate actual or likely major failures of plant functions needed for protection of the public.	SAE
HA6 Miscellaneous Events Potentially Affecting Safe Plant Operation. Modes: At all times	<u>EAL-1</u> Essential Cooling Pond (ECP) level less than 23.0 ft. mean sea level with no make-up available. <u>EAL-2</u> Other conditions exist which in the judgement of the Emergency Director indicate that plant safety systems may be degraded and that increased monitoring of plant functions is warranted.	ALERT
HU5 Miscellaneous Events Affecting Plant Operations. Modes: At all times	<u>EAL-1</u> Essential Cooling Pond (ECP) level less than 25.0 ft. mean sea level. <u>EAL-2</u> Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.	UE

	0ERP01-ZV-IN01	Rev. 6	Page 33 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 1 of 71	

TABLE OF CONTENTS

<u>Category</u>	<u>Initiating Condition</u>	<u>Page</u>
Fission Product Barrier Degradation Table		3
<u>System Malfunctions</u>		
	SU1	10
	SU2	11
	SU3	12
	SU4	14
	SU5	15
	SU6	16
	SU7	17
	SA1	18
	SA2	19
	SA3	20
	SA4	22
	SA5	24
	SA6	26
	SS1	27
	SS2	28
	SS3	29
	SS4	30
	SS5	31
	SS6	32
	SG1	34
	SG2	36
<u>Abnormal Rad Levels/Radiological Effluent</u>		
	RU1	38
	RU2	40
	RA1	41
	RA2	43
	RA3	45

	0ERP01-ZV-IN01	Rev. 6	Page 34 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 2 of 71	

TABLE OF CONTENTS (Continued)

<u>Category</u>	<u>Initiating Condition</u>	<u>Page</u>
<u>Abnormal Rad Levels/Radiological Effluent</u>		
<u>(Continued)</u>		
	RS1	47
	RS2	49
	RG1	50
	RG2	52
<u>Hazards & Other Conditions Affecting Plant</u>		
<u>Systems</u>		
	HU1	53
	HU2	54
	HU3	55
	HU4	56
	HU5	58
	HA1	59
	HA2	60
	HA3	62
	HA4	63
	HA5	65
	HA6	66
	HS1	67
	HS2	68
	HS3	69
	HG1	70
	HG2	71

	0ERP01-ZV-IN01	Rev. 6	Page 35 of 104
Emergency Classification			
Addendum 1	Bases for Emergency Action Levels	Page 3 of 71	

FUEL CLAD BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

Core Cooling - ORANGE indicates subcooling has been lost and that some clad damage may occur. Heat Sink-RED indicates the heat sink function is under extreme challenge and thus a potential loss of the fuel clad barrier. A declaration should not be made if Heat Sink -RED is the result of operator control of auxiliary feedwater flow.

Loss

Core Cooling - RED indicates significant superheating and core uncover and is considered to indicate loss of the fuel-clad barrier.

EAL-2, Reactor Coolant System (RCS) Activity

Potential Loss

A Failed Fuel Monitor reading of 870 microcuries/ml or greater indicates possible clad failure of about 1%.

Loss

A coolant activity level of 300 microcuries/gm Dose Equivalent I-131 is well above that for iodine spikes and indicates significant clad heating and a loss of the fuel clad barrier.

	0ERP01-ZV-IN01	Rev. 6	Page 36 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 4 of 71	

FUEL CLAD BARRIER, CONTINUED

EAL-3, Core Exit Thermocouple

Potential Loss

Core Exit Thermocouple readings of between $\geq 708^{\circ}\text{F}$ and 1200°F would indicate a loss of subcooling with the potential for fuel clad damage. This reading is redundant with the value needed to achieve Critical Safety Function Core Cooling - Orange.

Loss

Core Exit Thermocouple readings of 1200°F or higher corresponds to significant superheating of the coolant. This is redundant with the value needed to achieve Critical Safety Function Core Cooling - Red and should be considered an indicator of loss of fuel clad barrier.

EAL-4, Reactor Vessel Water Level

Potential Loss

A Reactor Vessel Water Level plenum reading of less than 20% corresponds to the Critical Safety Function Core Cooling - Orange and is indicative that without corrective actions the top of the active core could become uncovered leading to a core melt sequence.

Loss

None

EAL-5, Reactor Containment Building (RCB) Radiation Monitors

Potential Loss

None

Loss

A reading of greater than 100 R/hr on the RCB Accident Monitors or 222 mR/hr on the Hatch Monitor indicates release of reactor coolant, with elevated activity indicative of fuel damage. This value assumes the instantaneous release and dispersal into the containment of the reactor coolant noble gas and iodine inventory associated with 2% gap activity. This value is the same as that in RCS Barrier Loss EAL-5, and this EAL indicates a loss of both the fuel clad and RCS barriers.

	0ERP01-ZV-IN01	Rev. 6	Page 37 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 5 of 71

REACTOR COOLANT SYSTEM (RCS) BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

A RED path on these Critical Safety Functions indicates an extreme challenge and a potential loss of the RCS barrier. A declaration should not be made if Heat Sink - RED is the result of operator control of auxiliary feedwater flow.

Loss

A YELLOW path with subcooling less than 0°F in Core Cooling indicates that subcooling has been lost because of inadequate makeup capability.

EAL-2, Reactor Coolant System (RCS) Leak Rate

Potential Loss

Normal RCS make up capacity of one centrifugal charging pump (CCP) is unable to maintain RCS liquid inventory. The capacity of one CCP is 240 gpm which is the approximate design flow of a CCP with the RCS at 2235 psig and is the maximum charging flow identified in 0POP01-ZA-0018, Emergency Operating Procedure User's Guide. Any event that results in significant RCS inventory shrinkage will result in no lower than an ALERT emergency classification.

Loss

Conditions are such that leakage from the RCS is greater than the available inventory control capacity such that a loss of subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate.

	0ERP01-ZV-IN01	Rev. 6	Page 38 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 6 of 71	

REACTOR COOLANT SYSTEM (RCS) BARRIER, CONTINUED

EAL-3, Steam Generator (SG) Tube Rupture

Potential Loss

Normal operation of CVCS is unable to maintain RCS liquid inventory. The capacity of one CCP is 240 gpm which is the approximate design flow of a CCP with the RCS at 2235 psig and is the maximum charging flow identified in 0POP01-ZA-0018. Any event that results in significant RCS inventory shrinkage will result in no lower than an ALERT emergency classification.

Loss

This EAL indicates that there is a direct release of radioactive fission and activation products to the environment. This EAL also means Containment Loss EAL-3 is exceeded.

EAL-5, Reactor Containment Building (RCB) Radiation Monitors

Potential Loss

None

Loss

A reading of greater than 100 R/hr on the RCB Accident Monitors Monitors or 222 mR/hr on the Hatch Monitor indicates release of reactor coolant, with elevated activity indicative of fuel damage. This value assumes the instantaneous release and dispersal into the containment of the reactor coolant noble gas and iodine inventory associated with 2% gap activity. This value is the same as that in Fuel Clad Barrier Loss EAL-5, and this EAL indicates a loss of both the fuel clad and RCS barriers.

	0ERP01-ZV-IN01	Rev. 6	Page 39 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 7 of 71	

CONTAINMENT BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

A RED path on the Containment Critical Safety Function indicates an extreme challenge to the containment barrier and its potential loss due to pressure greater than design.

A Core Cooling ORANGE path represents an imminent melt situation which could lead to vessel failure and an increased potential for containment failure. In conjunction with the Fuel Clad and RCS Barrier EALs, this EAL results in the declaration of a General Emergency. Fifteen (15) minutes is chosen to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. This EAL should be entered as soon as it is recognized that the function restoration procedures have not been, or will not be, effective.

Loss

None

EAL-2, Containment Pressure

Potential Loss

Six percent (6%) hydrogen is the minimum explosive mixture in the Westinghouse Owners Group Emergency Response Guidelines and represents a potential loss of containment barrier. The second EAL means that containment heat removal systems are not functioning properly when they are needed.

Loss

A rapid unexplained loss of pressure, not attributable to containment spray or condensation effects, following an initial pressure increase indicates a loss of containment integrity. If containment pressure and sump levels do not increase as expected following a LOCA, then a loss of containment integrity is also indicated.

	0ERP01-ZV-IN01	Rev. 6	Page 40 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 8 of 71	

CONTAINMENT BARRIER, CONTINUED

EAL-3, Steam Generator (SG) Tube Leak

Potential Loss

None

Loss

Greater than Technical Specification primary to secondary leakage with a pathway to the environment outside normal plant design or operations.

The release to the environment must be due to the failure to isolate an abnormal pathway (e.g., nonisolable stuck open Safety, PORV, or steam line break outside containment).

Examples of pathways to atmosphere that are NOT considered a direct secondary side release path to atmosphere when evaluating plant conditions for the applicability of this EAL:

- Normal operation of the PORV to decrease Steam Generator pressure or control plant temperature.
- Pathways that result from the plant operational design such as the Condenser Air Removal System discharge.
- Pathways that are incidental to normal operation of the plant such as minor leakage from degraded secondary system components.

EAL-4, Containment Bypass

Potential Loss

An increase in area or ventilation radiation monitor readings located in areas adjacent to containment with a LOCA in progress could be due to penetration leakage. Other causes for increases could be interfacing system LOCAs involving systems (e.g. HHSI, LHSI) located in these areas, and leakage from systems recirculating containment sump water. All of these conditions are associated with a known LOCA and are indicative of a potential loss of the containment barrier. Unexplained increases in monitor readings without a LOCA should be classified in accordance with the Radiological section. Adjacent areas are those spaces immediately outside the containment boundary that are monitored by area or ventilation radiation monitors.

	0ERP01-ZV-IN01	Rev. 6	Page 41 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 9 of 71	

CONTAINMENT BARRIER, CONTINUED

EAL-4, Containment Isolation

Loss

This EAL indicates incomplete containment isolation that allows direct release to the environment and loss of the containment barrier.

EAL-5, Reactor Containment Building (RCB) Radiation Monitors

Potential Loss

This EAL indicates significant fuel damage, equivalent to 20% gap activity, in excess of Fuel Clad and RCS Barrier EALs. Regardless of whether containment is challenged, the amount of activity associated with fuel damage of this magnitude, if released, could have such severe consequences that it is treated as a potential loss of containment, which would lead to a classification of General Emergency.

Loss

None

	0ERP01-ZV-IN01	Rev. 6	Page 42 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 10 of 71	

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU1 Loss of All Offsite Power to ESF Busses for Greater than 15 Minutes

OPERATING MODE APPLICABILITY: 1-6, Defueled

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

- a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes.

AND

- b. At least 2 ESF DGs are supplying power to their respective busses.

BASES:

Prolonged loss of offsite 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.

	0ERP01-ZV-IN01	Rev. 6	Page 43 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 11 of 71	

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU2 Operation Outside the Plant Safety Envelope as defined by Technical Specifications

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The plant cannot be brought to the required operating mode within Technical Specifications LCO Action Statement Time.

BASES:

Limiting Conditions of Operation (LCOs) often require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the site Technical Specifications requires a one-hour report under 10CFR50.72(b) non-emergency events. The plant is within its safety envelope when being shutdown within the allowable action statement time in the Technical Specifications. An immediate declaration of an Unusual Event is required when the plant cannot be brought to the required operating mode within the allowable action statement time in the Technical Specifications, as the plant is outside its safety envelope. Declaration of an Unusual Event is based on the time at which the LCO-specified action statement time period elapses under Technical Specifications and is not related to how long a condition may have existed. Other required Technical Specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 44 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 12 of 71

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU3 **Unplanned Loss of Most Control Room Safety System Annunciation or Indication for Greater Than 15 Minutes**

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 **The following conditions exist:**

- a. **Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes.**

AND

- b. **Compensatory indications are available and can be adequately monitored with on-shift personnel.**

AND

- c. **The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indications (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit.**

AND

- d. **Annunciator or indicator loss is not the result of planned action.**

BASES:

This IC and its associated EAL is intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

Unplanned loss of annunciators or indicator excludes scheduled maintenance and testing activities.

	0ERP01-ZV-IN01	Rev. 6	Page 45 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 13 of 71

SYSTEM MALFUNCTIONS

Compensatory Indications: Includes any alternate source of information such as computers, Control Board indication or Local indication, which can be monitored to compensate for the loss of alarm functions or other indications.

Quantification of Most is arbitrary, however, it is estimated that if approximately 50% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgement threshold for determining the severity of the plant conditions. This judgement is supported by the specific opinion of the Shift Supervisor that additional operating personnel will be required to provide increased monitoring of system operation to safely operate the unit.

The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10CFR50.72. If the shutdown is not in compliance with the Technical Specification action, the Unusual Event is based on SU2 Inability to Reach Required Shutdown Within Technical Specification Limits.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Due to the limited number of safety systems in operation during cold shutdown, refueling, and defueled modes, no IC is indicated during these modes of operation.

This Unusual Event will be escalated to an Alert if a transient is in progress during the loss of annunciation or indication.

	0ERP01-ZV-IN01	Rev. 6	Page 46 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 14 of 71

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU4 **Unplanned Loss of All Onsite or Offsite Communications Capabilities**

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Unplanned loss of ALL onsite telephone, radio and headset communications capability affecting the ability to perform routine operations.

EAL-2 Unplanned loss of ALL onsite to offsite telephone and FAX communications capability: Plant telephone system, DPS/MCSO Ringdown Line, Texas Genco LP Line, STP Communicator (QSE) Ringdown Line, NRC ENS Line.

BASES:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff's ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than that addressed by 10CFR50.72.

Onsite communications loss encompasses the loss of all means of routine two-way communications.

Offsite communications loss encompasses the loss of all means of communications with offsite authorities. This EAL is intended to be used only when extraordinary means are being utilized to make communications possible (relaying of information from radio transmissions, individuals being sent to offsite locations, etc.).

	0ERP01-ZV-IN01	Rev. 6	Page 47 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 15 of 71	

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU5 **Unplanned Loss of Class 1E DC Power During Cold Shutdown or Refueling for Greater than 15 Minutes**

OPERATING MODE APPLICABILITY: 5 and 6

EMERGENCY ACTION LEVELS:

EAL-1 **Loss of ESF DC Power to Channel 1 and Channel 4 based on Battery Bus Voltage less than 107 volts DC for greater than 15 minutes.**

BASES:

The purpose of this IC and its associated EAL 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 EAL 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 this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely STP performs maintenance on a Train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per SA3 Inability to Maintain Plant in Cold Shutdown.

Class 1E bus voltage should be used as the minimum bus voltage necessary for the operation of safety related equipment. This voltage value of 107 volts DC incorporates a margin of at least 15 minutes of operation before the onset of inability to operate those loads.

	0ERP01-ZV-IN01	Rev. 6	Page 48 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 16 of 71

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU6 Fuel Clad Degradation

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 Failed Fuel Monitor RT-8039 indicates greater than or equal to 300 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample.

EAL-2 Dose Equivalent Iodine (DEI) sample greater than Technical Specification limitations.

BASES:

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. 300 $\mu\text{Ci/ml}$ reading on RT-8039 is based on 0.1% of the gap inventory. Grab sample verification is required in case of radiation monitor failures or high background radiation errors. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 49 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 17 of 71

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU7 RCS Leakage

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 Unidentified or pressure boundary leakage greater than 10 gpm.

EAL-2 Identified leakage greater than 25 gpm.

BASES:

This IC is included as an Unusual Event because it may be a precursor of more serious conditions and, as 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. Lesser values must generally be determined through the time-consuming RCS Inventory surveillance test. The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs or IC SA3, Inability to Maintain Plant in Cold Shutdown.

	0ERP01-ZV-IN01	Rev. 6	Page 50 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 18 of 71

SYSTEM MALFUNCTIONS

ALERT

SA1 Loss of Offsite and Onsite Power To All Three 4160V AC ESF Busses During Cold Shutdown or Refueling

OPERATING MODE APPLICABILITY: 5 and 6, and Defueled

EMERGENCY ACTION LEVELS:

EAL-1 No voltage on all 4160 VAC ESF busses for greater than 15 minutes.

BASES:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Pool Cooling and the Ultimate Heat Sink. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert because of the significantly reduced decay heat and lower temperature and pressure, which allows increased time to restore one of the emergency busses relative to that specified for the Site Area Emergency EAL. Escalating to Site Area Emergency, if appropriate, is by Abnormal Rad Levels/Radiological Effluent, or Emergency Director Judgement ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

	0ERP01-ZV-IN01	Rev. 6	Page 51 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 19 of 71	

SYSTEM MALFUNCTIONS

ALERT

SA2 Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Reactor Trip Was Successful from the Control Room

OPERATING MODE APPLICABILITY: 1-3

EMERGENCY ACTION LEVELS:

EAL-1 Reactor Protection System setpoint exceeded with NO automatic trip.

AND

A manual reactor trip was required for plant shutdown.

BASES:

This condition indicates failure of the automatic protection system to trip the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded (rather than limiting safety system setpoint being exceeded) is specified here because failure of the automatic protection system is the issue. A manual reactor trip is any set of actions by the reactor operator(s) in the Control Room which causes control rods to be rapidly inserted into the core and brings the reactor subcritical. Failure of manual reactor trip would escalate the event to a Site Area Emergency.

	0ERP01-ZV-IN01	Rev. 6	Page 52 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 20 of 71

SYSTEM MALFUNCTIONS

ALERT

SA3 Inability to Maintain Plant in Cold Shutdown

OPERATING MODE APPLICABILITY: 5 and 6

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

- a. Less than 2 RHR loops are functional.

AND

- b. Temperature increase that either:
 - Results in T_{avg} exceeding 200° F.

OR

- Results in uncontrolled temperature rise causing T_{avg} to approach 200° F.

BASES:

This EAL addresses complete loss of functions required for core cooling during refueling and cold shutdown modes. Escalation to Site Area Emergency or General Emergency would be via Abnormal Rad Levels/Radiological Effluent or Emergency Director Judgement ICs.

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 can lead to conditions where decay heat removal is lost and core uncover can occur. NRC analyses show sequences that can cause core uncover in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost. Under these conditions, RCS integrity is lost and fuel clad integrity is lost or potentially lost, which is consistent with a Site Area Emergency.

	0ERP01-ZV-IN01	Rev. 6	Page 53 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 21 of 71

SYSTEM MALFUNCTIONS

Indicators for this EAL are those methods used by the plant in response to Generic Letter 88-17 which include core exit temperature monitoring and RCS water level monitoring. In addition, radiation monitor readings may also be appropriate as an indicator of this condition.

Uncontrolled means that system temperature increase is not the result of planned actions by the plant staff. The EAL guidance related to uncontrolled temperature rise is necessary to preserve the anticipatory philosophy of NUREG-0654 for events starting from temperatures much lower than the cold shutdown temperature limit.

Escalation to the Site Area Emergency is by IC SS5, Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel, or by Radiological ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 54 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 22 of 71

SYSTEM MALFUNCTIONS

ALERT

SA4 Unplanned Loss of Most Control Room Safety System Annunciation or Indication With Either
(1) A Significant Transient In Progress, or (2) Compensatory Indicators Are Unavailable

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

- a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes.

AND

- b. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indicators (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit.

AND

- c. Annunciator or Indicator Loss does not result from planned action.

AND

- d. Either of the following conditions exist:
 1. A significant plant transient is in progress.

OR

2. Compensatory indications are unavailable or cannot be adequately monitored with on-shift personnel.

	0ERP01-ZV-IN01	Rev. 6	Page 55 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 23 of 71	

SYSTEM MALFUNCTIONS

BASES:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient.

Planned loss of annunciators or indicators includes scheduled maintenance and testing activities.

Quantification of Most is arbitrary; however, it is estimated that if approximately 50% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgement threshold for determining the severity of plant conditions. This judgement is supported by the specific opinion of the Shift Supervisor that additional operating personnel will be required to provide increased monitoring of system operation to safely operate the unit(s).

The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10CFR50.72. If the shutdown is not in compliance with the Technical Specification action, the Unusual Event is based on SU2, Inability to Reach Required Shutdown Within Technical Specification Limits.

Significant Transient includes response to automatic or manually initiated functions such as Reactor Trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

Compensatory Indications includes any alternate source of information such as computers, Control Room indication or Local indication, which can be monitored to compensate for the loss of alarm functions or other indications. If both a major portion of the annunciation system and all computer monitoring are unavailable to the extent that additional operating personnel are required to monitor indications, the Alert is required.

Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no IC is indicated during these modes of operation.

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor a transient in progress.

	0ERP01-ZV-IN01	Rev. 6	Page 56 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 24 of 71

SYSTEM MALFUNCTIONS

ALERT

SA5 AC Power Capability To The Three 4160V AC ESF Busses Is Reduced To A Single Power Source For Greater Than 15 Minutes Such That Any Additional Single Failure Would Result In Loss of ALL AC Power

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1

The following conditions exist:

- a. Loss of power to the STBY 1 XFMR, STBY 2 XFMR, UAT, and 13.8 KV Emergency bus 1(2)L for greater than 15 minutes,

AND

- b. Onsite power capability has been degraded to a single ESF diesel generator capable of supplying power to at least one ESF bus.

OR

EAL-2

The following conditions exist:

- a. One of the following offsite power supplies is providing power to ALL of the energized 4160 ESF busses:

STBY 1 XFMR
STBY 2 XFMR
UAT
13.8 KV Emergency bus 1(2)L

AND

- b. ESF DGs 11(21), 12(22), AND 13(23) are not capable of providing power to their respective bus.

	0ERP01-ZV-IN01	Rev. 6	Page 57 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 25 of 71

SYSTEM MALFUNCTIONS, CONTINUED

BASES:

This IC and the associated EALs provide an escalation from IC SU1, Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. 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 two ESF diesel generators to supply power to their emergency busses. Another related condition could be the loss of all but one offsite power source, or the loss of two 4160V AC ESF busses. The subsequent loss of this single power source would escalate the event to a Site Area Emergency in accordance with IC SS1, Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses.

	0ERP01-ZV-IN01	Rev. 6	Page 58 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 26 of 71	

SYSTEM MALFUNCTIONS

ALERT

SA6 Fuel Clad Degradation

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 Failed Fuel Monitor RT-8039 indicates greater than or equal to 870 $\mu\text{Ci/ml}$ and this reading is not the result of a crud burst as confirmed by a grab sample.

EAL-2 Dose Equivalent Iodine (DEI) sample greater than 300 $\mu\text{Ci/gm}$.

BASES:

This IC is included as an Alert 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. 870 $\mu\text{Ci/ml}$ reading on RT-8039 is based on 1% of the gap inventory. Grab sample verification is required in case of radiation monitor failures or high background radiation errors.

	0ERP01-ZV-IN01	Rev. 6	Page 59 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 27 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS1 Loss of Offsite and Onsite Power to All Three 4160V AC ESF Busses

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 No voltage on all 4160 VAC ESF busses for greater than 15 minutes.

BASES:

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 uncover and loss of containment integrity, thus this event can escalate to a General Emergency. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1. Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power.

	0ERP01-ZV-IN01	Rev. 6	Page 60 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 28 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS2 Failure of Reactor Protection System Instrumentation To Complete or Initiate An Automatic Reactor Trip Once A Reactor Protection System Setpoint Has Been Exceeded

AND

Manual Reactor Trip was NOT successful

OPERATING MODE APPLICABILITY: 1 and 2

EMERGENCY ACTION LEVELS:

EAL-1 Entry into 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS.

BASES:

Automatic and manual reactor trip are not considered successful if action away from the main Control Room was required to trip the reactor.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. Escalation of this event to a General Emergency would be via Fission Product Barrier Degradation ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 61 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 29 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS3 Loss of All Class 1E DC Power

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 Less than 107 volts DC on ALL four (4) ESF DC battery busses for greater than 15 minutes.

BASES:

Loss of all DC power compromises 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. Escalation to a General Emergency would occur by Radiological or Fission Product Barrier Degradation ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

	0ERP01-ZV-IN01	Rev. 6	Page 62 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 30 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS4 Complete Loss of any Function Needed to Achieve or Maintain Hot Shutdown

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

- EAL-1** **Mode 1-3** - Loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in ALL SGs AND total feedwater flow less than 576 gpm.
- EAL-2** **Mode 4** - Loss of RHR function indicated by entry into 0POP04-RH-0001, Loss of Residual Heat Removal, AND loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in ALL SGs AND total feedwater flow less than 576 gpm.

BASES:

These EALs address complete loss of functions 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. These EALs are only applicable in Modes 1-4. The conditions described above could be initiated in Modes 1 or 2 leading to a transition to Mode 3. Escalation to General Emergency would be via Radiological or Fission Product Barrier Degradation ICs. The SG narrow range level of 34%, as indicated by the brackets, is to be used as indication during adverse containment conditions.

	0ERP01-ZV-IN01	Rev. 6	Page 63 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 31 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS5 Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel

OPERATING MODE APPLICABILITY: 5 and 6

EMERGENCY ACTION LEVELS:

EAL-1 Loss of Reactor Vessel Water Level as indicated by:

- a. Loss of all Decay Heat Removal Cooling as determined by entry into step 14, 0POP04-RH-0001, Loss of Residual Heat Removal.

AND

- b. The Core is or will be uncovered as indicated by:

- RCS Narrow Range Hot Leg Level less than -2 inches (Elev. 32'-1).

BASES:

Under the conditions specified by this IC, severe core damage can occur and reactor coolant system pressure boundary integrity may not be assured.

This IC covers sequences such as prolonged boiling following loss of decay heat removal. Thus, declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via Radiological Effluent IC RG1.

	0ERP01-ZV-IN01	Rev. 6	Page 64 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 32 of 71

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS6 Inability to Monitor a Significant Transient in Progress

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

- a. Loss of Control Room Indicators and Annunciators associated with Safety Systems.

AND

- b. Compensatory Non-Alarming Indications are Unavailable (e.g. QDPS, Integrated Computer System (ICS), ERFDADS, Control Board, Local Alarms).

AND

- c. Significant transient in progress.

BASES:

This IC and its associated EAL are intended to recognize the inability of the Control Room staff to monitor the plant response to a transient. A Site Area Emergency is considered to exist if the Control Room staff cannot monitor safety functions needed for protection of the public.

STP plant annunciators for this EAL should be limited to include those identified in the Off Normal Operating Procedures, in the Emergency Operating Procedures, and in other EALs. (e.g., radiation monitors, etc.)

Compensatory non-alarming indications in this context includes computer-based information such as QDPS, ICS, ERFDADS, etc. This should include all computer systems available for this use depending on specific plant design and subsequent retrofits.

Significant Transient includes response to automatic or manually initiated functions such as reactor trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

	0ERP01-ZV-IN01	Rev. 6	Page 65 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 33 of 71

SYSTEM MALFUNCTIONS

STP plant indications needed to monitor safety functions necessary for protection of the public must include Control Room indications, computer generated indications and dedicated annunciation capability. The specific indications should be those used to determine such functions as the ability to shut down the reactor, maintain the core cooled and in a coolable geometry, to remove heat from the core, to maintain the reactor coolant system intact, and to maintain containment intact.

Planned actions are excluded from this EAL since the loss of instrumentation of this magnitude is of such significance during a transient that the cause of the loss is not a more tolerable factor.

	0ERP01-ZV-IN01	Rev. 6	Page 66 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 34 of 71

SYSTEM MALFUNCTIONS

GENERAL EMERGENCY

SG1 Prolonged Loss of Offsite and Onsite Power to All Three 4160V AC ESF Busses

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 Entry into 0POP05-EO-EC00, Loss of All AC Power, for greater than 15 minutes.

AND

Either of the following conditions exist:

- a. Restoration of at least one 4160V AC ESF Bus within 4 hours is not likely.

OR

- b. Degradation of core cooling is indicated by a valid Red or Orange path on the Core Cooling Critical Safety Function Status Tree.

BASES:

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 in conformance with 10CFR50.63 and Regulatory Guide 1.155, Station Blackout, with appropriate allowance for offsite emergency response. Although this IC may be viewed as 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 trajectory.

The likelihood of restoring at least one emergency bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions.

	0ERP01-ZV-IN01	Rev. 6	Page 67 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 35 of 71	

SYSTEM MALFUNCTIONS

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 Emergency Director a reasonable idea of how quickly (s)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?
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?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgement as it relates to IMMINENT Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

	0ERP01-ZV-IN01	Rev. 6	Page 68 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 36 of 71

SYSTEM MALFUNCTIONS

GENERAL EMERGENCY

SG2 Failure of the Reactor Protection System to Complete an Automatic Reactor Trip AND Manual Reactor Trip was NOT Successful AND There is Indication of an Extreme Challenge to the Ability to Cool the Core

OPERATING MODE APPLICABILITY: 1 and 2

EMERGENCY ACTION LEVELS:

EAL-1 Entry into 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS.

AND

Either of the following:

- a. Degradation of core cooling is indicated by a valid Red path on the Core Cooling Critical Safety Function Status Tree.

OR

- b. Degradation of heat sink is indicated by a valid Red path on the Heat Sink Critical Safety Function Status Tree.

BASES:

Automatic and manual reactor trip are not considered successful if action away from main control room is required to trip the reactor.

Under the conditions of this IC and its associated EALs, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. Although there are capabilities away from the reactor control console, such as emergency boration, the continuing temperature rise indicates that these capabilities are not effective. This situation could be a precursor for a core melt sequence.

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200°F or that the reactor vessel water level is below the top of active fuel. This EAL equates to a core cooling RED condition.

	0ERP01-ZV-IN01	Rev. 6	Page 69 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 37 of 71

SYSTEM MALFUNCTIONS

Another consideration is the inability to initially remove heat during the early stages of this sequence. If feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. This EAL equates to a Heat Sink RED condition.

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (5% power) a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

	0ERP01-ZV-IN01	Rev. 6	Page 70 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 38 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

RU1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two (2) Times the ODCM Limit at the site boundary for expected duration of 60 Minutes or Longer.

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 A valid reading on the following monitor that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0PSP07-VE-0005, Unit Vent Effluent Permit.

RT-8010B Unit Vent (Release Rate) >1.00 E+5 μ Ci/sec for 60 Minutes

Note: If the monitor reading is sustained for longer than 60 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

EAL-2 Confirmed sample analyses for gaseous releases indicates concentrations or release rates with a release duration of 60 minutes or longer in excess of 1.00 E-6 μ Ci/ml (two times the Effluent Concentrations*) at the site boundary.

EAL-3 Confirmed sample analyses for liquid releases indicates concentrations or release rates with a release duration of 60 minutes or longer in excess of two (2) times the Effluent Concentration Limit at the site boundary.

EAL-4 Valid dose rate measurement at the site boundary ≥ 0.1 mrem/hr for 60 minutes or longer.

BASES:

The term "Unplanned," as used in this context, includes any release for which a radioactive discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit.

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be correct.

* The Effluent Concentration Limit for Xe-133 is 5.00 E-7 μ Ci/ml.

	0ERP01-ZV-IN01	Rev. 6	Page 71 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 39 of 71	

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

The Unusual Event Limit is an unplanned release in excess of twice the Offsite Dose Calculation Manual (ODCM) limits that continues for 60 minutes or longer. Such an event is outside the permissible operating limits for South Texas Project and presumably represents an uncontrolled situation involving degradation in the level of plant safety. For a release to the offsite atmosphere, the limits of Control 3.11.2.1 apply (500 mrem/yr noble gas whole body and 1,500 mrem/yr organ dose rates). The final integrated dose (which is very low in the Unusual Event emergency class) is not the primary concern; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. For example, a release of eight times the ODCM limits for 15 minutes does not exceed this initiating condition. Further, the Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as it is evident the release will not be stopped within 60 minutes.

There is generally more than one applicable Site Radiological Effluent Limit (e.g., air dose rate, other Technical Specifications may be more limiting). For this reason, the EALs should trigger an assessment of all applicable ODCM and NRC limits.

The methods for calculating offsite dose for routine releases as described in the ODCM do not correspond to the methods used to assess doses during an accident. Specifically, the ODCM uses sector average X/Q dispersion that is smaller than the centerline X/Q used in emergency release calculations. Moreover, the ODCM uses a 500 hour average X/Q (averaged over all 16 sectors, $5.30 \text{ E-}06 \text{ sec/m}^3$) whereas emergency calculations typically use the X/Q for the sector into which the wind is blowing at the time of the release. In addition, the ODCM uses dose conversion factors calculated as described in Regulatory Guide 1.109 while emergency doses are calculated using Environmental Protection Agency (EPA) dose factors. The methodology of the ODCM produces a Unit Vent high alarm set point for noble gases of about $5.00 \text{ E+}04 \text{ } \mu\text{Ci/sec}$. When this alarm set point is evaluated using STAMPEDE*, the emergency offsite dose calculation method, and the assumptions below the resulting dose rates are about 540 mrem/yr (0.1 mrem/hr) TEDE, 150 mrem/yr (0.02 mrem/hr) gamma, and 550 mrem/yr thyroid CDE rate. These dose rates are in general agreement with the limits of ODCM Control 3.11.2.1. Consequently, adopting twice the Unit Vent high alarm set point is consistent with the criteria of twice the ODCM Control 3.11.2.1.

EAL 1 is set at 2 times the ODCM Limit which approximately corresponds to two (2) Effluent Concentration Limit for Xe-133 ($5.00 \text{ E-}7 \text{ } \mu\text{Ci/ml}$ specified in 10CFR20, Appendix B) which is the nuclide likely to dominate the release for this type of accident. The Unit Vent release rate of $1.00 \text{ E+}5 \text{ } \mu\text{Ci/sec}$ produces concentrations at the site boundary of $1.00 \text{ E-}6 \text{ } \mu\text{Ci/ml}$ when evaluated with the default meteorological conditions ($X/Q = 1.00 \text{ E-}5 \text{ sec/m}^3$).

EAL-4, the measured dose rate criteria is based on two times the ODCM Limits or 1,000 mrem/yr. Typical exposure rate instruments may detect radiation at 1,000 mrem/yr or 0.1 mrem/hr. Therefore, if radiation is detected, twice the Effluent Concentrations of 10CFR20, Appendix B are exceeded and the criterion of EAL-1 is also met.

* Assumed default meteorological conditions ($X/Q = 1.00 \text{ E-}5 \text{ sec/m}^3$), coolant inventory radionuclide release at $5.00 \text{ E+}4 \text{ } \mu\text{Ci/sec}$, and one (1) hour of decay before release.

	0ERP01-ZV-IN01	Rev. 6	Page 72 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 40 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

RU2 **Unexpected Increase in Plant Radiation Levels or Airborne Concentrations**

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

- EAL-1** Valid readings on any of the following Area Monitors RT-8052 through RT-8101 greater than 1,000 times 24 hr. average.
- EAL-2** Uncontrolled loss of water level in the Spent Fuel Pool and Fuel Transfer Canal with all irradiated fuel assemblies remaining covered by water.
- EAL-3** Uncontrolled decrease of water level in the Refueling Cavity/ICSA with all irradiated fuel assemblies remaining covered with water (Mode 6 only).

BASES:

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be correct.

All of the above events tend to have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low.

EAL-1 addresses unplanned increases in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. This EAL escalates to an Alert per IC RA3, if the increases impair safe operation.

Explicit coverage of EALs-2 and-3 is appropriate given their potential for increased doses to plant staff. Classification as an Unusual Event is warranted as a precursor to a more serious event.

	0ERP01-ZV-IN01	Rev. 6	Page 73 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 41 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

RA1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 25 Times the Unusual Event EALs at the site boundary for 15 Minutes or Longer

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 A valid reading on one or more of the following monitors that exceeds the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with OPSP07-VE-0005, Unit Vent Effluent Permit.

RT-8010B Unit Vent (Release Rate) >2.50 E+6 μ Ci/sec for 15 Minutes

NOTE: If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading. IF multiple release paths are indicated by elevated radiological monitor readings, THEN sum readings.

EAL-2 Confirmed sample analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 2.50 E-5 μ Ci/cc at the site boundary.

EAL-3 Confirmed sample analysis of liquid releases indicates concentration or release rates in excess of 25 times the Effluent Concentration Limit at the site boundary.

EAL-4 Site boundary radiation dose rate ≥ 3 mrem/hr for greater than 15 minutes based on dose projections or field team measurements.

	0ERP01-ZV-IN01	Rev. 6	Page 74 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 42 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be valid.

The Alert limit has historically been set at 100 times the ODCM Control 3.11.2.1 limits. Although the Alert action level should be well above the Unusual Event action level to indicate significantly worsening radiological conditions, it should remain well below the Site Area action level. The accident is not sufficiently severe to assume fuel damage so the coolant inventory of radioactive material is appropriate for evaluating this accident level. If 100 times the ODCM Control were used, the Alert limit would be very close to the Site Area limit. For this reason, the bases for this limit was reduced to 25 times the Unusual Event action level.

EAL 1 is set at 25 times the Unusual Event action level. The release rate $2.00 \text{ E}+6 \text{ } \mu\text{Ci/sec}$ would produce dose rates at the site boundary of about 30 rem/yr (TEDE) for the design basis coolant inventory of radionuclides. The design basis coolant inventory of radionuclides includes iodines and some corrosion products in addition to noble gases (as specified in the emergency offsite dose calculation code STAMPEDE). It is anticipated that a release of this magnitude would involve at least the activity available in the reactor coolant and therefore this mixture of radioactive materials is appropriate.

EAL-4, the measured dose rate criteria is based on the external dose rate component of EAL 1 above. The external dose component of 30 rem/yr (TEDE) is about 3 mrem/hr.

	0ERP01-ZV-IN01	Rev. 6	Page 75 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 43 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

RA2 Major Damage to Irradiated Fuel or Loss of Water Level that has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Valid readings on one or more of the following radiation monitors:

Fuel Handling Building Ventilation Monitor	RT8035 or 8036 > 5.00 E-2 μ Ci/ml
Fuel Bridge Area Radiation Monitor	RT8090 >5,000 mR/hr
Refuel Floor Area Radiation Monitor	RT8099 >5,000 mR/hr

EAL-2 Irradiated fuel uncovered (actual or potential) based on observation OR water level below top of fuel storage racks.

BASES:

NUREG-0818, Emergency Action Levels for Light Water Reactors, forms the basis for these EALs.

There is time available to take corrective actions, and there is little potential for substantial fuel damage. In addition, NUREG/CR-4982, Severe Accident in Spent Fuel Pools in Support of Generic Safety Issue 82, July 1987, indicates that even if corrective actions are not taken, no prompt fatalities are predicted, and that risk of injury is low. In addition, NRC Information Notice No. 90-08, KR-85 Hazards from Decayed Fuel presents the following in its discussion:

In the event of a serious accident involving decayed spent fuel, protective actions would be needed for personnel on site, while offsite doses (assuming an exclusion area radius of one mile from the plant site) would be well below the Environmental Protection Agency's Protective Action Guides.

	0ERP01-ZV-IN01	Rev. 6	Page 76 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 44 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Accordingly, it is important to be able to properly survey and monitor for Kr-85 in the event of an accident with decayed spent fuel.

Licensees may wish to reevaluate whether EALs specified in the Emergency Plan and procedures governing decayed fuel handling activities appropriately focus on concern for onsite workers and Kr-85 releases in areas where decayed spent fuel accidents could occur, for example, the spent fuel pool working floor. Furthermore, licensees may wish to determine if emergency plans and corresponding implementing procedures address the means for limiting radiological exposures of onsite personnel who are in other areas of the plant. Among other things, moving onsite personnel away from the plume and shutting off building air intakes downwind from the source may be appropriate.

Thus, an Alert Classification for this event is appropriate. Escalation, if appropriate, would occur via Radiological ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 77 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 45 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

RA3 Release of Radioactive Material or Increases in Radiation Levels That Impede Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Valid radiation monitor readings GREATER THAN 15 mrem/hr in areas requiring continuous occupancy to maintain plant safety functions:

RT-8066 - Control Room

EAL-2 Valid radiation monitor readings GREATER THAN 5 R/hr in areas requiring infrequent access to maintain plant safety functions.

RT8058, 8060, 8061, 8062, 8063, indicate accessibility to plant support equipment.
RT8077, 8084, 8085, 8086, 8087, 8090 indicate accessibility to safety injection equipment in the Fuel Handling Building.

NOTE: The Emergency Director should determine the cause of the increase in radiation levels and review other ICs for applicability.

BASES:

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be correct.

This IC addresses increased radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually, in order to maintain safe operation or perform a safe shutdown. It is this impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the increase radiation levels and determine if any other IC may be involved. For example, a dose rate of 15 mrem/hr in the Control Room or TSC may be a problem in itself.

	0ERP01-ZV-IN01	Rev. 6	Page 78 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 46 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

However, the increase may also be indicative of high dose rates in the containment due to LOCA. In this latter case, an SAE or GE may be indicated by the fission product barrier matrix ICs.

This IC is not meant to apply to increases in the containment dome radiation monitors as these events are addressed in the fission product barrier matrix ICs. Nor is it intended to apply to anticipated temporary increases due to planned events. (e.g., incore detector movement, radwaste container movement, depleted resin transfers, etc.)

The only area requiring continuous occupancy is the Control Room; however, other control stations that are manned continuously, such as a radwaste control room, a central security alarm station, or an operator station in the plant should be alerted if Control Room radiation levels reach the action level. The value of 15 mrem/hr is derived from the GDC 19 value of 5 rem in 30 days with adjustment of expected occupancy times. Although Section III.D.3 of NUREG-0737, Clarification of TMI Action Plan Requirements, provides that the 15 mrem/hr value can be averaged over the 30 days, the value is used here without averaging, as a 30 day duration implies in event potentially more significant than an Alert.

For areas requiring infrequent access, the values are based on radiation levels which result in exposure control measures intended to maintain doses within normal occupational exposure guidelines and limits (i.e., 10CFR20), and in doing so, will impede necessary access.

	0ERP01-ZV-IN01	Rev. 6	Page 79 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 47 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

RS1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 A valid reading on one or more of the following monitors that exceeds the value shown.
AND
 an offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes.

If an offsite dose assessment is completed, refer to EAL-2.

RT-8010B	Unit Vent (Release Rate)	>2.00 E+7 μ Ci/sec
RT-8046 thru RT-8049	Main Steam Line Monitors	>5 μ Ci/ml

Note: IF multiple release paths are indicated by elevated radiological monitor readings, THEN sum readings.

Note: RT-8046 thru 8049 Main Steam Line Monitors assumes Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr.

EAL-2 Dose assessment indicates dose consequences greater than 100 mrem TEDE or 500 mrem thyroid CDE.

EAL-3 Field survey results indicate site boundary dose rates exceeding 100 mrem/hr expected to continue for more than one hour; or analysis of field survey samples indicate thyroid dose commitment of 500 mrem for one hour of inhalation.

	0ERP01-ZV-IN01	Rev. 6	Page 80 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 48 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be correct.

The Site Area Emergency limit is 0.1 times the Protective Action Guides (PAGs) (0.100 rem TEDE or 0.500 rem Thyroid CDE at the site boundary). The 100 mrem TEDE and 500 mrem Thyroid CDE dose were adopted at one-tenth the EPA Protective Action Guideline doses. Doses at these levels would generally require action within the site boundary to protect personnel.

EAL 1 uses a source term that is representative of a postulated accident mixture of noble gases and iodine. The mixture assumes a gap inventory (as defined in the STAMPEDE emergency offsite dose calculation code) about one hour after the reactor ceases to be critical. This mixture is consistent with fuel damage that would be necessary for generating the dose rates associated with a site area emergency. The average centerline X/Q is assumed to be $1.00 \text{ E-}5 \text{ sec/m}^3$ to be consistent with the value used for emergency offsite dose calculations.

The 100 mrem TEDE and 500 mrem integrated thyroid dose were adopted at one-tenth the EPA Protective Action Guideline doses. Doses at these levels would generally require action within the site boundary to protect personnel. Note that the gap inventory radionuclide mixture contains sufficient iodine to exceed the 500 mrem/hr thyroid CDE criteria before the 100 mrem/hr TEDE is exceeded.

Integrated doses are generally not monitored in real-time. In establishing the emergency action levels, a duration of one hour is assumed, and the EALs are based on a site boundary dose rate of 100 mrem/hr TEDE or 500 mrem/hr thyroid, whichever is more limiting (depends on source term assumptions). If the Radiological Director/Emergency Director indicates a longer or shorter duration for the period in which the substantial portion of the activity is released, these dose rates should be adjusted.

	0ERP01-ZV-IN01	Rev. 6	Page 81 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 49 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

RS2 Unexpected Increase in Containment Radiation Levels

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 Valid reading on RT-8050 or RT-8051 greater than 100 R/hr.

OR

Valid reading on Hatch Monitor greater than 222 mR/hr.

BASES:

A reading of greater than 100 R/hr on the RCB Accident Monitors Monitors or 222 mR/hr on the Hatch Monitor indicates release of reactor coolant, with elevated activity indicative of fuel damage. This value assumes the instantaneous release and dispersal into the containment of the reactor coolant noble gas and iodine inventory associated with 2% gap activity. This EAL indicates a loss of both the fuel clad and RCS barriers.

	0ERP01-ZV-IN01	Rev. 6	Page 82 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 50 of 71

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

GENERAL EMERGENCY

RG1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 A valid reading on one or more of the following monitors that exceeds the value shown.

AND

An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes.

If an offsite dose assessment is completed, refer to EAL-2.

RT-8010B	Unit Vent (Release Rate)	>2.00 E+8 µCi/sec
RT-8046 thru RT-8049	Main Steam Line Monitors	>50 µCi/ml

Note: IF multiple release paths are indicated by elevated radiological monitor readings, THEN sum readings.

Note: RT-8046 thru RT-8049 Main Steam Line Monitors assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr.

EAL-2 Dose assessment indicates dose consequences greater than 1,000 mrem TEDE and/or 5,000 mrem thyroid CDE.

EAL-3 Field survey results indicate site boundary dose rates exceeding 1,000 mrem/hr expected to continue for more than one hour; or analysis of field survey samples indicate thyroid dose commitment of 5,000 mrem for one hour of inhalation.

	0ERP01-ZV-IN01	Rev. 6	Page 83 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 51 of 71	

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

Valid means that an unexpected radiation monitor reading has been confirmed by the operators to be correct.

Doses in excess of 1 rem TEDE or 5 rem Thyroid CDE at the site boundary warrant declaration of a General Emergency. The Emergency Action Level (EAL) is based on a dose rate consistent with the release rate that would have to be sustained for one hour to produce the 1 rem TEDE or 5 rem Thyroid CDE at the site boundary. Integrated doses are generally not monitored in real-time. In establishing the EALs, a duration of one hour is assumed, and the EALs are based on site boundary doses for either TEDE or Thyroid CDE, whichever is more limiting (source term dependent). The severity of the General Emergency requires fuel damage to have sufficient activity for significant offsite dose consequences. If the Radiological Director or Emergency Director indicates a longer or shorter duration for the period in which the substantial portion of the activity is released, these dose rates should be adjusted.

The release rate was derived using the centerline X/Q, 1.00 E-5 sec/m^3 , associated with average annual meteorology for emergency offsite dose calculations. Actual meteorology is used when calculating dose projections using 0ERP01-ZV-TP01, Offsite Dose Calculations.

Actual meteorology is specifically identified in the initiating condition since it gives the most accurate dose assessment. Actual meteorology (including forecasts) should be used whenever possible.

	0ERP01-ZV-IN01	Rev. 6	Page 84 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 52 of 71	

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

GENERAL EMERGENCY

RG2 Unexpected Increase in Containment Radiation Levels

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 Valid reading on RT-8050 or RT-8051 greater than 1,000 R/hr.

OR

Valid reading on Hatch Monitor greater than 2,222 mR/hr.

BASES:

This EAL indicates significant fuel damage, equivalent to 20% gap activity. Regardless of whether containment is challenged, the amount of activity associated with fuel damage of this magnitude, if released, could have such severe consequences that it is treated as a loss of containment, which would lead to a classification of General Emergency.

	0ERP01-ZV-IN01	Rev. 6	Page 85 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 53 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU1 Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Security Alert as defined by the Safeguards Contingency Plan.

EAL-2 Bomb device discovered inside the Protected Area, but outside the Vital Area.

BASES:

These EALs are based on the STPEGS Safeguards Contingency Plan Events. Security events which do not represent at least a potential degradation in the level of safety of the plant, are reported under 10CFR73.71 or in some cases under 10CFR50.72. Bomb devices discovered within a Vital Area would result in EAL escalation.

	0ERP01-ZV-IN01	Rev. 6	Page 86 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 54 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU2 Fire or Explosion in the Protected Area or Switchyard which Affects Normal Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Fire within the areas below which is not under control within 15 minutes of initial notification.

EAL-2 Explosion in or adjacent to any of the following areas which damages equipment necessary for normal plant operation.

Areas considered for EAL-1 and EAL-2:

- Switchyard
- Turbine Generator Building
- Mechanical/Electrical Auxiliary Building
- Fuel Handling Building
- Reactor Containment Building
- Essential Cooling Water Intake Structure
- Isolation Valve Cubicle
- Diesel Generator Building
- Circulating Water Intake Structure

BASES:

The purpose of this IC is to address the magnitude and extent of explosions or fires that may be potentially significant precursors to damage to safety systems or for initiation of plant transients. This excludes such items as fires within administration buildings, wastebasket fires, and other small fires of no safety consequence. This IC applies to buildings and areas contiguous to plant Vital Areas or other significant buildings or areas. The intent of this IC is not to include buildings (e.g., warehouses) or areas that are not contiguous or immediately adjacent to plant Vital Areas. Initial Notification is a credible notification a fire is occurring or verification of a fire detection system alarm. Verification of the alarm includes actions that can be taken within the Control Room or other plant specific locations to ensure the alarm is not spurious, but does not include dispatch of personnel to the scene to confirm a fire exists (NUMARC Q&A, June 1993). Fifteen minutes is allowed to verify that the fire alarm is valid and that initial fire fighting efforts have not been effective.

Escalation to a higher emergency class is by IC HA1, Fire or Explosion in a Vital Area Potentially Affecting Safe Shutdown or Decay Heat Removal.

	0ERP01-ZV-IN01	Rev. 6	Page 87 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 55 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU3 Toxic/Flammable Gases Affecting Plant Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Onsite toxic or flammable gas release which requires evacuation of areas within the Protected Area.

EAL-2 Report by Local, County or State Officials for potential evacuation of site personnel based on offsite event.

BASES:

This IC is based on releases in concentrations within the site boundary that will affect the health of plant personnel or affect the safe operation of the plant with the plant being within the evacuation area of an offsite event (e.g., tanker truck accident releasing toxic gases, etc.) The evacuation area is as determined from the DOT Evacuation Tables for Selected Hazardous Materials, in the DOT Emergency Response Guide for Hazardous Materials.

	0ERP01-ZV-IN01	Rev. 6	Page 88 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 56 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU4 Natural or Destructive Phenomena Affecting Plant Operations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

- EAL-1** Earthquake detected by seismic monitoring system and confirmed by 0POP04-SY-0001 Seismic Event.
- EAL-2** Tornado striking facilities within the Protected Area.
- EAL-3** Shutdown of the facility required due to actual or predicted natural phenomenon, in accordance with 0POP04-ZO-0002, Natural or Destructive Phenomena Guidelines.
- EAL-4** Vehicle crash into plant structures or systems within the Protected Area.
- EAL-5** Report of main turbine failure resulting in casing penetration or damage to turbine or generator seals.

BASES:

- EAL-1:** Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate. Method of detection can be based on instrumentation, validated by seismic event procedure 0POP04-SY-0001.
- EAL-2:** Based on the assumption that a tornado striking (touching down) within the Protected Area boundary may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.
- EAL-3:** This EAL raises awareness that the potential exists for loss of electrical power or station blackout. It also represents a threshold beyond which special provisions for additional support are likely.
- EAL 4:** Addresses events such as aircraft crash that may damage plant structures containing systems and functions required for safe shutdown. If the crash is confirmed to affect a Vital Area, the event may be escalated to an Alert.

	0ERP01-ZV-IN01	Rev. 6	Page 89 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 57 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

EAL-5: Intended to address main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual fires and flammable gas build up are appropriately classified via HU2 and HU3. This EAL is consistent with the definition of an Unusual Event while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by missiles generated by the failure or by radiological releases in conjunction with a steam generator tube rupture. These latter events would be classified by the radiological ICs or Fission Product Barrier ICs.

NOTE

If generator seal damage is observed after the generator has been purged for disassembly, declaration of an Unusual Event is not required. In this case, there is no report of a leak, no detection of hydrogen, and no explosion or fire. In effect, the amount of gas that leaked did not affect normal operations of the plant. (Ref. NUMARC Questions and Answers, June 1993)

	0ERP01-ZV-IN01	Rev. 6	Page 90 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 58 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU5 Miscellaneous Events Affecting Plant Operations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

- EAL-1** Essential Cooling Pond (ECP) level less than 25.0 ft. mean sea level.
- EAL-2** Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.

BASES:

- EAL-1** Based on the requirement to shutdown the plant for ECP level less than 25.5 ft. mean sea level. (STPUFSAR 9.2.5.1.1.5).
- EAL-2** This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Unusual Event emergency class.

From a broad perspective, one area that may warrant Emergency Director judgement is related to likely or actual breakdown of site specific event mitigating actions. Examples to consider include inadequate emergency response procedures, transient response either unexpected or not understood, failure or unavailability of emergency systems during an accident in excess of that assumed in accident analysis, or insufficient availability of equipment and/or support personnel.

Specific example of actual events that may require Emergency Director judgement for Unusual Event declaration are listed here for consideration. However, this list is by no means all inclusive and is not intended to limit the discretion of the site to provide further examples.

- Missile(s) impacting safety related structures.
- Near-site explosion which may adversely affect normal site activities.
- Near-site release of toxic or flammable gas which may adversely affect normal site activities.
- Uncontrolled RCS cooldown due to Secondary Depressurization.

It is also intended that the Emergency Director's judgement not be limited by any list of events as defined here or as augmented by the site. This list is provided solely as examples for consideration and it is recognized that actual events may not always follow a preconceived description.

	0ERP01-ZV-IN01	Rev. 6	Page 91 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 59 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA1 Security Event in the Protected Area

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Intrusion into the Protected Area by a hostile force.

EAL-2 Security Emergency as defined by the Safeguards Contingency Plan.

BASES:

This class of security events represents an escalated threat to plant safety above that contained in the Unusual Event. For the purposes of this IC, a civil disturbance which penetrates the Protected Area boundary can be considered a hostile force. Intrusion into a Vital Area by a hostile force will escalate this event to a Site Area Emergency

	0ERP01-ZV-IN01	Rev. 6	Page 92 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 60 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

HA2 Fire or Explosion in a Vital Area Potentially Affecting Safe Shutdown or Decay Heat Removal

OPERATING MODE APPLICABILITY: See Specific EAL

EMERGENCY ACTION LEVELS:

EAL-1 Fire or Explosion potentially affecting Safe Shutdown Equipment or systems required for decay heat removal (Modes 1-6).

The following conditions exist:

- a. Fire or explosion in any of the following areas:
 - Mechanical/Electrical Auxiliary Building
 - Reactor Containment Building
 - Isolation Valve Cubicle
 - Diesel Generator Building
 - Essential Cooling Water Intake Structure

AND

- b. Affected system parameter indications show degraded performance or plant personnel report visible damage to systems, structures or components within the specified area required for safe shutdown.

EAL-2 Fire or explosion in one or more of the areas listed below which impacts ability to maintain cooling for spent fuel. (Mode: At all times)

- Fuel Handling Building
- Mechanical/Electrical Auxiliary Building

	0ERP01-ZV-IN01	Rev. 6	Page 93 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 61 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SAFETY

BASES:

EAL-1 & 2: The areas above contain functions and systems required for the safe shutdown of the plant. This EAL addresses a fire and not the degradation in performance of affected systems. System degradation is addressed in the System Malfunction EALs. The reference to damage of systems is used to identify the magnitude of the fire and to discriminate against minor fires. The reference to safety systems is included to discriminate against fires in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the fire was large enough to cause damage to these systems. The designation of a single train is appropriate when the fire is large enough to affect more than one component and an Alert is justified.

Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Director Judgement ICs. With regard to explosions, only those explosions of sufficient force to damage permanent structures or equipment required for safe operation within the identified plant area should be considered. As used here, an explosion is a rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment, that potentially imparts significant energy to near-by structures and materials. The inclusion of a report of visible damage should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the explosion with reports of evidence of damage (e.g., deformation, scorching) is sufficient for declaration. The declaration of an Alert and the activation of the TSC will provide the Emergency Director with the resources needed to perform these damage assessments. The Emergency Director also needs to consider any security aspects of the explosions, if applicable.

Potential loss of decay heat removal during shutdown conditions or loss of spent fuel cooling capability can result in challenges to operators and plant response mechanisms. Vulnerabilities for the consequences of fire or explosion may be increased in Mode 4, 5 and 6 because of the likelihood of support systems being out of service for maintenance and reduced requirements for electrical power.

	0ERP01-ZV-IN01	Rev. 6	Page 94 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 62 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA3 Toxic/Flammable Gases Potentially Affecting Safe Operation

OPERATING MODE APPLICABILITY: At all times

EMERGENCY ACTION LEVELS:

EAL-1 Confirmed entry of toxic gas into Control Room envelope.

EAL-2 Uncontrolled entry of flammable gas into a Vital Area.

EAL-3 Uncontrolled entry of toxic gas into the facility in life threatening concentration or into a Vital Area where lack of access constitutes a safety problem.

BASES:

This IC is based on gases that have entered a plant structure affecting the safe operation of the plant. This IC applies to buildings and areas contiguous to plant Vital Areas or other significant buildings or areas. The intent of this IC is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to plant Vital Areas. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred. Escalation to the higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation or Abnormal Rad Levels/Radioactive Effluent ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 95 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 63 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA4 Natural or Destructive Phenomena Potentially Affecting Safe Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Seismic motion exceeding Operating Basis Earthquake (OBE) as indicated by a Seismic monitor alarm and confirmed by 0POP04-SY-0001.

EAL-2 Tornado or high wind causing visible structural damage to any of the following plant structures:

- Reactor Containment Building
- ECW Intake Structure
- Mechanical/Electrical Auxiliary Building
- Isolation Valve Cubicle
- Fuel Handling Building
- Diesel Generator Building

EAL-3 Entry of flood water into safety related structures such that the function of safety related equipment is jeopardized.

EAL-4 Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall.

EAL-5 Vehicle crash affecting a plant Vital Area.

EAL-6 Turbine failure generated missiles result in any visible structural damage to or penetration of any of the following plant areas:

- Reactor Containment Building
- ECW Intake Structure
- Mechanical/Electrical Auxiliary Building
- Isolation Valve Cubicle
- Fuel Handling Building
- Diesel Generator Building

	0ERP01-ZV-IN01	Rev. 6	Page 96 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 64 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

BASES:

- EAL-1:** Based on STPEGS UFSAR design basis. Seismic events of this magnitude can cause damage to safety functions.
- EAL-2:** Based on actual evidence of wind damage regardless of wind speed.
- EAL-3:** Based on potential for uncontrolled or ineffectually controlled flooding of vital structures which potentially affects systems required for safe shutdown of the plant.
- EAL-4:** Based on potential for a design basis flood event resulting from breach of the dike. (Ref. UFSAR 3.4.1)
- EAL-5:** Addresses items such as airplane, helicopter, or machinery crash into plant vital areas.
- EAL-6:** Is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. This EAL is, therefore, consistent with the definition of an ALERT in that if missiles have damaged or penetrated areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

Each of these EALs is intended to address events that may have resulted in a plant Vital Area being subjected to forces beyond design limits, and thus damage may be assumed to have occurred to plant safety systems. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation or Radiological ICs.

	0ERP01-ZV-IN01	Rev. 6	Page 97 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 65 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA5 Control Room Evacuation

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 The Control Room is evacuated and the plant is being controlled within 15 minutes per 0POP04-ZO-0001, Control Room Evacuation.

BASES:

With the evacuation of the Control Room, additional support, monitoring and direction through the TSC and for other Emergency Operations Centers is necessary. Inability to establish control from outside the Control Room within 15 minutes will escalate this event to a Site Area Emergency (HS-2). Step 12 of 0POP04-ZO-0001 places the control transfer switches in the Auxiliary Shutdown Panel (ASP) position. At this point the operators can determine that actual control is achieved at the ASP. If the Emergency Director is not confident that the appropriate plant controls are functioning at the ASP, escalation to a Site Area Emergency is indicated.

As stated in NUREG-0654, the rationale for the Alert class is to provide prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. When an Alert is declared, based upon control room evacuation or any other EAL, the Technical Support Center is staffed. Declaration of an Alert is appropriate to notify onsite and offsite emergency organizations that a control room evacuation is taking place and that the possibility exists, however small, that control cannot be established outside of the control room.

	0ERP01-ZV-IN01	Rev. 6	Page 98 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 66 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA6 Miscellaneous Events Potentially Affecting Safe Plant Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

- EAL-1 Essential Cooling Pond (ECP) level less than 23.0 ft. mean sea level. with no make-up available.
- EAL-2 Other conditions exist which in the judgement of the Emergency Director indicate that plant safety systems may be degraded and that increased monitoring of plant functions is warranted.

BASES:

- EAL-1 Based on continued depletion of ECP with no make-up. EAL allows 1.5 ft. margin to minimum ECP level described in UFSAR Table 9.2.5.3.
- EAL-2 Intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class.

	0ERP01-ZV-IN01	Rev. 6	Page 99 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 67 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

SITE AREA EMERGENCY

HS1 Security Event in a Plant Vital Area

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Intrusion into a Vital Area by a hostile force.

EAL-2 Security Emergency which in the judgement of the Emergency Director could prevent safe shutdown or interfere with maintaining safe shutdown conditions.

EAL-3 Confirmed presence of an explosive device in a Vital Area.

BASES:

This class of security events represents an escalated threat to plant safety above that contained in the Alert IC in that a hostile force has progressed from the Protected Area to a Vital Area, or that other events (e.g. sabotage) have been found which could affect safe shutdown.

	0ERP01-ZV-IN01	Rev. 6	Page 100 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 68 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

SITE AREA EMERGENCY

HS2 Control Room Evacuation and Plant Control Cannot be Established

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 1. The following conditions exist:

- a. Control room evacuation has been initiated per 0POP04-ZO-0001, Control Room Evacuation.

AND

- b. Control of the plant cannot be established by completion of step 12 of 0POP04-ZO-0001 within 15 minutes.

BASES:

Step 12 of 0POP04-ZO-0001 places the control transfer switches in the Auxiliary Shutdown Panel (ASP) position. At this point, the Operators can determine they have control at the ASP. Expeditious transfer of safety systems has not occurred but fission product barrier damage may not yet be indicated. Time for transfer based on analysis or assessments as to how quickly control must be reestablished without core uncovering and/or core damage. In cold shutdown and refueling modes, operator concern is directed toward maintaining core cooling such as is discussed in Generic Letter 88-17, Loss of Decay Heat Removal. In power operation, hot standby and hot shutdown modes, operator concern is primarily directed toward maintaining critical safety functions and thereby assuring fission product barrier integrity. Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation or Radiological ICs.

If the Emergency Director is not confident that adequate plant controls are functioning at the ASP, escalation to a Site Area Emergency is warranted.

	0ERP01-ZV-IN01	Rev. 6	Page 101 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 69 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

SITE AREA EMERGENCY

HS3 Miscellaneous Events Affect the Ability to Shutdown the Plant or maintain it in a Safe Shutdown Condition

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Other conditions exist which in the judgement of the Emergency Director indicate actual or likely major failures of plant functions needed for protection of the public.

BASES:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency.

	0ERP01-ZV-IN01	Rev. 6	Page 102 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels	Page 70 of 71	

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

GENERAL EMERGENCY

HG1 Security Event Resulting in Loss of Ability to Reach and Maintain Cold Shutdown

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 Loss of physical control of the Control Room due to security event.

EAL-2 Loss of physical control of the remote shutdown capability due to security event.

BASES:

This IC encompasses conditions under which a hostile force has taken physical control of a Vital Area required to reach and maintain safe shutdown.

	0ERP01-ZV-IN01	Rev. 6	Page 103 of 104
Emergency Classification			
Addendum 2	Bases for Emergency Action Levels		Page 71 of 71

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

GENERAL EMERGENCY

HG2 Miscellaneous Events Which May Potentially Result in a Hazard to the Public

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Other conditions exist which in the judgement of the Emergency Director indicate:

- a. Actual or imminent substantial core degradation with potential for loss of containment.

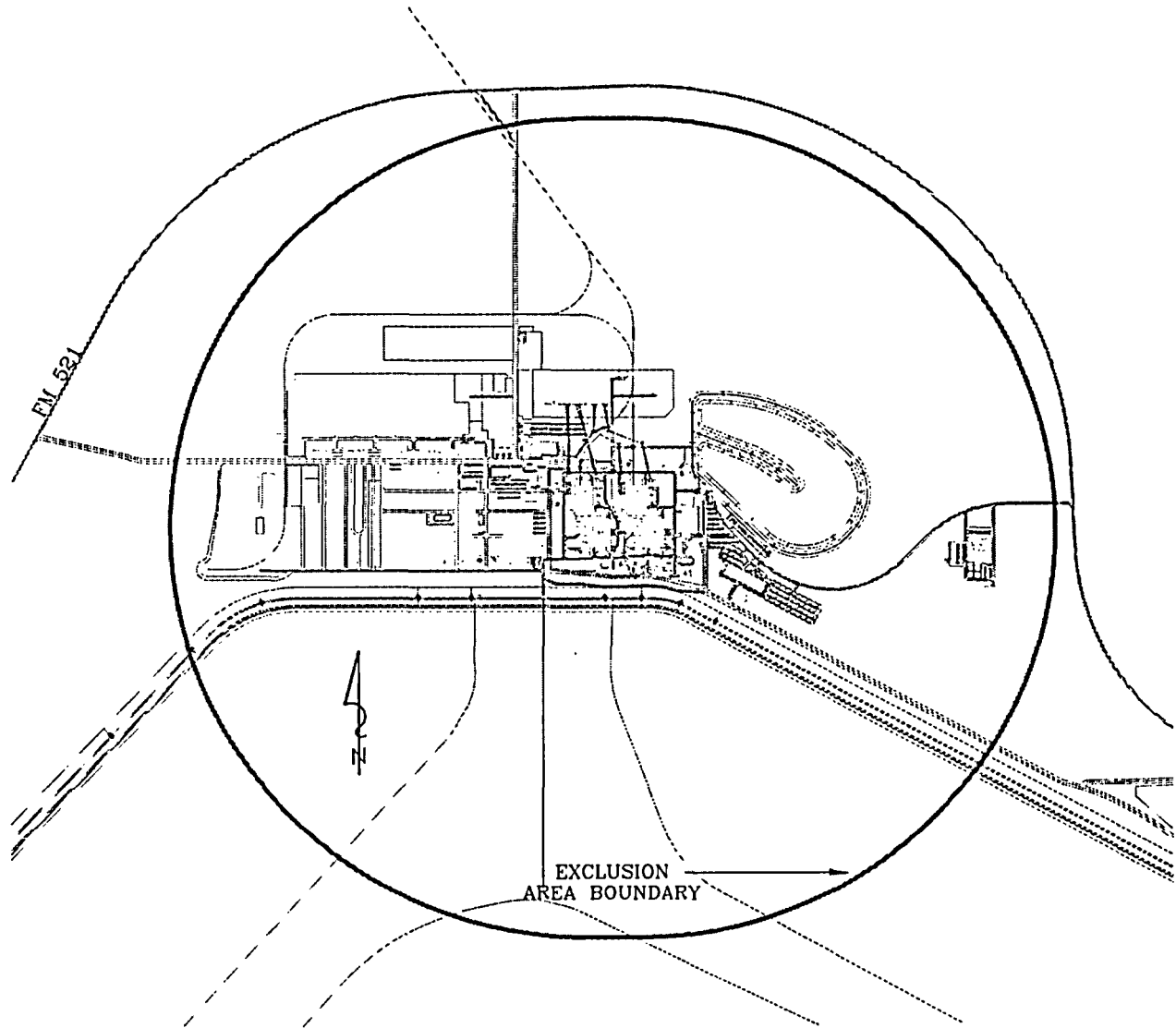
OR

- b. Potential for uncontrolled radionuclide releases. These releases can reasonably be expected to exceed EPA PAG plume exposure levels outside the site boundary.

BASES:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency class.

	0ERP01-ZV-IN01	Rev. 6	Page 104 of 104
Emergency Classification			
Addendum 3	Exclusion Area Boundary	Page 1 of 1	



E-0010 DWG
REV. 0

STI 31662988	0ERP01-ZV-IN02	Rev. 17	Page 1 of 28
Notifications To Offsite Agencies			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 10/16/03
Max Keys	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of ContentsPage

1.0	Purpose and Scope.....	2
2.0	Definitions	2
3.0	Precautions and Limitations	2
4.0	Responsibilities	4
5.0	Procedure	5
6.0	References	10
7.0	Support Documents	10
	Data Sheet 1, Offsite Agency Notification Message Form (Typical).....	11
	Data Sheet 2, Supplemental Notification Form (Typical).....	12
	Data Sheet 3, Offsite Agencies Log	13
	Data Sheet 4, NRC Event Notification Worksheet (Typical).....	14
	Data Sheet 5, Non-Emergency Offsite Agency Notification Message Form	16
	Addendum 1, Responsibilities for Notification.....	17
	Addendum 2, Special Instructions for Completing Supplemental Notification Form	18
	Addendum 3, Emergency Communications (SPR 91-0447).....	20
	Addendum 4, Instructions for Operating Emergency Response Data Systems (ERDS).....	24
	Addendum 5, Atmospheric Stability Classification	26
	Addendum 6, Suggested Wording for Event Description	27

	0ERP01-ZV-IN02	Rev. 17	Page 2 of 28
Notifications To Offsite Agencies			

1.0 Purpose and Scope

- 1.1 This procedure specifies the actions to be taken for notifying offsite agencies and the Nuclear Regulatory Commission of a declared emergency at the South Texas Project Electric Generating Station (STPEGS).
- 1.2 This procedure specifies the actions to be taken for notifying offsite agencies and the Nuclear Regulatory Commission of discovery of an undeclared (or miss-classified) event.

2.0 Definitions

- 2.1 Emergency Notification System (ENS) - FTS, 2001 Telephone System, used for initial notification of an emergency to the NRC.

3.0 Precautions and Limitations

NOTE

Addendum 3, Emergency Communications provides information on the following communications links:

- NRC Emergency Notification System (ENS)
- State and County Ringdown Line
- Health Physics Network (HPN)
- STP Coordinator (QSE) Ringdown Line
- 800 Mhz Radio

3.1 Notifications to offsite agencies shall meet the following time limits and criteria:

- 3.1.1 The State of Texas and Matagorda County shall be contacted within 15 minutes of the Emergency Director declaring:
 - Initial classification of the emergency;
 - Change in the classification; or
 - Change in Protective Action Recommendations (PARs) for the public, including changes in wind direction resulting in PARs affecting additional zones.

	0ERP01-ZV-IN02	Rev. 17	Page 3 of 28
Notifications To Offsite Agencies			

Once contacted, the information contained in Items 1-8 and 12 of Data Sheet 1, Offsite Agency Notification Message Form shall be transmitted. All information shall be provided after message Number 1.

- 3.1.2 Notify the NRC Operations Center immediately following notifications to the State/County and no later than one hour after the emergency has been declared. Use Data Sheet 4, NRC Event Notification Worksheet, as a record of conversation. If more than one communicator is available, NRC notification may be made concurrently with State/County notification.
- 3.1.3 The Emergency Response Data System (ERDS) shall be activated at the time the NRC Operations Center is notified of the Alert, Site Area Emergency or General Emergency (see Addendum 4, Instructions for Operating Emergency Response Data System).
- 3.1.4 Issue updates to the State and County approximately hourly unless a State/County consensus is obtained for a reduced frequency (e.g. a static condition).
- 3.1.5 Immediately update the NRC, via the open line of communications, per Section 5.2.1.4 of this procedure.
- 3.1.6 After Offsite Agency Notification Message Number 1, all subsequent notifications shall be completed in entirety.
- 3.2 If the Emergency Classification or PARs are changed during the 15 minute notification period, then continue to complete notifications to the State/County prior to initiating the new notification, and inform the agencies that a change in classification or change in PAR will be forthcoming. (LCTS 9100453-936)
 - 3.2.1 An exception to this situation is when termination is declared before the offsite agencies are notified of the emergency condition. For this situation, issue both notification forms concurrently.
- 3.3 Notifications to offsite agencies shall follow the guidelines in Addendum 3, Emergency Communications, when communication system deficiencies exist.
- 3.4 To report an event or condition that met an EAL threshold and no longer exists at the time of discovery and the event or condition was due to a rapidly concluded event or an oversight in the emergency classification.
 - 3.4.1 State and County notifications shall be made within one hour of discovery by completing Data Sheet 5, Non-Emergency Offsite Agency Notification Message Form, and use the ring down line ensuring to document the event condition has cleared.

	0ERP01-ZV-IN02	Rev. 17	Page 4 of 28
Notifications To Offsite Agencies			

3.4.2 Make NRC notifications within one hour of the discovery of the undeclared (or miss-classified) event and use the ENS Line for NRC notification.

3.5 Any revisions to this procedure that directly or indirectly affect the format or usage of Data Sheet 1 shall be reviewed by the Texas Department of Health, Bureau of Radiation Control (BRC) prior to becoming effective.

4.0 Responsibilities

NOTE

Refer to Addendum 1, Responsibilities for Notification.

- 4.1 The individual with Emergency Director authority is responsible for approving all notifications to offsite agencies and ensuring notifications are made within the required time frames.
- 4.2 The Shift Supervisor is responsible for implementation of this procedure while functioning as the Emergency Director. Actual completion of forms may be delegated to the communicators.
- 4.3 The Control Room ENS Communicator is responsible for maintaining the open line with the NRC, unless otherwise directed by the NRC. This responsibility shall not transfer to the Technical Support Center (TSC) or Emergency Operations Facility (EOF).
- 4.4 The Control Room ENS Communicator is responsible for activating the ERDS at the time the NRC Operations Center is notified of the Alert, Site Area Emergency, or General Emergency (see Addendum 4).
- 4.5 The Control Room State/County Communicator is responsible for notifications to the State/County and for maintaining Data Sheet 3, Offsite Agencies Log, while the Shift Supervisor has Emergency Director authority.
- 4.6 The Chemical/Radiochemical Manager in the TSC is responsible for gathering information and preparing Data Sheet 1 and implementation of this procedure while the TSC Manager has Emergency Director authority. The Chemical/Radiochemical Manager is responsible for ensuring the correctness and timeliness of Data Sheet 1.
- 4.7 The TSC Communicator in the TSC is responsible for completing notifications to the State and County when provided completed notification forms from the Chemical / Radiochemical Manager, and maintaining Data Sheet 3. The TSC Communicator shall contact the NRC using the ENS line as directed by the Chemical/Radiochemical Manager. The TSC Communicator shall maintain a file containing copies of all Data Sheet 1 that originate from either the Control Room or Technical Support Center.

	0ERP01-ZV-IN02	Rev. 17	Page 5 of 28
Notifications To Offsite Agencies			

- 4.8 The Engineering Assistant in the EOF is responsible for implementation of this procedure while the EOF Director has Emergency Director authority. The Engineering Assistant is responsible for gathering information and preparing Data Sheet 1, and has primary responsibility for the correctness and timeliness of Data Sheet 1. The Engineering Assistant should also, if time permits, routinely complete Data Sheet 2.
- 4.9 The Offsite Agency Communicator in the EOF is responsible for completing notifications to the State/County, when directed by the Emergency Director, and for maintaining Data Sheet 3. The Offsite Agency Communicator shall maintain a file containing a copy of all Data Sheet 1 from the start of the event to recovery.
- 4.10 The Licensing Director in the EOF is responsible for completing notifications to the NRC over the ENS once the EOF is activated.

5.0 Procedure

CAUTION

The State and County are required to be contacted within 15 minutes of the Emergency Director declaring any of the following:

- Initial classification of the emergency, (Item 4)
- Change in the classification, (Item 4) or
- Change in Protective Action Recommendations (PARs) for the public, including changes in wind direction resulting in PARs affecting additional Zones, (Item 6).

5.1 Offsite Agency Notification (State/County)

NOTE

Print the information on Data Sheet 1 (black ink should be used).

ONLY BLOCKS 1-8 AND 12 ARE REQUIRED TO BE COMPLETED UPON INITIAL NOTIFICATION. ALL INFORMATION SHALL BE PROVIDED AFTER MESSAGE NUMBER 1.

5.1.1 Complete Data Sheet 1

	0ERP01-ZV-IN02	Rev. 17	Page 6 of 28
Notifications To Offsite Agencies			

NOTE

The Communicator, at the time of contact, enters the names of the persons contacted at DPS Pierce and Matagorda County at the top of each form. Record the time of contact.

- 5.1.1.1 ITEM 1 - Name of the STPEGS person communicating information to offsite agencies. Mark the applicable Unit. If the event is common unit, then mark Unit 1.
- 5.1.1.2 ITEM 2 - Mark if notification is or is not a drill.
- 5.1.1.3 ITEM 3 - Start with number one (1). Number sequentially, independent of facility originating Data Sheet 1, and indicate which facility is originating the message.
- 5.1.1.4 ITEM 4 - Mark if the classification is new or unchanged. Fill in the date and time the current classification was declared. Mark the event classification.
- 5.1.1.5 ITEM 5 - A radiological release is defined as exceeding the Emergency Action Level (EAL) for an Unusual Event.
- 5.1.1.6 ITEM 6 - Mark if the recommended protective actions are new or unchanged.
 - a. A General Emergency Classification shall contain a Protective Action Recommendation.
 - b. Refer to 0ERP01-ZV-IN07, Offsite Protective Action Recommendations for PARs. Mark Block A or B. If Block A is marked then go to Step 5.1.1.7.
 - c. Ensure correct notations are used for zones and sectors. Zones range from 1 to 11. Sectors range from A to R. Refer to Addendum 5 in 0ERP01-ZV-IN07, Offsite Protective Action Recommendations, for a cross reference of zones and sectors.

	0ERP01-ZV-IN02	Rev. 17	Page 7 of 28
Notifications To Offsite Agencies			

- 5.1.1.7 **ITEM 7 -** Indicate BRC disposition on PARs recommendation or BRC Not Contacted.
- 5.1.1.8 **ITEM 8 -** Mark if the event description is new or unchanged. Enter the alphanumeric designator in the initiating condition line.
- a. Addendum 6 contains suggested wording that may be used by the communicator as an aid.
- b. If wording other than that provide in Addendum 6 is used, then, include a brief explanation of the event in lay terms for clarification to offsite agencies. Legibly print a non-technical description of the event. **DO NOT USE ACRONYMS.**

NOTE

Only Blocks 1, 8 and 12 are required to be completed upon initial notification. The remainder of the form should be completed if time allows. The entire form shall be completed on all subsequent notifications or updates.

- 5.1.1.9 **ITEM 9 -** Mark NEW or UNCHANGED. Meteorological data is available on the Integrated Computer System (ICS) Emergency Response Facility Data Acquisition Display System (ERFDADS). Ensure 15 minute average lower wind speed and wind direction is used. See Addendum 5, Atmospheric Stability Classification.
- 5.1.1.10 **ITEM 10 -** Mark NEW or UNCHANGED. A radiological release is defined as exceeding the EAL for an Unusual Event. Use a default 4 hour value if the release duration unknown.
- 5.1.1.11 **ITEM 11 -** Additional remarks, if any.
- 5.1.1.12 **ITEM 12 -** Signature of Emergency Director authorizing release of Data Sheet 1.
- 5.1.2 Complete notifications using Data Sheet 3.
- 5.1.2.1 Contact State/County on ringdown line or alternate numbers.

	0ERP01-ZV-IN02	Rev. 17	Page 8 of 28
Notifications To Offsite Agencies			

- Read ITEMS 1-8.
 - Supply information in Items 9-11, if available.
- 5.1.2.2 Fax notification forms. Log time fax completed and confirmed.
- 5.1.2.3 If the Communicator is also making NRC notifications, complete Section 5.2 of this procedure prior to continuing.
- 5.1.2.4 Contact BRC and issue information on Data Sheet 1.
- 5.1.2.5 Notify unaffected Unit Control Room that an emergency fax notification has been made.
- 5.1.2.6 Notify the STP Coordinator (QSE) that emergency fax notification has been made. This step is not required by the Offsite Agency Communicator located in the EOF.
- 5.1.3 Issue update notifications to State and County approximately hourly unless a State/County consensus is obtained for a reduced frequency (e.g. a static condition).
- 5.1.3.1 Update notifications are made using Data Sheet 1, Offsite Agency Notification Message Form.
- 5.1.3.2 If the Emergency Director is located in the Emergency Operations Facility and events are not rapidly changing, then, following issuance of Data Sheet 1, issue Data Sheet 2, Supplemental Notification Form. (Guidance for issuing Data Sheet 2 is found in Addendum 2, Special Instructions for Completing Supplemental Notification Form.)
- 5.1.4 If Data Sheet 1 or Data Sheet 2 is issued with incorrect information, then immediately contact the notified agencies correct the information and follow-up with a corrected Data Sheet 1 or Data Sheet 2.
- 5.1.5 If Data Sheet 1 or Data Sheet 2 is being transmitted with incorrect information, then immediately stop transmission, gather the correct information, and re-transmit a corrected Data Sheet 1 or Data Sheet 2.

	0ERP01-ZV-IN02	Rev. 17	Page 9 of 28
Notifications To Offsite Agencies			

5.2 NRC Notification

NOTE

Complete Data Sheet 4 (black ink should be used) for initial NRC notification. Complete all applicable blocks on the worksheet.

- 5.2.1 Notify the NRC Operations Center immediately following initial notification of State/County agencies and no later than one hour after the emergency has been declared. If more than one communicator is available, these notifications may be done concurrently. Use Data Sheet 4 as a record of initial conversation. Additional records of conversation may be made on Emergency Action Log Sheets.
- 5.2.1.1 Description, Provide a description of the event to include systems affected, actuation's and initiating signals, causes, effect of event on plant, actions taken or planned, etc. Additional space is provided on back of Data Sheet 4. Check block when Control Room Log Book entry is made.
- 5.2.1.2 Radiological Releases, Complete this section if the event is radiologically based. Information from Data Sheet 1 may be used if information described in Data Sheet 4 is not available and obtaining it would likely cause a late notification.
- 5.2.1.3 Activate the ERDS at the time the NRC Operations Center is notified of the Alert, Site Area Emergency or General Emergency (see Addendum 4).
- 5.2.1.4 The Control Room ENS Communicator must maintain an open telephone line with the NRC, unless otherwise directed by the NRC. During the course of the event, immediately report any further degradation in the level of safety of the plant or other worsening conditions, including those that require declaration of any of the emergency classes, or may change from one emergency class to another, or a termination of the emergency class. Immediately report the results of ensuing evaluations or assessments of plant conditions, the effectiveness of response or protective measures taken, and information relating to plant behavior that is not understood.
- 5.2.2 Notify NRC Resident Inspector. Log time of contact on Data Sheet 4.

	0ERP01-ZV-IN02	Rev. 17	Page 10 of 28
Notifications To Offsite Agencies			

6.0 References

- 6.1 STPEGS Emergency Plan**
- 6.2 OPGP05-ZV-0004, Emergency Plan Implementing Procedure Users Guide**
- 6.3 0ERP01-ZV-IN07, Offsite Protective Action Recommendations**
- 6.4 0ERP01-ZV-IN01, Emergency Classification**
- 6.5 10CFR50.72(a)ii.3**
- 6.6 Inspection Report 91-03-01 (LCTS 9100453-936)**
- 6.7 10CFR50 Appendix E, IV.D.3**
- 6.8 IEN 89-89**

7.0 Support Documents

- 7.1 Data Sheet 1, Offsite Agency Notification Message Form (Typical)**
- 7.2 Data Sheet 2, Supplemental Notification Form (Typical)**
- 7.3 Data Sheet 3, Offsite Agencies Log**
- 7.4 Data Sheet 4, NRC Event Notification Worksheet (Typical)**
- 7.5 Non-Emergency Offsite Agency Notification Message Form**
- 7.6 Addendum 1, Responsibilities for Notifications**
- 7.7 Addendum 2, Special Instructions for Completing Supplemental Notification Form**
- 7.8 Addendum 3, Emergency Communications**
- 7.9 Addendum 4, Instructions for Operating Emergency Response Data System (ERDS)**
- 7.10 Addendum 5, Atmospheric Stability Classification**
- 7.11 Addendum 6, Suggested Wording for Event Description**

	0ERP01-ZV-IN02	Rev. 17	Page 11 of 28
Notifications To Offsite Agencies			
Data Sheet 1	Offsite Agency Notification Message Form (Typical)		Page 1 of 1

STP 1690 (04/02) Rev. 13		SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION OFFSITE NOTIFICATION MESSAGE FORM	
Roll call: _____		_____	_____
DPS Pierce		Matagorda County	Time
A L W A Y S C O M P L E T E	1. Communicator: Name _____ <input type="checkbox"/> U1 <input type="checkbox"/> U2 2. <input type="checkbox"/> This is a drill <input type="checkbox"/> This is <u>NOT</u> a drill 3. Message Number _____ Originating From: <input type="checkbox"/> CR <input type="checkbox"/> TSC <input type="checkbox"/> EOF 4. Emergency Classification: <input type="checkbox"/> New <input type="checkbox"/> Unchanged Declared at: Date: _____ Time: _____ <input type="checkbox"/> Unusual Event <input type="checkbox"/> Alert <input type="checkbox"/> Site Area Emergency <input type="checkbox"/> General Emergency <input type="checkbox"/> Terminated 5. Radiological release in progress: <input type="checkbox"/> Yes <input type="checkbox"/> No 6. Recommended Protective Actions: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. <input type="checkbox"/> No recommended protective actions at this time B. <input type="checkbox"/> Recommended protective actions are: 1. Evacuate from zones: _____ 2. Sectors affected: _____ 7. Bureau of Radiation Control (BRC) concurs with recommendations in 6 above: <input type="checkbox"/> Yes <input type="checkbox"/> BRC Not Contacted <input type="checkbox"/> No 8. Event Description: <input type="checkbox"/> New <input type="checkbox"/> Unchanged Classification Path/Initiating Condition: _____ Explain: _____ _____ _____ _____		
F O L L O W U P	9. Meteorological data: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. Wind direction from _____ Degrees Wind speed _____ MPH B. Stability Class (Check One): <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G C. Precipitation (Check One): <input type="checkbox"/> None <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Snow <input type="checkbox"/> Hail <input type="checkbox"/> Fog 10. Release Involves: <input type="checkbox"/> New <input type="checkbox"/> Unchanged A. <input type="checkbox"/> Radiological release in progress: Expected Duration: _____ hrs. Started: Date _____ Time _____ B. <input type="checkbox"/> Radiological release which has ended: Duration: _____ hrs. Terminated: Date _____ ime _____ 11. Remarks: _____ _____ _____ _____		
A L L	12. Approved: _____ Date _____ Time _____		

WHEN COMPLETED, THIS RECORD SHALL BE RETAINED IN ACCORDANCE WITH THE DOCUMENT TYPE LIST (DTL).

	0ERP01-ZV-IN02	Rev. 17	Page 12 of 28
Notifications To Offsite Agencies			
Data Sheet 2	Supplemental Notification Form (Typical)	Page 1 of 1	

STP 1686C (04/02) REV. 9		SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION SUPPLEMENTAL NOTIFICATION FORM		<input type="checkbox"/> THIS IS A DRILL <input type="checkbox"/> THIS IS NOT A DRILL
1. MESSAGE <u>S-</u>		3. EMERGENCY DIRECTOR LOCATION: () CR () TSC () EOF () AEOF		
2. UNIT STATUS: UNIT 1 POWER _____ UNIT 2 POWER _____		COMMUNICATOR NAME: _____		
STATUS OF BOUNDARY		4. FUEL CLADDING	5. REACTOR COOLANT SYSTEM	6. CONTAINMENT
INTACT		()	()	()
POTENTIAL LOSS		()	()	()
LOSS		()	()	()
RE-ESTABLISHED		N/A	()	()
7. PROGNOSIS OF SITUATION () IMPROVING () STABLE () DEGRADING SLOWLY () DEGRADING QUICKLY () UNKNOWN, UNDER ASSESSMENT		10. OFFSITE SUPPORT REQUESTED () NONE () AMBULANCE () FIRE () LOCAL LAW ENFORCEMENT () WESTINGHOUSE () BECHTEL () INPO () NRC () OTHER _____		
8. EAL #: _____				
9. NUMBER OF FUNCTIONAL SAFETY TRAINS: _____				
11. ONSITE PROTECTIVE MEASURES ORDERED		YES	NO	12. ORGANIZATION /FACILITIES ACTIVATED () TSC/OSC () EOF () ALTERNATE EOF () JIC
ACCOUNTABILITY		_____	_____	
EVACUATION OF NON-ESSENTIALS		_____	_____	
CONTROL ROOM EVACUATION		_____	_____	
TSC/OSC RELOCATION		_____	_____	
EOF RELOCATION		_____	_____	
POTASSIUM IODIDE ISSUED		_____	_____	
MEDICAL EMERGENCY OFFSITE TRANSPORT		_____	_____	
OTHER _____		_____	_____	
13. PROJECTED OFFSITE DOSES (CENTERLINE)		14. MISCELLANEOUS INFORMATION		
		TEDE (REM)	THYROID CDE (REM)	
A. EXCLUSION AREA BOUNDARY		_____	_____	
B. 2 MILES _____		_____	_____	
C. 5 MILES _____		_____	_____	
D. 10 MILES _____		_____	_____	
E. ESTIMATED RELEASE DURATION _____		_____	HRS	
F. RELEASE RATE _____		_____	µCi/sec	
15. EMERGENCY DIRECTOR APPROVAL:				
SIGNATURE		DATE TIME		
16. ACKNOWLEDGMENT OF RECEIPT:				
SIGNATURE		DATE TIME		

WHEN COMPLETED, THIS RECORD SHALL BE RETAINED IN ACCORDANCE WITH THE DOCUMENT TYPE LIST (DTL).

	0ERP01-ZV-IN02	Rev. 17	Page 13 of 28
Notifications To Offsite Agencies			
Data Sheet 3	Offsite Agencies Log		Page 1 of 1

MESSAGE NUMBER	*MATAGORDA COUNTY	*DPS, PIERCE	FAX COMPLETED AND CONFIRMED	*TEXAS DEPT. OF HEALTH (BRC)	*UNAFFECTED UNIT CONTROL ROOM STP COORDINATOR	NOTIFICATIONS COMPLETED
	CONSOLE OR 979-245-5526 OR 979-244-1178 (When EOC Activated)	CONSOLE OR 979-543-6878 OR 979-532-1740	(Refer to Addendum 2)	512-834-6688 OR 512-458-7460	U1-8614/8610/ 8595/7732 U2-7953/8549/ 8683/8156 CONSOLE OR 713-207-2740	BY: NAME/LOCATION

15 MINUTE NOTIFICATION
REQUIRED

*LOG THE TIME OF CONTACT.

WHEN COMPLETED, THIS RECORD SHALL BE RETAINED IN ACCORDANCE WITH THE DOCUMENT TYPE LIST (DTL).

	0ERP01-ZV-IN02	Rev. 17	Page 14 of 28
Notifications To Offsite Agencies			
Data Sheet 4	NRC Event Notification Worksheet (Typical)		Page 1 of 2

NRC FORM 361 (12-2000)		REACTOR PLANT EVENT NOTIFICATION WORKSHEET		U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER EN #	
NRC OPERATION TELEPHONE NUMBER: PRIMARY – 301-816-5100 or 800-532-3469*, BACK UPS – [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.					
NOTIFICATION TIME ET CT	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER	CALL BACK #	
EVENT TIME & ZONE CT	EVENT DATE	POWER/MODE BEFORE /	POWER/MODE AFTER /		
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)	<input type="checkbox"/> (v)(A) Safe S/D Capability AINA <input type="checkbox"/> (v)(B) RHR Capability AINB		
<input type="checkbox"/> GENERAL EMERGENCY GEN/AAEC		<input type="checkbox"/> TS Deviation ADEV	<input type="checkbox"/> (v)(C) Control of Rad Release AINC <input type="checkbox"/> (v)(D) Accident Mitigation AIND		
<input type="checkbox"/> SITE AREA EMERGENCY SIT/AAEC		4-Hr. Non-Emergency 10 CFR 50.72(b)(2)	<input type="checkbox"/> (xii) Offsite Medical AMED <input type="checkbox"/> (xiii) Loss Comm/Asm/Resp ACOM		
<input type="checkbox"/> ALERT ALE/AAEC		<input type="checkbox"/> (i) TS Required S/D ASHU			
<input type="checkbox"/> UNUSUAL EVENT UNU/AAEC		<input type="checkbox"/> (iv)(A) ECCS Discharge to RCS ACCS			
<input type="checkbox"/> 50.72 NON-EMERGENCY (see next columns)		<input type="checkbox"/> (iv)(B) RPS Actuation (scram) ARPS			
<input type="checkbox"/> PHYSICAL SECURITY (73.71) DDDD		<input type="checkbox"/> (xi) Offsite Notification APRE	60-Day Optional 10 CFR 50.73(a)(1)		
<input type="checkbox"/> MATERIAL/EXPOSURE B???		8-Hr. Non-Emergency 10 CFR 50.72(b)(3)	<input type="checkbox"/> Invalid Specified System Act AINV		
<input type="checkbox"/> FITNESS FOR DUTY HFIT		<input type="checkbox"/> (ii)(A) Degraded Condition ADEG	Other Unspecified Requirement (Identify)		
<input type="checkbox"/> OTHER UNSPECIFIED REQMT (see last column)		<input type="checkbox"/> (ii)(B) Unanalyzed Condition AUNA	<input type="checkbox"/> NONR		
<input type="checkbox"/> INFORMATION ONLY NNF		<input type="checkbox"/> (iv)(A) Specified System Actuation AESF	<input type="checkbox"/> NONR		
DESCRIPTION					
Include: Systems affected, actuations and their initiating signals, causes, effect on plant, actions taken or planned, etc. (Continue on back)					
<input type="checkbox"/> Control Room Log Book entry made.					
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD? <input type="checkbox"/> YES (explain above) <input type="checkbox"/> NO	
NRC RESIDENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
STATE(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DID ALL SYSTEMS FUNCTION AS REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO (explain above)	
LOCAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
OTHER GOV AGENCIES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
MEDIA/PRESS RELEASE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MODE OF OPERATION UNTIL CORRECTED:	ESTIMATE FOR RESTART DATE:
				ADDITIONAL INFO ON BACK <input type="checkbox"/> YES <input type="checkbox"/> NO	

NRC FORM 361 (12-2000)

WHEN COMPLETED, THIS RECORD SHALL BE RETAINED IN ACCORDANCE WITH THE DOCUMENT TYPE LIST (DTL).

	0ERP01-ZV-IN02	Rev. 17	Page 15 of 28
Notifications To Offsite Agencies			
Data Sheet 4	NRC Event Notification Worksheet (Typical)	Page 2 of 2	

ADDITIONAL INFORMATION

PAGE 2 OF 2

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
<input type="checkbox"/> LIQUID RELEASE	<input type="checkbox"/> GASEOUS RELEASE	<input type="checkbox"/> UNPLANNED RELEASE	<input type="checkbox"/> PLANNED RELEASE	<input type="checkbox"/> ONGOING	<input type="checkbox"/> TERMINATED	
<input type="checkbox"/> MONITORED	<input type="checkbox"/> UNMONITORED	<input type="checkbox"/> OFFSITE RELEASE	<input type="checkbox"/> T.S. EXCEEDED	<input type="checkbox"/> RM ALARMS	<input type="checkbox"/> AREAS EVACUATED	
<input type="checkbox"/> PERSONNEL EXPOSED OR CONTAMINATED		<input type="checkbox"/> OFFSITE PROTECTIVE ACTIONS RECOMMENDED		*State release path in description.		
	Release Rate (Ci/sec)	% T.S. Limit	HOO Guide	Total Activity (Ci)	% T.S. Limit	HOO Guide
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 µCi/sec			0.01 Ci
Particulate			1 µCi/sec			1 mCi
Liquid (excluding tritium and Dissolved noble gases)			10 µCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						
	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER	
RAD MONITOR READINGS						
ALARM SETPOINTS						
% T. S. LIMIT (if applicable)						
RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
LOCATION OF THE LEAK (e.g., SG #, valve, pipe, etc)						
LEAK RATE	UNITS: gpm/gpd	T. S. LIMITS	SUDDEN OR LONG TERM DEVELOPMENT			
LEAK START DATE:	TIME:	COOLANT ACTIVITY AND UNITS:		PRIMARY - SECONDARY -		
	MST					
LIST OF SAFETY EQUIPMENT NOT OPERATIONAL:						
EVENT DESCRIPTION (Continued from front)				INITIALS AND DATE _____ _____ _____ _____ _____		

Revised 01/29/2001

WHEN COMPLETED, THIS RECORD SHALL BE RETAINED IN ACCORDANCE WITH THE DOCUMENT TYPE LIST (DTL).

	0ERP01-ZV-IN02		Rev. 17	Page 17 of 28
Notifications To Offsite Agencies				
Addendum 1	Responsibilities For Notification			Page 1 of 1
RESPONSIBILITY	RESPONSIBLE PERSON BASED ON LOCATION OF EMERGENCY DIRECTOR			
	CR	TSC	EOF	
Complete Data Sheet 1, Offsite Agency Notification Message Form	State/County Communicator	Chemical/Radiochemical Manager	Engineering Assistant	
Complete Data Sheet 4, NRC Event Notification Worksheet and Maintain Open line	ENS Communicator	N/A	N/A	
Update NRC on event status	ENS Communicator	Chemical/Radiochemical Manager	Licensing Director	
Complete Data Sheet 2, Supplemental Notification Form	N/A	N/A	Engineering Assistant	
Log State/County Notifications using Data Sheet 3, Offsite Agencies Log	State/County Communicator	TSC Communicator	Offsite Agency Communicator	

	0ERP01-ZV-IN02	Rev. 17	Page 18 of 28
Notifications To Offsite Agencies			
Addendum 2	Special Instructions for Completing Supplemental Notification Form		Page 1 of 2

NOTE

- Data Sheet 2 should be completed using black ink. No items are to be left blank even if information is unchanged.
- The Engineering Assistant should, if time permits, routinely complete Data Sheet 2.

- ITEM 1 - Use same number as on Data Sheet 1, which will be completed in conjunction with this form.
- ITEM 3 - Identify the location of the Emergency Director and the name of the Communicator.
- ITEM 9 - Enter the number of Engineered Safety Features (ESF) trains in the affected unit which are functional.
- ITEM 10 - Mark offsite support requested which will be responding to the site. This block is completed to facilitate the support group requested through county established roadblocks.
- ITEM 14 - Examples of miscellaneous information:
- a. Estimate of quantity of radioactive material released or being released and the points and heights of releases.
 - b. Chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates.
 - c. Estimate of any surface radioactive contamination in plant, onsite or offsite.
 - d. Any licensee emergency response actions underway.
- GENERAL -
- a. Enter unavailable if information is not known.
 - b. Enter N/A if item is not applicable.

	0ERP01-ZV-IN02	Rev. 17	Page 19 of 28
Notifications To Offsite Agencies			
Addendum 2	Special Instructions For Completing Supplemental Notification Form		Page 2 of 2

c. Fax the completed and approved Data Sheet 2 to all agencies listed below:

- Matagorda County Sheriff's Office Dispatcher
- Matagorda County Emergency Operations Center
- Texas Department of Public Safety (DPS), Pierce, TX
- Texas Department of Health, BRC
- Division of Emergency Management
- Texas Department of Public Safety, Houston, TX
- Emergency Operations Facility
- Affected Unit's TSC
- Affected Unit's Control Room (when Emergency Direction is not in Control Room)
- Unaffected Unit's Control Room
- Site Public Affairs (EOF)
- Joint Information Center (JIC) (if activated)
- Energy Control Data Center

NOTE

Fax numbers can be found in the STPEGS Emergency Communications Directory.

	0ERP01-ZV-IN02	Rev. 17	Page 20 of 28
Notifications To Offsite Agencies			
Addendum 3	Emergency Communications (SPR 91-0447)	Page 1 of 4	

1.0 Emergency Communications System

1.1 Emergency Notification System (ENS)

- 1.1.1 The ENS is a telephone circuit provided by the NRC.
- 1.1.2 The ENS is activated to notify the NRC of a declared emergency or drills/exercises and to maintain communications with the NRC Operations Center as needed.
- 1.1.3 If the ENS is activated, then a person SHALL remain on the line until the NRC agrees that the ENS may be terminated.
- 1.1.4 There are seven (7) methods to notify the NRC. These are:
 - ENS telephone
 - Outside phone lines
 - Control Room direct phone line to Bay City
 - Microwave line to Texas Genco LP and call forwarded to the NRC
 - Ringdown line to STP Coordinator (QSE) and call forward to the NRC
 - 800 MHz Radio to communicate with STP Coordinator (QSE) and call forward to the NRC
 - Security radio communications to Matagorda County Sheriff's Office and forwarded to the NRC
- 1.1.5 The principal method of communications with the NRC is the ENS. The circuit may also be activated by the NRC.
- 1.1.6 If the ENS is out of service, then use outside phone lines to notify the NRC at one of the following telephone numbers (in order of priority) AND remain on the line.
 - 9-1-301-816-5100
 - 9-1-301-951-0550

	0ERP01-ZV-IN02	Rev. 17	Page 21 of 28
Notifications To Offsite Agencies			
Addendum 3	Emergency Communications (SPR 91 0447)	Page 2 of 4	

- 1.1.7 If the outside telephone lines are out of service, then use the Control Room direct phone line to Bay City and notify the NRC at one of the following telephone numbers (in order of priority) AND remain on the line.
 - 1-301-816-5100
 - 1-301-951-0550
- 1.1.8 If the Control Room direct telephone line to Bay City is out of order, then use the microwave tower line (32-0) to Texas Genco LP and have the Operator/Security complete the phone call to the NRC AND remain on the line if requested by the NRC.
- 1.1.9 If the microwave tower line is out of service, then use the STP Coordinator (QSE) Ringdown line and have the dispatcher forward the call or information to the NRC AND remain on the line if requested by the NRC.
- 1.1.10 If the STP Coordinator (QSE) Ringdown line is out of service, then use the 800 MHz Radio to communicate with STP Coordinator and have the dispatcher forward the information to the NRC AND remain on the radio if requested by the NRC.
- 1.1.11 If the 800 MHz Radio is out of service, then use the Security radio console to contact the Matagorda County Sheriff's Office and request the information be forwarded to the NRC. Stay on the radio with the Matagorda County Sheriff's Office.
- 1.2 State and County Ringdown line
 - 1.2.1 The State and County ringdown line is provided to notify State and County officials of a declared emergency.
 - 1.2.2 The State-County ringdown line is an automatic ringdown telephone circuit terminated on a communications console or an ORANGE telephone (EOF).
 - 1.2.3 There are seven (7) methods to notify the State/County. These are:
 - State/County ringdown telephone
 - Outside telephone lines
 - Control Room direct telephone line to Bay City
 - Microwave line to Texas Genco LP and call forwarded to the State and County

	0ERP01-ZV-IN02	Rev. 17	Page 22 of 28
Notifications To Offsite Agencies			
Addendum 3	Emergency Communications (SPR 91 0447)	Page 3 of 4	

- 800 MHz Radio Communications with the State/County
- Ringdown line to STP Coordinator and call forward to the State/County
- Security radio communications with the County

1.2.4 If the State/County ringdown line is out of service, then use outside telephone lines to notify the State and County at one of the following telephone numbers:

- State/DPS-Pierce
 - 9-1-979-543-6878

OR

- 9-1-979-532-1740
- Matagorda County Sheriff's Office
 - 9-1-979-245-5526

1.2.5 If outside telephone lines are out of service, then use the Control Room direct telephone line to Bay City to notify the State/County.

1.2.6 If the Control Room direct telephone line to Bay City is out of service, then use the microwave line (32-0) to Texas Genco LP and have the Operator/Security complete the telephone calls to the State/County.

1.2.7 If the microwave line is out of service, then use the 800 MHz Radio to communicate with the State/County.

1.2.8 If the 800 MHz Radio is out of service, then use the STP Coordinator (QSE) Ringdown line and forward the telephone call or information to the State/County.

1.2.9 If the STP Coordinator (QSE) Ringdown line is out of service, then use the Security radio to notify the County and request they forward the information to the State.

1.3 Health Physics Network (HPN)

1.3.1 The HPN is terminated on an FTS, 2001 telephone.

1.3.2 The HPN is to be used only at the request of the NRC.

	0ERP01-ZV-IN02	Rev. 17	Page 23 of 28
Notifications To Offsite Agencies			
Addendum 3	Emergency Communications (SPR 91 0447)		Page 4 of 4

- 1.3.4 If the outside telephone lines are out of service, then use the microwave line (32-0) to Texas Genco LP and have the Operator/Security complete the telephone call to the NRC/HPN.
- 1.3.5 If the HPN telephone line is out of service, then notify the NRC Operations Center. (IEN 89-19)
 - NOTIFY the NRC when the telephone set has been returned to service. (IEN 89-19)
- 1.3.6 The HPN telephone is designed to provide communications with the NRC Health Physics Section and/or other nuclear power plants during a declared emergency or drill/exercise. STPEGS health physics personnel MAY request a conference call with other nuclear power plants on the HPN by asking the NRC to connect the desired plant(s).

1.4 STP Coordinator (QSE) Ringdown line

- 1.4.1 The STP Coordinator (QSE) ringdown line is an automatic ringdown between the Co-owners and the plant.

1.5 800 MHz Radio

- 1.5.1 Press HOME on keypad to ensure channel 65 is on the LCD display. Channel 65 is monitored by the dispatcher.
- 1.5.2 If unnecessary traffic is coming over the radio, use MODE on the keypad until the prompt appears to put the radio to sleep. Entering 0 will put the unit to sleep. Pressing any button on the keypad will wake the unit up. Traffic will again be monitored.
- 1.5.3 To contact STP Coordinator, press STP Coordinator (QSE) on the keypad. Channel 65 should be displayed, and momentarily, the STP Coordinator will acknowledge the unit calling. The handset is a push to talk handset.
- 1.5.4 The 800 MHz has many additional capabilities, including, use as a radiotelephone. Contact the EOF Communications System Supervisor for additional instructions.

	0ERP01-ZV-IN02	Rev. 17	Page 24 of 28
Notifications To Offsite Agencies			
Addendum 4	Instructions for Operating Emergency Response Data Systems (ERDS)		Page 1 of 2

- 1.0 Emergency Response Data System (ERDS) Activation, Termination, and Error Handling Instructions:
- 2.0 Steps to Activate the ERDS from Integrated Computer System / Emergency Response Facility Data Acquisition Display System (ICS/ERFDADS) Main Menu:
 - 2.1 Click on the Menu UP Arrow (WDPF Main Menu)
 - 2.2 Select Custom Graphics
 - 2.3 Select Top Level Menu
 - 2.4 Select AF, AM, AP, BR, & CC DISPLAYS
 - 2.5 Select NRC Link Control
 - 2.6 Click in ACTIVATE Block to connect with the NRC ERDS Computer at the NRC Operations Center in Rockville, Maryland, via a dedicated telephone line.
 - 2.7 The dial-up should generally succeed within one minute, at which time the NRC Link Control screen will indicate ACTIVE and ONLINE and will begin counting GOOD CYCLES. Otherwise, the ICS/ERFDADS will automatically re-dial and attempt to connect with the NRC ERDS computer several additional times. If no connection is established within approximately five minutes, then NRC Link Control screen will indicate the link status via error messages. If more than five minutes elapses without a successful response, then site personnel should notify the NRC before terminating efforts to establish the ERDS data link.
 - 2.8 The display terminal may now be used for other purposes while the ERDS data continues to be transmitted to the NRC. Whenever the ERDS is active, it is suggested that NRC Link Control or NRC Link Status screen be used to monitor the status of the ERDS data link.
- 3.0 Steps to terminate the ERDS:
 - 3.1 If NRC Link Control screen is not present on an ICS/ERFDADS terminal, repeat the ERDS activation steps 2.1, 2.2, 2.3, 2.4, and 2.5.
 - 3.2 When NRC Link Control screen is present on the terminal CLICK in the TERMINATE Block. This action causes the ICS/ERFDADS to disconnect the telephone connection with the NRC ERDS computer in Rockville, Maryland.
 - 3.3 When the ERDS is terminated by STP, the NRC Link Control and NRC Link Status screens will show the message Terminated and the Link Status Block with the message OFFLINE. When STP terminates the ERDS, then 15 minutes must lapse before attempting to activate the ERDS again from the same STP Unit.

	0ERP01-ZV-IN02	Rev. 17	Page 25 of 28
Notifications To Offsite Agencies			
Addendum 4	Instructions For Operating Emergency Response Data Systems (ERDS)		Page 2 of 2

4.0 Steps to handle ERDS error conditions:

- 4.1 If an error condition occurs, then the error messages will be displayed on NRC Link Control and NRC Link Status screens. If an error condition occurs, then obtain a hardcopy of the error message using Print Screen.
- 4.2 When the ERDS is active and no errors are occurring, then displays NRC Link Control and NRC Link Status screens will tag the ERDS Messages block with the message Active, the Link Status block with the message Online, the Read Error block with the message OK, the Nonsensical error block with the message OK, and the Write Error block with the message OK.
- 4.3 If an attempt is made to activate the ERDS by STP and all telephone lines at NRC are busy, then displays NRC Link Control and NRC Link Status screens will tag the ERDS Messages block with the message NRC lines busy. Obtain a hardcopy of the display showing the NRC lines busy message and then follow the steps to terminate the ERDS. Periodically try again to activate the ERDS, producing a hardcopy of the display each time the NRC lines busy message is shown.
- 4.4 If an attempt is made to activate the ERDS by STP and NRC denies access to the ERDS computer system in Rockville, Maryland, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with the message Unaccepted by NRC. Obtain a hardcopy of the display showing the denied access by NRC message and then follow the steps to terminate the ERDS. Periodically try again to activate the ERDS, producing a hardcopy of the display each time the denied access by NRC message is shown.
- 4.5 NRC has the ability to terminate an active ERDS link. If NRC terminates such a link, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with the message Terminated by NRC and the Link Status block with the message Offline. Obtain a hardcopy the display showing the ERDS link termination by NRC.
- 4.6 If the ERDS link is active and the telephone line is disconnected, then the ICS/ERFDADS will automatically re-dial and attempt to reconnect with the NRC ERDS computer system. If the telephone line is disconnected, then displays NRC Link Control and NRC Link Status will tag the ERDS Messages block with either the message Active or with the message Modem trouble, the Link Status block with the message Offline, and the remainder of the status messages blocks with the message OK or the message TRBL.

If the ERFDADS is not able to reconnect with the NRC ERDS computer system, then hardcopy the displayed error messages and contact the ERFDADS System Engineer.

	0ERP01-ZV-IN02	Rev. 17	Page 26 of 28
Notifications To Offsite Agencies			
Addendum 5	Atmospheric Stability Classification	Page 1 of 1	

Stability Classification	Class	Delta T (60m-10m)°F	*Sigma-Theta
Extremely Unstable	A	< -1.7	≥ 22.5
Moderately Unstable	B	-1.71 TO -1.53	17.5 TO 22.5
Slightly Unstable	C	-1.52 TO -1.35	12.5 TO 17.5
Neutral	D	-1.34 TO -0.45	7.5 TO 12.5
Slightly Stable	E	-0.44 TO 1.35	3.8 TO 7.5
Moderately Stable	F	1.36 TO 3.60	2.1 TO 3.8
Extremely Stable	G	> 3.60	< 2.1

* Do not use Sigma-Theta if wind speed is less than 5 mph, use default Stability Class D.

	0ERP01-ZV-IN02	Rev. 17	Page 27 of 28
Notifications To Offsite Agencies			
Addendum 6	Suggested Wording for Event Description	Page 1 of 2	

NOTE

Obtain Initiating Condition alphanumeric designation from the Emergency Director. Match designation with list below and enter into item 8 of Data Sheet 1.

Fission Product Barrier Degradation

FU1	Loss or potential loss of Containment barrier
FA1	Loss or potential loss of Fuel Clad or Reactor Coolant System barrier
FS1	Loss or potential loss of two fission product barriers
FG1	Loss of two fission product barriers with potential loss or loss of the third barrier

System Malfunction

SU1	Loss of offsite power to safety systems. Multiple sources of emergency power are available.
SU2	Plant operation determined to be outside of plant safety specifications.
SU3	Unplanned loss of most Control Room safety system alarm indications.
SU4	Unplanned loss of all onsite or offsite communications capabilities.
SU5	Unplanned loss of safety related battery power causing difficulty monitoring plant conditions while shutdown.
SU6	Indication of degradation or potential loss of the Fuel Clad fission product barrier.
SU7	Indication of degradation of Reactor Coolant System fission product barrier.
SA1	Loss of all power to safety systems while the plant is shutdown and cooled down.
SA2	Reactor failed to automatically shutdown when required. Manual shutdown was successful.
SA3	Inability to maintain appropriate cooled down temperature while shutdown.
SA4	Difficulty monitoring changing plant conditions due to unplanned loss of most Control Room safety system alarm indications.
SA5	Electrical power to safety systems has degraded to a single source.
SA6	Indication of potential loss of the Fuel Clad fission product barrier.
SS1	Loss of all electrical power to safety systems.
SS2	Reactor failed to automatically shutdown when required. Initial attempts at manual shutdown were not successful.
SS3	Unplanned loss of safety related battery power compromising the ability to monitor and control plant safety functions.
SS4	Complete loss of systems required for plant cooldown.
SS5	Loss of water level in the Reactor Vessel that has or will uncover the fuel in the Reactor Vessel while the plant is shutdown and cooled down.
SS6	Inability to monitor changing plant conditions due to unplanned loss of most Control Room safety system alarm indications.
SG1	Prolonged loss of all electrical power to safety systems which will lead to a loss of all three fission product barriers unless restored.
SG2	All attempts to shutdown the reactor have been unsuccessful which may lead to loss of all three fission product barriers.

	0ERP01-ZV-IN02	Rev. 17	Page 28 of 28
Notifications To Offsite Agencies			
Addendum 6	Suggested Wording for Event Description	Page 2 of 2	

Abnormal Radiological Levels

RU1	Unplanned release to the environment of very low levels of radioactivity which exceed effluent limits and indicates a degradation in plant radiological controls.
RU2	Unexpected increase in plant radiation levels.
RA1	Unplanned release to the environment of low levels of radioactivity which significantly exceed effluent limits and indicates a substantial degradation in plant radiological controls.
RA2	Potential damage or damage to spent nuclear fuel outside of the Reactor Vessel.
RA3	Elevated plant radiation levels impede necessary access to plant operating stations.
RS1	Actual or projected radiological dose at the site boundary has reached a level which is equal to 10% of the dose which would prompt an offsite protective action recommendation.
RS2	An unexpected increase in containment radiation levels indicate a loss or potential loss of two fission product barriers.
RG1	Actual or projected radiological dose at the site boundary has reached a level which requires an offsite protective action recommendation.
RG2	An unexpected increase in containment radiation levels indicate a loss of two fission product barriers with potential loss or loss of third barrier.

Hazards and Other Conditions

HU1	Security event affecting normal operation of the plant.
HU2	(Fire or Explosion) in the (Protected Area or Switchyard) which affects normal plant operations.
HU3	(Toxic or Flammable) gasses are affecting normal plant operations.
HU4	(Describe destructive event) _____ is affecting normal plant operations.
HU5	Conditions exist, not specifically covered by the Station Emergency Plan, which are impacting normal plant operations and, in the judgment of the Emergency Director, warrants declaration of an Unusual Event.
HA1	Security event inside the Protected Area may potentially affect safe operation of the plant.
HA2	(Fire or Explosion) in a plant vital area may potentially affect safe operation of the plant.
HA3	(Toxic or Flammable) gasses may potentially affect safe operation of the plant.
HA4	(Describe destructive event) _____ may potentially affect safe operation of the plant.
HA5	Evacuation of Main Control Room. Plant controls established at Auxiliary Shutdown Panel.
HA6	Conditions exist, not specifically covered by the Station Emergency Plan, which may affect safe operation of the plant, and, in the judgment of the Emergency Director, warrants the declaration of an Alert.
HS1	Security event in a plant vital area which could affect safe shutdown.
HS2	Evacuation of Main Control Room and plant controls cannot be established.
HS3	Events affect the ability to shutdown the plant or maintain it in a safe shutdown condition.
HG1	Security event resulting in loss of ability to reach and maintain safe shutdown.
HG2	Conditions exist, not specifically covered by the Station Emergency Plan, which may potentially result in a hazard to the public, and in the judgment of the Emergency Director, warrants the declaration of a General Emergency.

STI 31662989	0ERP01-ZV-IN07	Rev. 9	Page 1 of 10
Offsite Protective Action Recommendations			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 10/16/03
Max Keys	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of Contents

	<u>Page</u>
1.0 Purpose and Scope.....	2
2.0 Definitions	2
3.0 Precautions and Limitations	3
4.0 Responsibilities	3
5.0 Procedure.....	4
6.0 References	5
7.0 Support Documents	5
Addendum 1, Initial Protective Action Recommendation Flowchart	6
Addendum 2, Core/Containment Status Table.....	7
Addendum 3, Radiological Release Table	8
Addendum 4, Protective Response Zones Map.....	9
Addendum 5, Protective Response Zones	10

	0ERP01-ZV-IN07	Rev. 9	Page 2 of 10
Offsite Protective Action Recommendations			

1.0 Purpose and Scope

- 1.1 This procedure provides instructions for determining Offsite Protective Action Recommendations (PARs) for the general public.
- 1.2 PARs may be based on any of the following:
 - 1.2.1 Declaration of a General Emergency.
 - 1.2.2 Projected and/or actual measured doses offsite exceeding the EPA Protective Action Guidelines of 1 REM TEDE or 5 REM Thyroid CDE.
- 1.3 No PARs are required for the Unusual Event, Alert or Site Area Emergency classification.
- 1.4 This procedure implements the requirements of the South Texas Project Electric Generating Station (STPEGS) Emergency Plan specific to PARs.

2.0 Definitions

- 2.1 **COMMITTED DOSE EQUIVALENT (CDE):** Total dose from internally deposited radionuclides over subsequent 50 year period to a specific organ.
- 2.2 **EXCLUSION AREA BOUNDARY:** An oval shape that is at least 1,430 meters (4,692 feet, 0.889 miles) from the center of either containment building, see Addendum 3 of procedure 0ERP01-ZV-IN01, Emergency Classification. The Site Boundary and Exclusion Area Boundary are considered the same for dose assessment purposes.
- 2.3 **PROTECTIVE ACTIONS:** Any action taken to avoid or reduce a projected radiological dose to the public.
- 2.4 **PROTECTIVE ACTION GUIDE (PAG):** The projected dose to reference man, or other defined individual, from an unplanned release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended.
- 2.5 **PROTECTIVE RESPONSE ZONES:** Designated areas that divide the ten mile Emergency Planning Zone (EPZ) by geographical boundaries, access roads and natural landmarks to facilitate evacuation of the public.
- 2.6 **RADIOLOGICAL RELEASE:** Any radiological release from the plant that exceeds the EAL limits established for an Unusual Event.
- 2.7 **SECTOR:** The emergency planning zone is divided into 16 sectors (22.5° each). Sectors are used to provide a visual representation of the location of the plume.
- 2.8 **TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE):** The sum of the deep dose equivalent (external exposure) and the committed effective dose equivalent (internal exposure).

	0ERP01-ZV-IN07	Rev. 9	Page 3 of 10
Offsite Protective Action Recommendations			

3.0 Precautions and Limitations

- 3.1 PAR development is expected to be made promptly following indications that conditions have exceeded Protective Action Guides (PAGs). PARs shall be developed and given to the Emergency Director within 15 minutes of initial indications.
- 3.2 The PARs determined by this procedure are to be issued to State and County agencies as RECOMMENDATIONS. State and County agencies are responsible for determining and implementing protective actions for the general public.
- 3.3 Offsite agency notifications and Protective Action Recommendations should not be delayed until a dose assessment can be completed. Follow-up notifications can address the results of dose assessments.
- 3.4 Upon declaration of a General Emergency, a PAR shall be issued. This recommendation shall accompany notification of the emergency declaration and shall be issued within 15 minutes of the declaration of the Emergency Classification.
- 3.5 Changes in wind direction, stability class, or increase in release rates may result in the need to revise PARs to include additional protective response zones.
- 3.6 Wind direction changes that only affect additional downwind sectors shall be communicated to the Bureau of Radiation Control (BRC).
- 3.7 Any change to a PAR shall be issued on 0ERP01-ZV-IN02, Data Sheet 1, Offsite Agency Notification Message Form within 15 minutes of approval of the revision by the Emergency Director.
- 3.8 Any recommendation to relax protective measures implemented for the public requires joint concurrence by the State of Texas, Matagorda County, and the NRC.
- 3.9 If PARs have been made beyond 10 miles, then wind direction changes that affect additional sectors may result in the need to revise PARs.

4.0 Responsibilities

- 4.1 The Emergency Director shall be responsible for implementation of this procedure and the approval and release of PARs to offsite agencies.
- 4.2 The Radiological Director shall be responsible for making PAR recommendations to the Emergency Director.
 - 4.2.1 If the Emergency Operations Facility is not activated and Command and Control is in the Technical Support Center, then the Radiological Manager is responsible for making Protective Action Recommendations to the Emergency Director.

	0ERP01-ZV-IN07	Rev. 9	Page 4 of 10
Offsite Protective Action Recommendations			

- 4.2.2 If neither the Technical Support Center nor the Emergency Operations Facility is activated, then the Acting Radiological Manager is responsible for making Protective Action Recommendations to the Emergency Director.

5.0 Procedure

- 5.1 Based on the judgement of the Radiological Director, Protective Action Recommendations are developed using the guidance provided in Addendum 2 or Addendum 3 and recommended to the Emergency Director.
- 5.2 Determine PARs at a General Emergency by one of the following methods:
- 5.2.1 IF a radiological release is in progress AND time does not permit the calculation and evaluation of downwind doses OR personnel are not available to complete these calculations, THEN determine the PAR using Addendum 1, Initial Protective Action Recommendation Flowchart.
- 5.2.2 IF a radiological release is NOT in progress, THEN determine the PAR using Addendum 2, Core/Containment Status Table.
- 5.2.3 IF a radiological release is in progress, THEN use Addendum 3, Radiological Release Table. Refer to 0ERP01-ZV-TP01, Offsite Dose Calculations, to determine projected downwind doses.
- Conditions presented in Addendum 3 are listed in order of preference based on available data.
 - Any single condition or combination of conditions may be used to determine the most appropriate PAR.
- 5.2.4 IF a PAR has been calculated and issued using Addendum 2, Core/Containment Status Table, and a radiological release begins, THEN determine PAR expansion using dose assessment or field monitoring results and Addendum 3, Radiological Release Table.
- 5.2.5 IF a PAR has been calculated and issued using dose assessment, and the radiological release is terminated, THEN determine PAR expansion using field monitoring results.
- 5.2.6 IF dose assessment results indicate PAGs are exceeded at 10 miles, THEN
- Verify dose projection with field team measurements.

	0ERP01-ZV-IN07	Rev. 9	Page 5 of 10
Offsite Protective Action Recommendations			

- If field team measurement supports the dose projection, then recommend to the Emergency Director that PARs be expanded to include the 10-mile radius and the downwind sectors greater than 10-miles in 2-mile increments until PAGs are not exceeded.

5.3 If weather conditions (such as frontal passage) are or would cause frequent revisions to the PAR due to downwind zone changes (frequently changing wind direction), then recommend protective actions affecting the entire radius.

5.4 Use Addendum 5, Protective Response Zones, and determine the affected zones and sectors. Use Addendum 4, Protective Response Zones Map, for a visual representation of PARs.

5.5 Provide PARs to the Emergency Director for approval and issuance.

6.0 References

6.1 STPEGS Emergency Plan

6.2 0ERP01-ZV-IN02, Notifications to Offsite Agencies

6.3 0ERP01-ZV-TP01, Offsite Dose Calculations

6.4 EPA 400, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

6.5 NUREG 0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

6.6 OPGP05-ZV-00004, Emergency Plan Implementing Procedure Users Guide

6.7 NEI 99-02, Revision 1, Regulatory Assessment Performance Guideline

7.0 Support Documents

7.1 Addendum 1, Initial Protective Action Recommendation Flowchart

7.2 Addendum 2, Core/Containment Status Table

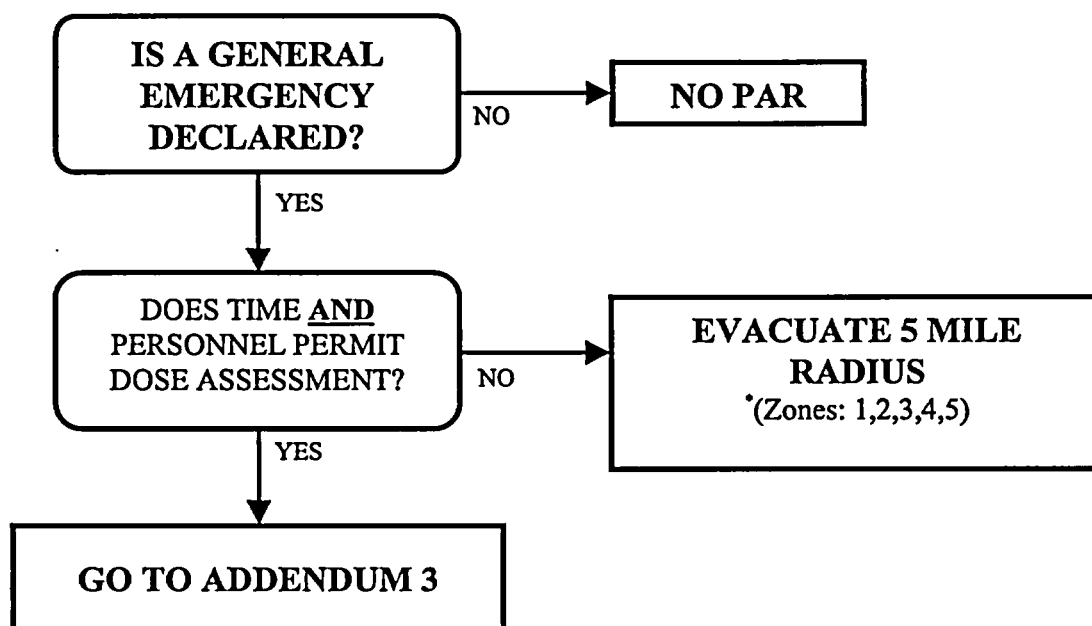
7.3 Addendum 3, Radiological Release Table

7.4 Addendum 4, Protective Response Zones Map

7.5 Addendum 5, Protective Response Zones

	0ERP01-ZV-IN07	Rev. 9	Page 6 of 10
Offsite Protective Action Recommendations			
Addendum 1	Initial Protective Action Recommendation Flowchart		Page 1 of 1

ENTRY REQUIREMENTS: A General Emergency AND a radiological release is in progress AND time does not permit the calculation and evaluation of downwind doses OR personnel are not available to complete these calculations.



*To select the appropriate downwind sectors, refer to Addendum 5, Protective Response Zones.

	0ERP01-ZV-IN07	Rev. 9	Page 7 of 10
Offsite Protective Action Recommendations			
Addendum 2	Core/Containment Status Table		Page 1 of 1

ENTRY REQUIREMENTS: General Emergency **AND** a radiological release is **NOT** in progress.

Containment High Range Radiation Monitor (Rt-8050, 8051)	^(a) Hatch Monitor	Containment Pressure	^(b) Evacuation Protective Action Recommendations
Less Than 200 R/hr	Less Than 444 mR/hr	N/A	2 Mile Radius (Zone: 1)
200 R/hr to 1,000 R/hr	444 mR/hr to 2,222 mR/hr	< 5 psig	2 Mile Radius & 5 Miles Downwind
		≥ 5 psig	5 Mile Radius (Zones: 1,2,3,4,5)
Greater Than 1,000 R/hr	Greater Than 2,222 mR/hr	< 5 psig	5 Mile Radius & 10 Miles Downwind
		≥ 5 psig	10 Mile Radius (Zones: 1,2,3,4,5,6,7,8,9,10,11)

^(a) If the Containment High Range Radiation Monitors (RT-8050 and RT-8051) are out of service then use the Hatch Monitor.

^(b) To select the appropriate downwind evacuation zones and sectors refer to Addendum 5, Protective Response Zones.

NOTE: Evaluated using Revision 7.0 of the STAMPEDE code. The evaluation involved running a series of calculations and comparing the offsite doses to the PAGs at 1, 5, and 10 miles. The gap inventory existing about 1 hour after reactor shutdown was assumed to best represent the nuclide mix. STAMPEDE defaults were assumed for the meteorology. The "containment leakage" method was used to calculate the release rate because this method allows the entry of both the containment pressure indications and the containment exposure rate measured by the RT8050 or RT8051 radiation monitors. (see CR 01-1243-1)

	0ERP01-ZV-IN07	Rev. 9	Page 8 of 10
Offsite Protective Action Recommendations			
Addendum 3	Radiological Release Table		Page 1 of 1

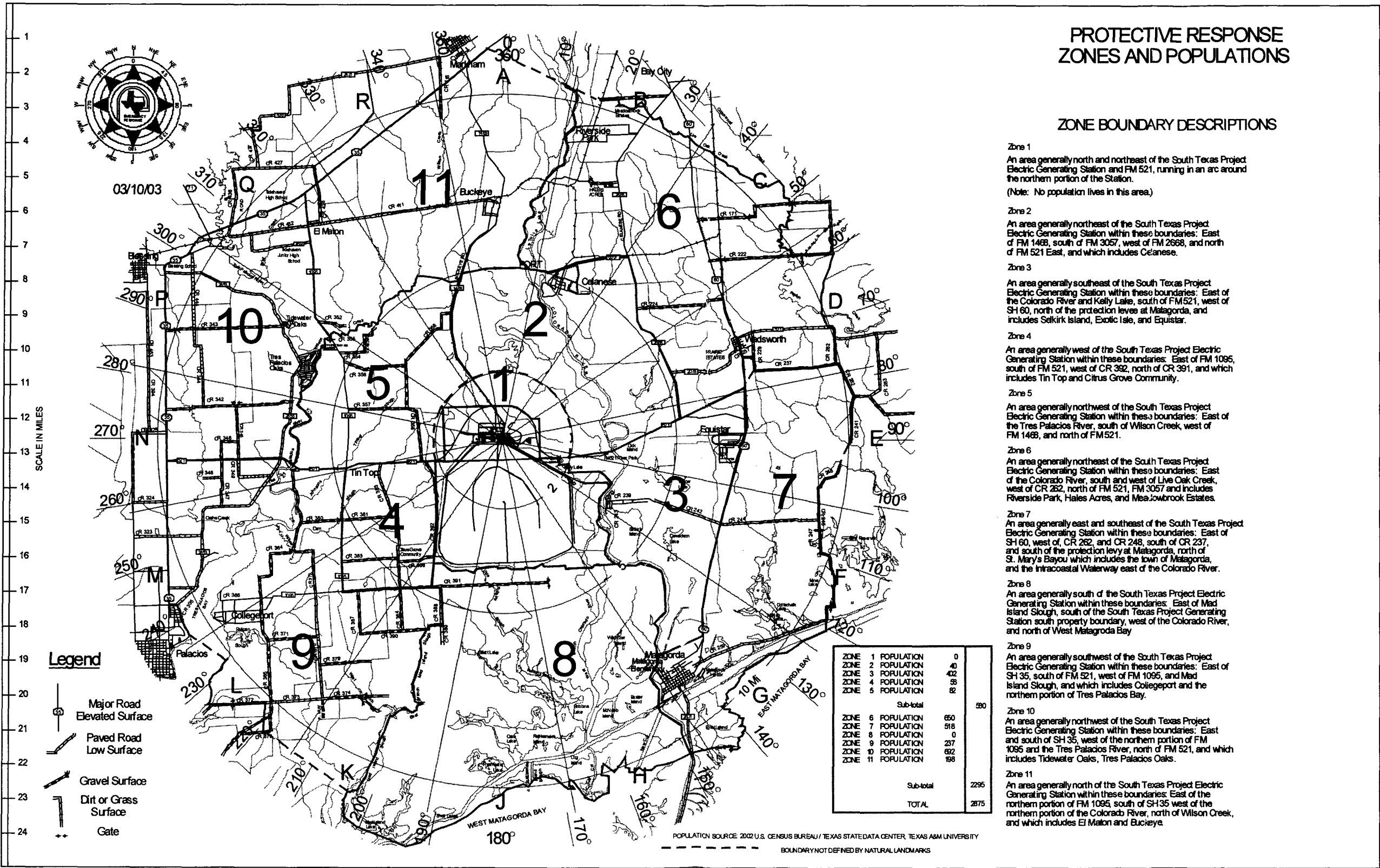
ENTRY REQUIREMENTS: General Emergency WITH a radiological release in progress. The below List is in order of preference based on available data.

CONDITION	PROTECTIVE ACTION
	EVACUATE
I. <u>PROJECTED DOSES</u> (For Short Duration Puffs only < 30 min) a. Projected doses < PAG (1 rem TEDE or 5 rem Thyroid CDE) b. Projected doses ≥ PAG (1 rem TEDE or 5 rem Thyroid CDE)	a. Two mile radius b. Two mile radius and zones in any sector projected to exceed PAG
II. <u>PROJECTED DOSES BEYOND EXCLUSION AREA BOUNDARY</u> a. Projected doses < PAG (1 rem TEDE or 5 rem Thyroid CDE) b. Projected doses ≥ PAG 1-5 miles (1 rem TEDE or 5 rem Thyroid CDE) c. Projected doses ≥ PAG 5-10 miles (1 rem TEDE or 5 rem Thyroid CDE) d. Projected doses ≥ PAG at greater than 10-miles and dose projection is supported by field team measurements (1 rem TEDE or 5 rem Thyroid CDE)	a. Two mile radius b. Two mile radius and zones in affected downwind sectors to 5 miles c. Five mile radius and zones in affected downwind sectors to 10 miles d. Ten mile radius and affected downwind sectors in 2-mile increments until PAG is not exceeded.
III. <u>DOSE RATES MEASURED AT PLUME CENTERLINE ON EXCLUSION AREA BOUNDARY</u> a. <100 mR/hr b. 100 mR/hr to 1,000 mR/hr c. >1,000 mR/hr	a. Two mile radius b. Two mile radius and zones in affected downwind sectors to 5 miles c. Five mile radius and zones in affected downwind sectors to 10 miles
IV. <u>RELEASE RATES</u> a. ≥ EAL for General Emergency	a. Five mile radius and zones in affected downwind sectors to 10 miles
V. <u>DEFAULT VALUES</u> (Addendum 1) a. General Emergency	a. Five mile radius

To select the appropriate evacuation zones and downwind sectors, refer to Addendum 5, Protective Response Zones.

Offsite Protective Action Recommendations

Protective Response Zones Map



	0ERP01-ZV-IN07	Rev. 9	Page 10 of 10
Offsite Protective Action Recommendations			
Addendum 5	Protective Response Zones		Page 1 of 1

AFFECTED ZONES: Determine affected sectors and protective response zones and enter onto 0ERP01-ZV-IN02, Data Sheet 1, Offsite Agency Notification Message Form.

TWO MILE RADIUS: Protective Response Zone: 1

FIVE MILE RADIUS: Protective Response Zones: 1, 2, 3, 4, 5

TEN MILE RADIUS: Protective Response Zones: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

WIND DIRECTION FROM IS BETWEEN	AFFECTED DOWNWIND SECTORS	PROTECTIVE RESPONSE ZONE KEY HOLE	
		2 Mile Radius & 5 Miles Downwind	5 Mile Radius & 10 Miles Downwind
164° to 174°	Q, R, A, B	1, 2, 5	1, 2, 3, 4, 5, 6, 10, 11
175° to 185°	R, A, B	1, 2	1, 2, 3, 4, 5, 6, 11
186° to 196°	R, A, B, C	1, 2	1, 2, 3, 4, 5, 6, 11
197° to 208°	A, B, C	1, 2	1, 2, 3, 4, 5, 6, 11
209° to 219°	A, B, C, D	1, 2	1, 2, 3, 4, 5, 6, 11
220° to 230°	B, C, D	1, 2	1, 2, 3, 4, 5, 6
231° to 241°	B, C, D, E	1, 2, 3	1, 2, 3, 4, 5, 6, 7
242° to 253°	C, D, E	1, 2, 3	1, 2, 3, 4, 5, 6, 7
254° to 264°	C, D, E, F	1, 2, 3	1, 2, 3, 4, 5, 6, 7
265° to 275°	D, E, F	1, 2, 3	1, 2, 3, 4, 5, 6, 7
276° to 286°	D, E, F, G	1, 2, 3	1, 2, 3, 4, 5, 6, 7
287° to 298°	E, F, G	1, 3	1, 2, 3, 4, 5, 7
299° to 309°	E, F, G, H	1, 3	1, 2, 3, 4, 5, 7, 8
310° to 320°	F, G, H	1, 3	1, 2, 3, 4, 5, 7, 8
321° to 331°	F, G, H, J	1, 3	1, 2, 3, 4, 5, 7, 8
332° to 343°	G, H, J	1	1, 2, 3, 4, 5, 7, 8
344° to 354°	G, H, J, K	1	1, 2, 3, 4, 5, 7, 8, 9
355° to 5°	H, J, K	1	1, 2, 3, 4, 5, 8, 9
6° to 16°	H, J, K, L	1	1, 2, 3, 4, 5, 8, 9
17° to 28°	J, K, L	1	1, 2, 3, 4, 5, 8, 9
29° to 39°	J, K, L, M	1, 4	1, 2, 3, 4, 5, 8, 9
40° to 50°	K, L, M	1, 4	1, 2, 3, 4, 5, 8, 9
51° to 61°	K, L, M, N	1, 4, 5	1, 2, 3, 4, 5, 8, 9, 10
62° to 73°	L, M, N	1, 4, 5	1, 2, 3, 4, 5, 9, 10
74° to 84°	L, M, N, P	1, 4, 5	1, 2, 3, 4, 5, 9, 10
85° to 95°	M, N, P	1, 4, 5	1, 2, 3, 4, 5, 9, 10
96° to 106°	M, N, P, Q	1, 4, 5	1, 2, 3, 4, 5, 9, 10, 11
107° to 118°	N, P, Q	1, 5	1, 2, 3, 4, 5, 9, 10, 11
119° to 129°	N, P, Q, R	1, 5	1, 2, 3, 4, 5, 9, 10, 11
130° to 140°	P, Q, R	1, 5	1, 2, 3, 4, 5, 10, 11
141° to 151°	P, Q, R, A	1, 2, 5	1, 2, 3, 4, 5, 10, 11
152° to 163°	Q, R, A	1, 2, 5	1, 2, 3, 4, 5, 10, 11

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

D0527

STI 31662990	0ERP01-ZV-SH01	Rev. 18	Page 1 of 34
Shift Supervisor			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 10/16/03
Max Keyes	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of ContentsPage

1.0	Purpose and Scope.....	2
2.0	Responsibilities	2
3.0	References	3
4.0	Procedure.....	3
5.0	Support Documents	5
	Addendum 1, Protective Action Recommendation Flowchart.....	6
	Addendum 2, Core/Containment Status Table.....	7
	Addendum 3, Radiological Release Table	8
	Addendum 4, Protective Response Zones	9
	Data Sheet 1, Unusual Event Checklist.....	10
	Data Sheet 2, Alert Checklist	16
	Data Sheet 3, Site Area Emergency Checklist.....	22
	Data Sheet 4, General Emergency Checklist.....	28
	Data Sheet 5, Termination Checklist.....	34

	0ERP01-ZV-SH01	Rev. 18	Page 2 of 34
Shift Supervisor			

1.0 Purpose and Scope

- 1.1 This procedure specifies the actions to be completed by the Shift Supervisor in the Control Room during a declared emergency.

2.0 Responsibilities

- 2.1 The Shift Supervisor of the affected Unit is responsible for:

- 2.1.1 Recognizing, classifying and declaring the emergency.
- 2.1.2 Assuming the responsibilities and authorities of the Emergency Director until relieved by the TSC Manager or EOF Director.
- 2.1.3 Completing notifications and Protective Action Recommendations (PARs) to offsite agencies until relieved of Emergency Director responsibility and authority.
- 2.1.4 Directing initial onsite emergency response activities.
- 2.1.5 Monitoring plant conditions for changes in emergency action levels (EALs) and emergency classification.
- 2.1.6 Directing Control Room response to mitigate the emergency condition.
- 2.1.7 Approving departures from license conditions per 10CFR50.54(x) for Control Room Operator actions and equipment manipulations.
- 2.1.8 Directing notification of the Emergency Response Organization (ERO), until relieved of Emergency Director responsibility and authority.
- 2.1.9 Approving, or delegating approval of, press releases prior to issuance until relieved of Emergency Director responsibility and authority.

- 2.2 The Shift Supervisor of the unaffected Unit is responsible for:

- 2.2.1 Assuming the responsibilities and authority of Emergency Director if the Shift Supervisor of the affected Unit is unable to assume or continue to perform the duties of the Emergency Director.

- 2.3 The Unit 1 Shift Supervisor is responsible for:

- 2.3.1 Assuming the responsibilities and authorities of Emergency Director for events common to both Units.

	0ERP01-ZV-SH01	Rev. 18	Page 3 of 34
Shift Supervisor			

3.0 References

- 3.1 STPEGS Emergency Plan
- 3.2 0ERP01-ZV-IN01, Emergency Classification
- 3.3 0ERP01-ZV-IN02, Notifications to Offsite Agencies
- 3.4 0ERP01-ZV-IN03, Emergency Response Organization Notification
- 3.5 0ERP01-ZV-IN04, Assembly and Accountability
- 3.6 0ERP01-ZV-IN05, Site Evacuation
- 3.7 0ERP01-ZV-TS01, TSC Manager
- 3.8 0ERP01-ZV-RE02, Documentation
- 3.9 0POP04-ZO-0004, Personnel Emergencies
- 3.10 0POP02-HE-0002, Technical Support Center HVAC System
- 3.11 0PGP09-ZA-0002, Fitness for Duty Program
- 3.12 0ERP01-ZV-TP03, Severe Accident Management
- 3.13 NRC Inspection Report 90-10-03 (LCTS #9000789-936)
- 3.14 0PGP05-ZV-0004, Emergency Plan Implementing Procedure Users Guide

4.0 Procedure

- 4.1 If an Unusual Event or higher emergency classification is declared, implement the appropriate Data Sheet (1, 2, 3, or 4) based on the emergency classification declared. Use these Data Sheets to direct emergency activities.
- 4.2 If the emergency classification changes, then terminate completion of the current Data Sheet and initiate a new Data Sheet (2, 3, 4, or 5) based on the new emergency classification.
- 4.3 Request a licensed Reactor Operator from the unaffected Unit (if available) be dispatched to assist.
- 4.4 Consider restricting hand held radio transmissions during security events that include explosive or electronic controlled devices.

	0ERP01-ZV-SH01	Rev. 18	Page 4 of 34
Shift Supervisor			

- 4.5 Assume the responsibilities and authorities of the Emergency Director. The Emergency Director is responsible for making certain key decisions and ensuring their implementation. The responsibilities which CANNOT be delegated include:
 - 4.5.1 Declaring a new emergency classification.
 - 4.5.2 Approving Protective Action Recommendations (PARs) issued to State and County authorities.
 - 4.5.3 Approving required notifications to the State and County.
 - 4.5.4 Approving exposures in excess of 10CFR20 limits and authorizing the use of Potassium Iodide (KI).
 - 4.5.5 Approving departure from license conditions per 10CFR50.54(x).
 - 4.5.6 Declaring entry into Severe Accident Management Guidelines.
- 4.6 The following Emergency Director responsibilities and authorities MAY be delegated:
 - 4.6.1 Requesting federal assistance.
 - 4.6.2 Approving press releases prior to issuance.
 - 4.6.3 Approving commitments to the NRC.
 - 4.6.4 Approving required communications with the NRC.
- 4.7 Upon arrival of the TSC Manager or EOF Director, provide a turnover briefing per 0ERP01-ZV-TS01, Data Sheet 2, Emergency Director Turnover Briefing.
- 4.8 When Emergency Director responsibilities have been transferred to the TSC Manager or EOF Director, then the Shift Supervisor shall perform the following:
 - 4.8.1 Keep the Emergency Director informed of any plant conditions which could change the EAL or PARs.
 - 4.8.2 Provide ongoing assessment and interface with the Operations Manager, including recommending priorities for repair activities.
 - 4.8.3 Approve departure from license conditions per 10CFR50.54(x) for Control Room Operator actions and equipment manipulations.

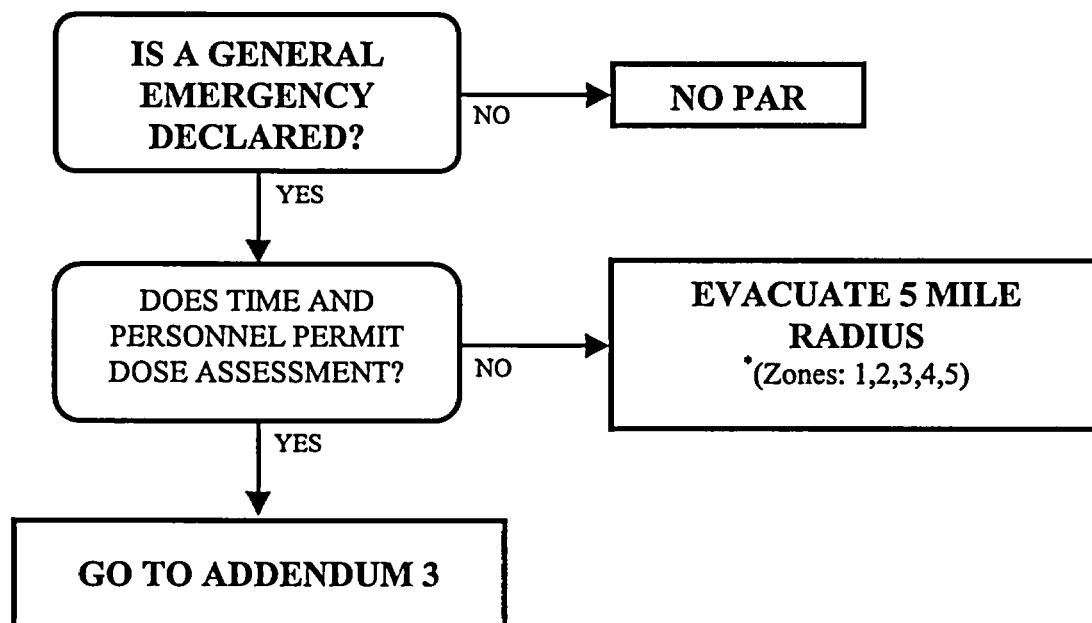
	0ERP01-ZV-SH01	Rev. 18	Page 5 of 34
Shift Supervisor			

5.0 Support Documents

- 5.1 Addendum 1, Protective Action Recommendation Flowchart
- 5.2 Addendum 2, Core/Containment Status Table
- 5.3 Addendum 3, Protective Response Sectors
- 5.4 Data Sheet 1, Unusual Event Checklist
- 5.5 Data Sheet 2, Alert Checklist
- 5.6 Data Sheet 3, Site Area Emergency Checklist
- 5.7 Data Sheet 4, General Emergency Checklist
- 5.8 Data Sheet 5, Termination Checklist

	0ERP01-ZV-SH01	Rev. 18	Page 6 of 34
Shift Supervisor			
Addendum 1	Protective Action Recommendation Flowchart		Page 1 of 1

ENTRY REQUIREMENTS: A General Emergency AND a radiological release is in progress AND time does not permit the calculation and evaluation of downwind doses OR personnel are not available to complete these calculations.



*To select the appropriate downwind sectors, refer to Addendum 4, Protective Response Zones.

	0ERP01-ZV-SH01	Rev. 18	Page 7 of 34
Shift Supervisor			
Addendum 2	Core/Containment Status Table		Page 1 of 1

ENTRY REQUIREMENTS: General Emergency **AND** a radiological release is **NOT** in progress.

Containment High Range Radiation Monitor (Rt-8050, 8051)	^(a)Hatch Monitor	Containment Pressure	^(b)Evacuation Protective Action Recommendations
Less Than 200 R/hr	Less Than 444 mR/hr	N/A	2 Mile Radius (Zone: 1)
200 R/hr to 1,000 R/hr	444 mR/hr to 2,222 mR/hr	< 5 psig	2 Mile Radius & 5 Miles Downwind
		≥ 5 psig	5 Mile Radius (Zones: 1,2,3,4,5)
Greater Than 1,000 R/hr	Greater Than 2,222 mR/hr	< 5 psig	5 Mile Radius & 10 Miles Downwind
		≥ 5 psig	10 Mile Radius (Zones: 1,2,3,4,5,6,7,8,9,10,11)

^(a) If the Containment High Range Radiation Monitors (RT-8050 and RT-8051) are out of service then use the Hatch Monitor.

^(b) To select the appropriate downwind evacuation zones and sectors refer to Addendum 4, Protective Response Zones.

NOTE: Assumptions used in the calculation of this table are in procedure 0ERP01-ZV-IN07, Offsite Protective Action Recommendations, Addendum 2.

	0ERP01-ZV-SH01	Rev. 18	Page 8 of 34
Shift Supervisor			
Addendum 3	Radiological Release Table		Page 1 of 1

ENTRY REQUIREMENTS: General Emergency **WITH** a radiological release in progress.
(The below List is in order of preference based on available data)

CONDITION	PROTECTIVE ACTION
	EVACUATE
I. <u>PROJECTED DOSES</u> (For Short Duration Puffs only < 30 min) a. Projected doses < PAG (1 rem TEDE or 5 rem Thyroid CDE) b. Projected doses \geq PAG (1 rem TEDE or 5 rem Thyroid CDE)	a. Two mile radius b. Two mile radius and zones in any sector projected to exceed PAG
II. <u>PROJECTED DOSES BEYOND EXCLUSION AREA BOUNDARY</u> a. Projected doses < PAG (1 rem TEDE or 5 rem Thyroid CDE) b. Projected doses \geq PAG 0-5 miles (1 rem TEDE or 5 rem Thyroid CDE) c. Projected doses \geq PAG 5-10 miles (1 rem TEDE or 5 rem Thyroid CDE) d. Projected doses \geq PAG at greater than 10-miles and dose projection is supported by field team measurements (1 rem TEDE or 5 rem Thyroid CDE)	a. Two mile radius b. Two mile radius and zones in affected downwind sectors to 5 miles c. Five mile radius and zones in affected downwind sectors to 10 miles d. Ten mile radius and affected downwind sectors in 2-mile increments until PAG is not exceeded.
III. <u>DOSE RATES MEASURED AT PLUME CENTERLINE ON EXCLUSION AREA BOUNDARY</u> a. <100 mR/hr b. 100 mR/hr to 1000 mR/hr c. >1000 mR/hr	a. Two mile radius b. Two mile radius and zones in affected downwind sectors to 5 miles c. Five mile radius and zones in affected downwind sectors to 10 miles
IV. <u>RELEASE RATES</u> a. \geq EAL for General Emergency	a. Five mile radius and zones in affected downwind sectors to 10 miles
V. <u>DEFAULT VALUES</u> (Addendum 1) a. General Emergency	a. Five mile radius

To select the appropriate evacuation zones and downwind sectors refer to Addendum 4, Protective Response Zones.

	0ERP01-ZV-SH01	Rev. 18	Page 9 of 34
Shift Supervisor			
Addendum 4	Protective Response Zones		Page 1 of 1

AFFECTED ZONES: Determine affected sectors and protective response zones and enter onto 0ERP01-ZV-IN02, Data Sheet 1, Offsite Agency Notification Message Form.

TWO MILE RADIUS: Protective Response Zone: 1

FIVE MILE RADIUS: Protective Response Zones: 1, 2, 3, 4 & 5

TEN MILE RADIUS: Protective Response Zones: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11

WIND DIRECTION FROM(°)	AFFECTED DOWNWIND SECTORS	PROTECTIVE RESPONSE ZONE KEY HOLE	
		2 Mile Radius & 5 Miles Downwind	5 Mile Radius & 10 Miles Downwind
164-174	Q, R, A, B	1, 2, 5	1, 2, 3, 4, 5, 6, 10, 11
175-185	R, A, B	1, 2	1, 2, 3, 4, 5, 6, 11
186-196	R, A, B, C	1, 2	1, 2, 3, 4, 5, 6, 11
197-208	A, B, C	1, 2	1, 2, 3, 4, 5, 6, 11
209-219	A, B, C, D	1, 2	1, 2, 3, 4, 5, 6, 11
220-230	B, C, D	1, 2	1, 2, 3, 4, 5, 6
231-241	B, C, D, E	1, 2, 3	1, 2, 3, 4, 5, 6, 7
242-253	C, D, E	1, 2, 3	1, 2, 3, 4, 5, 6, 7
254-264	C, D, E, F	1, 2, 3	1, 2, 3, 4, 5, 6, 7
265-275	D, E, F	1, 2, 3	1, 2, 3, 4, 5, 6, 7
276-286	D, E, F, G	1, 2, 3	1, 2, 3, 4, 5, 6, 7
287-298	E, F, G	1, 3	1, 2, 3, 4, 5, 7
299-309	E, F, G, H	1, 3	1, 2, 3, 4, 5, 7, 8
310-320	F, G, H	1, 3	1, 2, 3, 4, 5, 7, 8
321-331	F, G, H, J	1, 3	1, 2, 3, 4, 5, 7, 8
332-343	G, H, J	1	1, 2, 3, 4, 5, 7, 8
344-354	G, H, J, K	1	1, 2, 3, 4, 5, 7, 8, 9
355-5	H, J, K	1	1, 2, 3, 4, 5, 8, 9
6-16	H, J, K, L	1	1, 2, 3, 4, 5, 8, 9
17-28	J, K, L	1	1, 2, 3, 4, 5, 8, 9
29-39	J, K, L, M	1, 4	1, 2, 3, 4, 5, 8, 9
40-50	K, L, M	1, 4	1, 2, 3, 4, 5, 8, 9
51-61	K, L, M, N	1, 4, 5	1, 2, 3, 4, 5, 8, 9, 10
62-73	L, M, N	1, 4, 5	1, 2, 3, 4, 5, 9, 10
74-84	L, M, N, P	1, 4, 5	1, 2, 3, 4, 5, 9, 10
85-95	M, N, P	1, 4, 5	1, 2, 3, 4, 5, 9, 10
96-106	M, N, P, Q	1, 4, 5	1, 2, 3, 4, 5, 9, 10, 11
107-118	N, P, Q	1, 5	1, 2, 3, 4, 5, 9, 10, 11
119-129	N, P, Q, R	1, 5	1, 2, 3, 4, 5, 9, 10, 11
130-140	P, Q, R	1, 5	1, 2, 3, 4, 5, 10, 11
141-151	P, Q, R, A	1, 2, 5	1, 2, 3, 4, 5, 10, 11
152-163	Q, R, A	1, 2, 5	1, 2, 3, 4, 5, 10, 11

	0ERP01-ZV-SH01	Rev. 18	Page 10 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 1 of 6

(Name)	(Date)	(Unit)
Action		Time

1.0 INITIAL ACTIONS

- 1.1 Announce to Control Room personnel the declaration of an **Unusual Event** and the assumption of Emergency Director responsibilities by the Shift Supervisor.
- 1.2 Ensure the following announcement (or similar announcement) is made over the public address system using the **Unit Override** button:

CAUTION

Public Address Announcements may be changed or delayed due to the following conditions:
Severe weather conditions which could threaten safe transport, a significant radiological hazard which could be encountered, a security threat occurring which could have an adverse impact on personnel moving around or leaving the site.

(READ SLOWLY) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. AN UNUSUAL EVENT HAS BEEN DECLARED IN UNIT(S) _____. ALL PERSONNEL SHOULD CONTINUE WITH THEIR NORMAL DUTIES UNLESS ASSIGNED EMERGENCY RESPONSE ACTIONS FOR AN UNUSUAL EVENT." (Optional: Give brief description of the event).

- 1.3 Direct the Control Room Communicators or available personnel to complete the required notifications as described in 0ERP01-ZV-IN02, Notifications to Offsite Agencies.

	0ERP01-ZV-SH01	Rev. 18	Page 11 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 2 of 6

Action		Time
<ul style="list-style-type: none"> • No PARs are required for an Unusual Event. • State/County shall be contacted within 15 minutes of declaration of the Unusual Event to make emergency notifications. • NRC notification shall be made immediately upon completion of State/County notification and no later than one hour after declaring the Unusual Event. If more than one Communicator is available, NRC notification may be made concurrently with State/County notification. 		
1.4	As appropriate, upon the Onsite Communicator arrival, direct him/her to complete asterisked steps of this Checklist.	_____
* 1.5	Contact the Duty Operations Manager and brief him/her on the situation.	_____
* 1.6	Contact the Duty Plant Manager and brief him/her on the situation.	_____
* 1.7	Contact the STP Coordinator (QSE) and advise him/her of the nature of the emergency.	_____
* 1.8	Contact the Alarm Station Operator at extension 6042 to verify Emergency Notification and Response System (ENRS) activation.	_____
* 1.9	If ENRS fails, then direct the Onsite Communicator to notify select management personnel listed in the Onsite Communicator Position Manual.	_____

	0ERP01-ZV-SH01	Rev. 18	Page 12 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 3 of 6

Action		Time
*	1.10 Ensure that the following on-shift personnel have responded to their emergency duty station or have contacted the Control Room and are available to respond if needed:	
	<ul style="list-style-type: none"> Onsite Communicator (Control Room) State/County Communicator (Control Room) ENS Communicator (Control Room) Acting Radiological Manager Shift Technical Advisor (Control Room) Acting OSC Coordinator Acting Security Manager 	
	1.11 If early staffing of the Emergency Response Facilities is desirable, then contact the Alarm Station Operator at extension 6042 and request ENRS activation for Staffing ERO Facilities.	
	1.12 If any of the following conditions exist, then consider establishing the OSC in accordance with procedure 0ERP01-ZV-IN03, Emergency Response Organization Notification, Form 1, Amplifying Information:	
	<ul style="list-style-type: none"> In-plant radiological conditions are deteriorating; Search and rescue efforts are necessary; Security threat is in progress; Offsite chemical plant release occurs which may impact site operations; Vital equipment in the plant is in a degraded condition; Shift Supervisor judgment. 	

	0ERP01-ZV-SH01	Rev. 18	Page 13 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 4 of 6

Action		Time
2.0 SPECIAL ACTIONS		
2.1	Consider restricting hand held radio transmissions during security events that include explosive or electronic controlled devices.	LOG
2.2	Early Dismissal of Non-Essential Personnel	
2.2.1	Consider early dismissal of non-essential personnel for the following conditions:	
	<ul style="list-style-type: none"> The event is declared due to radiological problems and the condition could worsen. A Security event is in progress and removal of personnel from the site would facilitate the ability of Security to respond. Notification of severe weather has been received which could impact the safety of personnel onsite. Notification of an incident at a nearby chemical facility has been received that could impact the site. An orderly shutdown of activities and movement of personnel offsite is warranted. A situation which has a significant potential to develop into unsafe or hazardous conditions onsite exists. 	
2.2.2	Discuss with the Duty Operations Manager the advisability of conducting early dismissal.	
2.2.3	If early dismissal of non-essential personnel in the Protected Area is determined appropriate, then make the following announcement:	

	0ERP01-ZV-SH01	Rev. 18	Page 14 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 5 of 6

Action		Time
*	(READ SLOWLY) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. THE EMERGENCY DIRECTOR HAS ORDERED THE EARLY DISMISSAL OF ALL NON-ESSENTIAL PERSONNEL. ALL MEMBERS OF THE EMERGENCY RESPONSE ORGANIZATION REPORT TO YOUR FACILITIES. ALL NON-ESSENTIAL PERSONNEL SHALL SECURE THEIR WORK AREA, INFORM THEIR SUPERVISOR OF JOB STATUS, AND EXIT THE SITE UNLESS DIRECTED OTHERWISE BY SUPERVISION. MONITOR LOCAL RADIO BROADCASTS FOR ADDITIONAL INFORMATION."	
*	2.2.4 If early dismissal of non-essential personnel in the Owner Controlled Area is determined appropriate, then contact the Security Force Supervisor (Acting Security Manager) and request notification of personnel in the Owner Controlled Area.	
2.3	Assembly and Accountability	
2.3.1	Implement 0ERP01-ZV-IN04, Assembly and Accountability.	
2.3.2	If the OSC has been activated, then instruct Plant Operators that have not been assigned tasks to proceed to the OSC for accountability and remain there to support OSC operations.	
2.3.3	If persons are determined to be missing as a result of performing Assembly and Accountability, then contact the Duty Maintenance Supervisor (Acting OSC Coordinator) and provide names and last known locations of the missing persons. Direct the Duty Maintenance Supervisor (Acting OSC Coordinator) to form and dispatch Search and Rescue teams.	
2.4	Site Evacuation	
2.4.1	Implement 0ERP01-ZV-IN05, Site Evacuation.	
2.5	Personnel Emergencies	
2.5.1	Implement 0POP04-ZO-0004, Personnel Emergencies.	LOG

	0ERP01-ZV-SH01	Rev. 18	Page 15 of 34
Shift Supervisor			
Data Sheet 1	Unusual Event Checklist		Page 6 of 6

Action		Time
2.6	Potential for Radiological Release Occurring or Imminent	
2.6.1	Place the affected Unit's TSC HVAC System in emergency/isolation mode or verify automatic transfer has occurred using 0POP02-HE-0002, TSC HVAC System.	_____
*	2.6.2 Contact unaffected Unit's Shift Supervisor and recommend placing the unaffected Unit's TSC HVAC in emergency/isolation mode.	_____
2.7	Toxic Gas/Chemical Release from Nearby Chemical Facilities	
2.7.1	If time permits, then initiate 0ERP01-ZV-IN04, Assembly and Accountability and 0ERP01-ZV-IN05, Site Evacuation.	_____
*	2.7.2 Otherwise, announce over the public address system for all personnel to seek shelter in buildings and turn off ventilation systems. Direct the Security Force Supervisor (Acting Security Manager) to warn personnel outside the Protected Area.	_____
3.0	ONGOING ACTIONS	
3.1	Continuously assess plant conditions against 0ERP01-ZV-IN01, Emergency Classification, to determine if changes to the current emergency classification are warranted.	LOG _____
3.2	Evaluate the need for continued staffing of ERO positions and release unnecessary personnel to return to normal duties.	LOG _____
3.3	Review and approve press releases as applicable.	LOG _____
	• Maintain an Emergency Action Log.	

	0ERP01-ZV-SH01	Rev. 18	Page 16 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 1 of 6

(Name)	(Date)	(Unit)
Action		Time

1.0 INITIAL ACTIONS

1.1 Announce to Control Room personnel the declaration of an Alert and the continuation (or assumption) of Emergency Director responsibilities by the Shift Supervisor.

1.2 Ensure the following announcement (or similar announcement) is made over the public address system using the **Unit Override** button:

CAUTION

Public Address Announcements may be changed or delayed due to the following conditions:
Severe weather conditions which could threaten safe transport, a significant radiological hazard which could be encountered, a security threat occurring which could have an adverse impact on personnel moving around or leaving the site.

(READ SLOWLY) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. AN ALERT HAS BEEN DECLARED IN UNIT(S) _____. ALL DESIGNATED MEMBERS OF THE EMERGENCY RESPONSE ORGANIZATION REPORT TO YOUR FACILITY. ALL OTHER PERSONNEL ARE TO CONTINUE WITH THEIR NORMAL DUTIES UNLESS FURTHER INSTRUCTIONS ARE GIVEN." (Optional: Give brief description of the event.)

	0ERP01-ZV-SH01	Rev. 18	Page 17 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 2 of 6

Action	Time
<p>1.3 Direct the Control Room Communicators or available personnel to complete the required notifications as described in 0ERP01-ZV-IN02, Notifications to Offsite Agencies.</p> <p>_____</p> <ul style="list-style-type: none"> • No PARs are required for an Alert. • State/County shall be contacted within 15 minutes of the declaration of the Alert to make emergency notifications. • NRC notification shall be made immediately upon completion of State/County notification and not later than one hour after declaring the Alert. If more than one Communicator is available, NRC notification may be made concurrently with State/County notification. • Activate Emergency Response Data System (ERDS) at the time the NRC Operations Center is notified of the Alert. 	
1.4 As appropriate, upon the Onsite Communicator arrival, direct him/her to complete asterisked steps of this Checklist.	_____
* 1.5 Contact the Alarm Station Operator at extension 6042 to verify Emergency Notification and Response System activation.	_____
* 1.6 Contact the Duty Operations Manager and brief him/her on the situation.	_____
* 1.7 Contact the Duty Plant Manager and brief him/her on the situation.	_____
* 1.8 Contact the STP Coordinator (QSE) and advise him/her of the nature of the emergency.	_____
* 1.9 Ensure that the following on-shift personnel have responded to their emergency duty station:	_____
<ul style="list-style-type: none"> • Onsite Communicator (Control Room) • State/County Communicator (Control Room) • ENS Communicator (Control Room) 	

	0ERP01-ZV-SH01	Rev. 18	Page 18 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 3 of 6

Action		Time
<ul style="list-style-type: none"> • Shift Technical Advisor (Control Room) • Acting Radiological Manager • Acting OSC Coordinator • Acting Security Manager 		
2.0 SPECIAL ACTIONS		
2.1	Consider restricting hand held radio transmissions during security events that include explosive or electronic controlled devices.	LOG
2.2	Early Dismissal of Non-Essential Personnel	
2.2.1	Consider early dismissal of non-essential personnel for the following conditions:	
	<ul style="list-style-type: none"> • The event is declared due to radiological problems and the condition could worsen. • A Security event is in progress and removal of personnel from the site would facilitate the ability of Security to respond. • Notification of severe weather has been received which could impact the safety of personnel onsite. • Notification of an incident at a nearby chemical facility has been received that could impact the site. • An orderly shutdown of activities and movement of personnel offsite is warranted. • A situation with a significant potential to develop into unsafe or hazardous conditions exists onsite. 	
2.2.2	Discuss with the Duty Operations Manager the advisability of conducting early dismissal.	

	0ERP01-ZV-SH01	Rev. 18	Page 19 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 4 of 6

Action		Time
2.2.3	If early dismissal of non-essential personnel in the Protected Area is determined appropriate, then make the following announcement:	
*	(Read Slowly) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. THE EMERGENCY DIRECTOR HAS ORDERED THE EARLY DISMISSAL OF ALL NON-ESSENTIAL PERSONNEL. ALL NON-ESSENTIAL PERSONNEL SHALL SECURE THEIR WORK AREA, INFORM THEIR SUPERVISOR OF JOB STATUS, AND EXIT THE SITE UNLESS DIRECTED OTHERWISE BY SUPERVISION. MONITOR LOCAL RADIO BROADCASTS FOR ADDITIONAL INFORMATION."	_____
*	2.2.4 If early dismissal of non-essential personnel in the Owner Controlled Area is determined appropriate, then contact the Security Force Supervisor (Acting Security Manager) and request notification of personnel in the Owner Controlled Area.	_____
2.3	Assembly and Accountability	
2.3.1	Implement 0ERP01-ZV-IN04, Assembly and Accountability.	_____
2.3.2	Instruct Plant Operators that have not been assigned tasks to proceed to the OSC for Accountability and remain there to support OSC operations.	_____
2.3.3	If missing persons are discovered as a result of performing Assembly and Accountability, then contact the Duty Maintenance Supervisor (Acting OSC Coordinator) and provide names and last known locations of the missing persons. Direct the Duty Maintenance Supervisor (Acting OSC Coordinator) to form and dispatch Search and Rescue teams.	_____
2.4	Site Evacuation	
2.4.1	Implement 0ERP01-ZV-IN05, Site Evacuation.	_____

	0ERP01-ZV-SH01	Rev. 18	Page 20 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 5 of 6

Action		Time
2.5	Personnel Emergencies	
2.5.1	Implement 0POP04-ZO-0004, Personnel Emergencies.	LOG
2.6	Radiological Release Occurring or Imminent	
2.6.1	Place the affected Unit's TSC HVAC System in emergency/isolation mode or verify automatic transfer has occurred using 0POP02-HE-0002, TSC HVAC System.	
*	2.6.2 Contact the unaffected Unit's Shift Supervisor and recommend placing the unaffected Unit's TSC HVAC in emergency/isolation mode.	
2.6.3	Direct all Plant Operators to report to the 41' RCA Access Control Point and obtain an electronic dosimeter.	
2.6.4	Direct the Dose Assessment Specialist in the EOF to perform dose projections. If the Dose Assessment Specialist is not available, then direct the Acting Radiological Manager to perform dose projections.	
2.7	Toxic Gas/Chemical Release from Nearby Chemical Facilities	
2.7.1	If time permits, then initiate 0ERP01-ZV-IN04, Assembly and Accountability and 0ERP01-ZV-IN05, Site Evacuation.	
*	2.7.2 Otherwise, announce over the public address system for all personnel to seek shelter in buildings and turn off ventilation systems. Direct the Security Force Supervisor (Acting Security Manager) to warn personnel outside the Protected Area.	
3.0	ONGOING ACTIONS	
3.1	Continuously assess plant conditions against 0ERP01-ZV-IN01, Emergency Classification, to determine if changes to the current emergency classification are warranted.	LOG

	0ERP01-ZV-SH01	Rev. 18	Page 21 of 34
Shift Supervisor			
Data Sheet 2	Alert Checklist		Page 6 of 6

Action		Time
3.2	Evaluate the adequacy of the current Operations staffing and request assistance from the unaffected Unit and/or call out additional personnel.	LOG
* 3.3	Make periodic site public address announcements on the status of the emergency including any radiological hazard precautions.	LOG
3.4	Until relieved as the Emergency Director, update off-site agencies (State, County, BRC) about hourly (or more frequently if warranted) on the status of the emergency.	LOG
3.5	Keep Plant Operators in the field advised of plant status and radiological conditions as applicable.	LOG
3.6	Review and approve press releases as applicable.	LOG
	<ul style="list-style-type: none"> Maintain an Emergency Action Log. 	
4.0	FOLLOWING EMERGENCY DIRECTOR TURNOVER TO THE TSC MANAGER OR EOF DIRECTOR	
	<ul style="list-style-type: none"> Maintain ENS communications with the NRC if requested. Advise the Emergency Director of conditions which may change the emergency classification. Periodically brief Control Room staff of the status of the emergency and ongoing repair efforts. 	

	0ERP01-ZV-SH01	Rev. 18	Page 22 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist		Page 1 of 6

_____	_____	_____
(Name)	(Date)	(Unit)
Action		Time

NOTE

Continue with this checklist only if the TSC Manager or EOF Director has not assumed Emergency Director responsibilities and authorities.

1.0 INITIAL ACTIONS

- 1.1 Announce to Control Room personnel the declaration of a **Site Area Emergency (SAE)** and the continuation (or assumption) of Emergency Director responsibilities by the Shift Supervisor. _____
- 1.2 Ensure the following announcement (or similar announcement) is made over the public address system using the **Unit Override** button: _____

CAUTION

Public Address Announcements may be changed or delayed due to the following conditions:
Severe weather conditions which could threaten safe transport, a significant radiological hazard which could be encountered, a security threat occurring which could have an adverse impact on personnel moving around or leaving the site.

(READ SLOWLY) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. A SITE AREA EMERGENCY HAS BEEN DECLARED IN UNIT(S) ____."
(Optional: Give brief description of the event.)

	0ERP01-ZV-SH01	Rev. 18	Page 23 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist		Page 2 of 6

Action	Time
<p>1.3 If Assembly and Accountability has not been completed, then determine wind direction (from) and implement Assembly and Accountability by sounding the assembly alarm for about 15 seconds and make the following announcement:</p> <p>“ATTENTION. ATTENTION. ASSEMBLY AND ACCOUNTABILITY HAS BEEN ORDERED FOR ALL PERSONNEL IN THE PROTECTED AREA. ALL EMERGENCY RESPONSE ORGANIZATION PERSONNEL REPORT TO YOUR DESIGNATED ASSEMBLY AREA AND IMMEDIATELY CARD-IN ON ACCOUNTABILITY CARDREADERS. ALL OTHER PERSONNEL EXIT THE PROTECTED AREA VIA THE FOLLOWING ROUTE:</p> <p>(Read one of the following as determined by wind direction [from])</p> <p>[Wind Direction From: 000-090] PERSONNEL SHOULD GO NORTH OF UNITS 1 AND 2 AND EXIT THE EAST GATEHOUSE, AND ASSEMBLE IN THE NUCLEAR SUPPORT CENTER. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”</p> <p style="text-align: center;">OR</p> <p>[Wind Direction From: 091-180] PERSONNEL SHOULD GO SOUTH OF UNITS 1 AND 2 AND EXIT THE EAST GATEHOUSE, AND ASSEMBLE IN THE NUCLEAR SUPPORT CENTER. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”</p> <p style="text-align: center;">OR</p> <p>[Wind Direction From: 181-270] PERSONNEL SHOULD GO SOUTH OF UNITS 1 AND 2 AND EXIT THE WEST GATEHOUSE, AND ASSEMBLE IN THE CENTRAL PROCESSING FACILITY. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”</p> <p style="text-align: center;">OR</p> <p>[Wind Direction From: 271-359] PERSONNEL SHOULD GO NORTH OF UNITS 1 AND 2 AND EXIT THE WEST GATEHOUSE, AND ASSEMBLE IN THE CENTRAL PROCESSING FACILITY. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”</p> <p>(Repeat the assembly alarm and announcement as appropriate to ensure personnel accountability is complete).</p>	

	0ERP01-ZV-SH01	Rev. 18	Page 24 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist		Page 3 of 6

Action	Time
<p>1.4 Direct the Control Room Communicators or available personnel to complete the required notifications as described in 0ERP01-ZV-IN02, Notifications to Offsite Agencies.</p> <ul style="list-style-type: none"> • No PARs are required for a Site Area Emergency. • State/County shall be contacted within 15 minutes of the declaration of the SAE to make emergency notifications. • NRC notification shall be made immediately upon completion of State/County notification and not later than one hour after declaring the SAE. If more than one Communicator is available, NRC notification may be made concurrently with State/County notification. • Activate Emergency Response Data System (ERDS) at the time the NRC Operations Center is notified of the Site Area Emergency, if not previously activated. 	_____
1.5 As appropriate, upon the Onsite Communicator arrival, direct him/her to complete asterisked steps of this Checklist.	_____
* 1.6 If not already accomplished, then contact the Alarm Station Operator at extension 6042 to verify Emergency Notification and Response System activation.	_____
1.7 Instruct Plant Operators that have not been assigned tasks to proceed to the OSC for Accountability and remain there to support OSC operations. Ensure Plant Operators that remain under Control Room direction obtain an electronic dosimeter.	_____
* 1.8 Contact the STP Coordinator (QSE) and advise him/her of the nature of the emergency.	_____

	0ERP01-ZV-SH01	Rev. 18	Page 25 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist		Page 4 of 6

Action		Time
*	<p>1.9 Verify that the following on-shift personnel have responded to their emergency duty station:</p> <ul style="list-style-type: none"> Onsite Communicator (Control Room) State/County Communicator (Control Room) ENS Communicator (Control Room) Shift Technical Advisor (Control Room) Acting Radiological Manager Acting OSC Coordinator Acting Security Manager 	_____
	<p>1.10 If the event is radiologically based and the TSC HVAC has not been transferred to emergency/isolation mode, Then:</p> <p>1.10.1 Place the affected Unit's TSC HVAC System in emergency/isolation mode or verify automatic transfer has occurred using 0POP02-HE-0002, TSC HVAC System.</p>	_____
*	<p>1.10.2 Contact the unaffected Unit's Shift Supervisor and recommend placing the unaffected Unit's TSC HVAC in emergency/isolation mode.</p>	_____
	<p>1.11 If site evacuation has not been completed, then implement 0ERP01-ZV-IN05, Site Evacuation upon completion of Assembly and Accountability.</p>	_____

	0ERP01-ZV-SH01	Rev. 18	Page 26 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist	Page 5 of 6	

Action		Time
2.0	SPECIAL ACTIONS	
2.1	Consider restricting hand held radio transmissions during security events that include explosive or electronic controlled devices.	LOG
2.2	Personnel Emergencies	
2.2.1	Implement OPOP04-ZO-0004, Personnel Emergencies.	LOG
2.3	Radiological Release Occurring or Imminent	
2.3.1	Direct all Plant Operators to report to the 41' RCA Access Control Point and obtain an electronic dosimeter.	
2.3.2	Direct the Dose Assessment Specialist in the EOF to perform dose projections. If the Dose Assessment Specialist is not available, then direct the Acting Radiological Manager to perform the dose projections.	
2.4	Toxic Gas/Chemical Release from Nearby Chemical Facilities	
*	2.4.1 If conditions did not permit Assembly and Accountability and Evacuation, announce over the public address system for all personnel to seek shelter in buildings and turn off ventilation systems. Direct the Security Force Supervisor (Acting Security Manager) to warn personnel outside the Protected Area.	
2.5	Missing Persons	
*	2.5.1 If missing persons are discovered as a result of performing Assembly and Accountability, then contact the Duty Maintenance Supervisor (Acting OSC Coordinator) and provide names and last known locations of the missing persons. Direct the Duty Maintenance Supervisor (Acting OSC Coordinator) to form and dispatch Search and Rescue teams.	

	0ERP01-ZV-SH01	Rev. 18	Page 27 of 34
Shift Supervisor			
Data Sheet 3	Site Area Emergency Checklist		Page 6 of 6

Action	Time
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3.0 ONGOING ACTIONS

3.1	Continuously assess plant conditions against 0ERP01-ZV-IN01, Emergency Classification to determine if changes to the current emergency classification are warranted.	LOG
3.2	Evaluate the adequacy of the current Operations staffing and request assistance from the unaffected Unit and/or call out additional personnel.	LOG
* 3.3	Make periodic site public address announcements of the status of the emergency including any radiological hazard precautions.	LOG
3.4	Until relieved as the Emergency Director, update off-site agencies (State, County, BRC) about hourly (or more frequently if warranted) on the status of the emergency.	LOG
<ul style="list-style-type: none"> Maintain an Emergency Action Log. 		

4.0 FOLLOWING EMERGENCY DIRECTOR TURNOVER TO THE TSC MANAGER

- Maintain ENS communications with the NRC if requested.
- Advise the Emergency Director of conditions which may change the emergency classification.
- Periodically brief the Control Room staff of the status of the emergency and ongoing repair efforts.
- Keep Plant Operators in the field advised of plant status and radiological conditions as applicable.
- Review and approve press releases as applicable.

	0ERP01-ZV-SH01	Rev. 18	Page 28 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 1 of 6

(Name)	(Date)	(Unit)
Action		Time

NOTE

Continue with this checklist only if the TSC Manager or EOF Director has not assumed Emergency Director responsibilities and authorities.

1.0 INITIAL ACTIONS

1.1 Announce to Control Room personnel the declaration of a **General Emergency (GE)** and the continuation (or assumption) of Emergency Director responsibilities by the Shift Supervisor.

1.2 Ensure the following announcement (or similar announcement) is made over the public address system using the **Unit Override** button:

CAUTION

Public Address Announcements may be changed or delayed due to the following conditions:
Severe weather conditions which could threaten safe transport, a significant radiological hazard which could be encountered, a security threat occurring which could have an adverse impact on personnel moving around or leaving the site.

(READ SLOWLY) "ATTENTION ALL PERSONNEL; ATTENTION ALL PERSONNEL. A GENERAL EMERGENCY HAS BEEN DECLARED IN UNIT(S) ____." (Optional: Give brief description of the event.)

	0ERP01-ZV-SH01	Rev. 18	Page 29 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 2 of 6

Action	Time
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- 1.3 If Assembly and Accountability has not been completed, then determine wind direction (from) and implement Assembly and Accountability by sounding the assembly alarm for about 15 seconds and make the following announcement:

“ATTENTION. ATTENTION. ASSEMBLY AND ACCOUNTABILITY HAS BEEN ORDERED FOR ALL PERSONNEL IN THE PROTECTED AREA. ALL EMERGENCY RESPONSE ORGANIZATION PERSONNEL REPORT TO YOUR DESIGNATED ASSEMBLY AREA AND IMMEDIATELY CARD-IN ON ACCOUNTABILITY CARDREADERS. ALL OTHER PERSONNEL EXIT THE PROTECTED AREA VIA THE FOLLOWING ROUTE:

(Read one of the following as determined by wind direction [from])

[Wind Direction From: 000-090] PERSONNEL SHOULD GO NORTH OF UNITS 1 AND 2 AND EXIT THE EAST GATEHOUSE, AND ASSEMBLE IN THE NUCLEAR SUPPORT CENTER. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”

OR

[Wind Direction From: 091-180] PERSONNEL SHOULD GO SOUTH OF UNITS 1 AND 2 AND EXIT THE EAST GATEHOUSE, AND ASSEMBLE IN THE NUCLEAR SUPPORT CENTER. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”

OR

[Wind Direction From: 181-270] PERSONNEL SHOULD GO SOUTH OF UNITS 1 AND 2 AND EXIT THE WEST GATEHOUSE, AND ASSEMBLE IN THE CENTRAL PROCESSING FACILITY. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”

OR

[Wind Direction From: 271-359] PERSONNEL SHOULD GO NORTH OF UNITS 1 AND 2 AND EXIT THE WEST GATEHOUSE, AND ASSEMBLE IN THE CENTRAL PROCESSING FACILITY. NO EATING, DRINKING, SMOKING, OR CHEWING IS ALLOWED BY EVACUEES.”

(Repeat the assembly alarm and announcement as appropriate to ensure personnel accountability is complete).

	0ERP01-ZV-SH01	Rev. 18	Page 30 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 3 of 6

Action	Time
<p>1.4 Direct the Control Room Communicators or available personnel to complete the required notifications as described in 0ERP01-ZV-IN02, Notifications to Offsite Agencies.</p> <ul style="list-style-type: none"> • State/County shall be contacted within 15 minutes of the declaration of the GE to make emergency notifications. • NRC notification shall be made immediately upon completion of State/County notification and not later than one hour after declaring the GE. If more than one Communicator is available, NRC notification may be made concurrently with State/County notification. • Activate Emergency Response Data System (ERDS) at the time the NRC Operations Center is notified of the GE, if not previously activated. 	<hr/> <hr/> <hr/>
<p>1.5 Instruct Plant Operators that have not been assigned tasks to proceed to the OSC for Accountability and remain there to support OSC operations. Ensure Plant Operators that remain under Control Room direction obtain an electronic dosimeter.</p>	<hr/>
<p>1.6 PAR development is expected to be made promptly following indications that conditions have exceeded Protective Action Guides (PAGs). PARs shall be developed within 15 minutes of initial indications.</p>	<hr/>
<p>1.6.1 IF a radiological release is in progress, <u>AND</u> time does not permit the calculation and evaluation of downwind doses <u>OR</u> personnel are not available to complete these calculations, then determine the Protective Action Recommendation using Addendum 1, Initial Protective Action Recommendation Flowchart.</p>	<hr/>
<p>1.6.2 IF a radiological release is <u>NOT</u> in progress, THEN determine the PAR using Addendum 2, Core/Containment Status Table.</p>	<hr/>

	0ERP01-ZV-SH01	Rev. 18	Page 31 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 4 of 6

Action		Time
1.6.3	IF a radiological release <u>IS</u> in progress, <u>AND</u> Computerized Dose Assessment is available, THEN obtain the Protective Action Recommendation from the printout.	_____
1.6.4	IF a radiological release is in progress, <u>AND</u> Computerized Dose Assessment is <u>NOT</u> available, THEN use manual dose assessment, actual field readings, or release rates to determine the Protective Action Recommendation using Addendum 3, Radiological Release Table.	_____
1.6.5	IF dose assessment results indicate ≥ 1 rem TEDE or ≥ 5 rem Thyroid CDE (PAGs) are exceeded at 10 miles, and field team measurements verify projected dose, THEN recommend evacuation of 10 mile radius and downwind sectors greater than 10-miles in 2-mile increments until PAGs are not exceeded.	_____
1.6.6	Determine affected downwind sectors and zones using Addendum 4, Protective Response Zones.	_____
1.7	As appropriate, upon the Onsite Communicator arrival, direct him/her to complete the asterisked steps of this Checklist.	_____
* 1.8	If not already accomplished, then contact the Alarm Station Operator at extension 6042 to verify Emergency Notification and Response activation.	_____
* 1.9	Contact the STP Coordinator (QSE) and advise him/her of the nature of the emergency.	_____
* 1.10	Verify that the following on-shift personnel have responded to their emergency duty station: <ul style="list-style-type: none"> • State/County Communicator (Control Room) • ENS Communicator (Control Room) • Shift Technical Advisor (Control Room) • Acting Radiological Manager • Acting OSC Coordinator • Acting Security Manager 	_____

	0ERP01-ZV-SH01	Rev. 18	Page 32 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 5 of 6

Action		Time
1.11 If the event is radiologically based:		
1.11.1	Place the affected Unit's TSC HVAC System in emergency/isolation mode or verify automatic transfer has occurred using 0POP02-HE-0002, TSC HVAC System.	
*	1.11.2 Contact the unaffected Shift Supervisor and recommend placing the unaffected Unit's TSC HVAC in emergency/isolation mode.	
	1.11.3 Direct the Dose Assessment Specialist in the EOF to perform dose projections. If the Dose Assessment Specialist is not available, then direct the Acting Radiological Manager to perform dose projections.	
1.12 If site evacuation has not been completed, then implement 0ERP01-ZV-IN05, Site Evacuation upon completion of Assembly and Accountability.		
2.0 SPECIAL ACTIONS		
2.1	Consider restricting hand held radio transmissions during security events that include explosive or electronic controlled devices.	LOG
2.2	Personnel Emergencies	
2.2.1	Implement 0POP04-ZO-0004, Personnel Emergencies.	LOG
2.3	Missing Persons	
*	2.3.1 If missing persons are discovered as a result of performing Assembly and Accountability, then contact the Duty Maintenance Supervisor (Acting OSC Coordinator) and provide names and last known locations of the missing persons. Direct the Duty Maintenance Supervisor (Acting OSC Coordinator) to form and dispatch Search and Rescue teams.	
3.0 ONGOING ACTIONS		
3.1	Continuously assess plant conditions against 0ERP01-ZV-IN01, Emergency Classification to determine if changes to the current emergency classification are warranted.	LOG

	0ERP01-ZV-SH01	Rev. 18	Page 33 of 34
Shift Supervisor			
Data Sheet 4	General Emergency Checklist		Page 6 of 6

Action		Time
3.2	Evaluate the adequacy of the current Operations staffing and request assistance from the unaffected Unit and/or call out additional personnel.	LOG
* 3.3	Make periodic site public address announcements of the status of the emergency including any radiological hazard precautions.	LOG
3.4	Until relieved as the Emergency Director, update off-site agencies (State, County, BRC) about hourly (or more frequently if warranted) on the status of the emergency.	LOG
3.5	Keep Plant Operators advised of Plant Status and radiological conditions as applicable.	LOG
3.6	Review and approve press releases as applicable.	LOG
3.7	If severe reactor core damage is identified, then implement procedure 0ERP01-ZV-TP03, Severe Accident Management.	LOG
	<ul style="list-style-type: none"> Maintain an Emergency Action Log. 	
4.0	FOLLOWING EMERGENCY DIRECTOR TURNOVER TO THE TSC MANAGER	
	<ul style="list-style-type: none"> Maintain ENS communications with the NRC if requested. Advise the Emergency Director of conditions which may change the classification of the emergency. Periodically brief the Control Room staff of the status of the emergency and ongoing repair efforts. 	

	0ERP01-ZV-SH01	Rev. 18	Page 34 of 34
Shift Supervisor			
Data Sheet 5	Termination Checklist		Page 1 of 1

_____	_____	_____
(Name)	(Date)	(Unit)
Action		Time

1.0 TERMINATION ACTIONS

- | | | |
|-------|--|-------|
| 1.1 | Announce termination of the emergency condition over the public address system. | _____ |
| 1.2 | Complete notifications to offsite agencies per 0ERP01-ZV-IN02, Notifications to Offsite Agencies, if applicable. | _____ |
| 1.3 | For termination of an Unusual Event, notify all individuals notified on declaration of the event that the event is terminated. | _____ |
| 1.4 | Determine if Fitness for Duty post-accident screening should be initiated per 0PGP09-ZA-0002, Fitness For Duty Program. | _____ |
| 1.5 | Provide a list of any supplies or forms needing replenishment to the Supervisor, Emergency Response. | _____ |
| 1.6 | Develop a list of activities and tasks which should be completed using 0ERP01-ZV-RE02, Form 1, Corrective Action Items List. | _____ |
| 1.6.1 | Collect the lists developed by the Acting Radiological Manager, Acting Security Manager, and the Acting OSC Coordinator. Review the lists and forward them to the Manager, Emergency Response. | _____ |
| 1.7 | Following termination from an Unusual Event, collect all logs and data sheets pertaining to the event and forward to the Supervisor, Emergency Response. | _____ |
| 1.8 | Following termination from an Alert or higher classification, forward all control room documentation to the Assistant TSC Manager. | _____ |

STI 31663158	0ERP01-ZV-TP01	Rev. 14	Page 1 of 24
Offsite Dose Calculations			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 10/16/03
Max Keyes	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of ContentsPage

1.0	Purpose and Scope.....	2
2.0	Definitions	2
3.0	Precautions and Limitations	4
4.0	Responsibilities	5
5.0	Procedure.....	5
6.0	References	6
7.0	Support Documents	6
	Form 1, Offsite Dose Calculations Transmittal Form (Sample)	7
	Addendum 1, Offsite Dose Calculation Input Worksheet.....	8
	Addendum 2, UFSAR Accident Assumptions	10
	Addendum 3, Use of OPDA Program	11
	Addendum 4, Containment Leakage Nomograph	12
	Addendum 5, Use of STAMPEDE Program.....	15
	Addendum 6, Emergency Dose Rate Tables	16
	Addendum 7, Method Selection Flowchart.....	24

	0ERP01-ZV-TP01	Rev. 14	Page 2 of 24
Offsite Dose Calculations			

1.0 Purpose and Scope

- 1.1 This procedure provides instructions for performing offsite dose calculations by estimating offsite dose rates and integrated doses to the general public during a declared event when radioactive material is released from the South Texas Project Electric Generating Station (STPEGS).
- 1.2 Methods that may be used for dose calculations included in this procedure are STAMPEDE, Emergency Dose Rate Tables, and OPDA.
- 1.3 This procedure implements the requirements of the STPEGS Emergency Plan specific to calculating offsite doses to the General Public.

2.0 Definitions

- 2.1 **ATMOSPHERIC STABILITY CLASS:** A letter designator indicating the relative stability or instability of an air mass.
- 2.2 **DEFAULT RELEASE DURATION -** The amount of time in hours, automatically used by dose projection programs as the release duration. This default value is selected to best characterize release duration based on maximum evacuation times and historical meteorological data.
- 2.3 **DELTA TEMPERATURE:** The temperature differential measured between the 60 meter and 10 meter levels of the primary meteorological tower (60 m (°F) - 10 m (°F)).
- 2.4 **GROUND LEVEL RELEASE:** All releases at the STPEGS are assumed to be best modeled as though at ground level and are dispersed based on 10 meter meteorological data.
- 2.5 **OFFSITE DOSE CALCULATION METHODS:**
 - 2.5.1 **South Texas Assessment Model Projecting Emergency Dose Evaluation (STAMPEDE)**

A computer program used to perform offsite dose calculations, TEDE dose rates, inhalation thyroid CDE dose rates and doses integrated through the duration of the release are calculated.

	0ERP01-ZV-TP01	Rev. 14	Page 3 of 24
Offsite Dose Calculations			

2.5.2 Emergency Dose Rate Tables

Tables which predict TEDE and thyroid CDE dose rates at 1 to 10 miles from the STPEGS are based on an estimated release rate ($\mu\text{Ci/sec}$) and the atmospheric stability class (A through G). The default isotopic mix was based on a gap inventory using STAMPEDE. Wind speed varies per stability class as indicated on each table.

2.5.3 Onshift Prompt Dose Assessment (OPDA)

A computerized calculation program which operates in a Windows environment to estimate TEDE and thyroid CDE dose based on an estimated release rate ($\mu\text{Ci/sec}$), atmospheric stability class and release pathway. This method may be used by onshift Health Physics technicians in performing a prompt dose assessment.

- 2.6 **HATCH MONITOR:** Temporary monitor installed when Containment Monitors RT-8050 and RT-8051 are out of service. A correction factor has been calculated to relate Hatch Monitor dose rate to dose rate inside containment. Reference 6.6
- 2.7 **OFFSITE DOSE CALCULATION:** A calculation of the estimated offsite dose to the general public based on releases of radioactive material, meteorological conditions, time since reactor shutdown, and the expected release duration. The offsite dose calculation is helpful in formulating offsite Protective Action Recommendations (PAR).
- 2.8 **PROTECTIVE ACTION GUIDE (PAG) :** An action to be taken to avoid or reduce a projected dose as identified in EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.
- 2.9 **RADIOLOGICAL RELEASE:** Any radiological release from the plant that exceeds the EAL limits established for an Unusual Event.
- 2.10 **SIGMA-THETA:** A method to assign atmospheric stability classes based on the standard deviation of the wind direction in degrees ($^{\circ}$).
- 2.11 **SOURCE TERM:** With respect to offsite dose calculations, the characteristics and release rates of the radioactive material.

	0ERP01-ZV-TP01	Rev. 14	Page 4 of 24
Offsite Dose Calculations			

3.0 Precautions and Limitations

- 3.1 For Steam Generator Tube Rupture (SGTR) events with 100% S/G water level, the steam flow reported on the Integrated Computer System (ICS) will be high and result in an over conservative PAR. Use the default MSL flow rate specified by the dose assessment program.
- 3.2 The dose projection capabilities of all methods depend upon models that become less exact at greater distances from the release point.
- 3.3 When collecting wind speed and wind direction meteorological data from the primary or backup meteorological tower, or the National Weather Service Forecast Office, care must be taken to ensure that a 15 minute average value is used in dose calculations and not an instantaneous value.
- 3.4 Regional meteorological data may be required to help evaluate offsite dose calculations. This information can be obtained from the National Weather Service in Dickinson, Texas. The types of information that can be obtained include temperature, wind speed, wind direction, cloud height, and cloud cover. As time permits, forecast data may be used to supplement dose projections.
- 3.5 Default parameters are built into the STAMPEDE program for ground wind velocity, ground level wind direction, and atmospheric stability class. These parameters are displayed on screen while working with STAMPEDE.
- 3.6 IF dose assessment results indicate Protective Action Guides (PAGs) exceeded at >10 miles, AND the Emergency Director resides in the affected Unit Control Room, THEN as available, verify dose assessment results with field teams and notify the Emergency Director. Discuss with the Emergency Director expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.
- 3.7 IF dose assessment results indicate PAGs exceeded at >10 miles, AND the Emergency Director resides in the TSC, THEN verify dose assessment results with field teams and notify the Radiological Manager. Discuss with the Radiological Manager expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.
- 3.8 IF dose assessment results indicate PAGs exceeded at >10 miles, AND the Emergency Director resides in the EOF, THEN verify dose assessment results with field teams and notify the Radiological Director. Discuss with the Radiological Director expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.

	0ERP01-ZV-TP01	Rev. 14	Page 5 of 24
Offsite Dose Calculations			

- 3.9 If multiple release paths are indicated by elevated radiological monitor readings, then calculate each pathway and sum result. (Example: Two S/G Tube Ruptures with two stuck open PORV's results in the following - Calculate Main Steam Line Monitors RT-8046 and RT-8049 and sum results).

4.0 Responsibilities

- 4.1 Prior to activation of the TSC or EOF, the Acting Radiological Manager is responsible for implementation of this procedure (i.e., Onshift Dose Assessment). Offsite dose calculation results shall be provided to the Emergency Director.
- 4.2 Upon activation of the TSC, the Radiological Manager is responsible for implementation of this procedure. Offsite dose calculation results shall be provided to the Emergency Director.
- 4.3 Upon activation of the EOF, the Radiological Director is responsible for implementation of this procedure. The Dose Assessment Specialist shall perform offsite dose calculations as directed by the Radiological Director and provide results.
- 4.4 Offsite dose calculations are updated as requested by the Emergency Director, Radiological Manager, or Radiological Director.

5.0 Procedure

- 5.1 Use the appropriate sections of Addendum 1, Offsite Dose Calculation Input Worksheet, as needed, to perform offsite dose calculations.
- 5.2 Review Addendum 2, UFSAR Accident Assumptions, as necessary.
- 5.3 Select the appropriate Dose Assessment tool using Addendum 7, Method Selection Flowchart.
- 5.4 Changes to any of the following parameters requires additional offsite dose calculations:
- 5.4.1 Increased release rates or wind speed (that add additional zones downwind)
 - 5.4.2 Wind direction (that add additional zones)
 - 5.4.3 Atmospheric stability classification (that add additional zones)
- 5.5 If a prompt dose assessment is required from onshift Health Physics personnel, the OPDA program as described in Addendum 3, Use of OPDA Program, may be used. The program is available in both unit Control Rooms and at the 41 ft. Health Physics control point, and can be run by double-clicking on the OPDA icon and inputting the requested data.

	0ERP01-ZV-TP01	Rev. 14	Page 6 of 24
Offsite Dose Calculations			

- 5.6 IF the type of accident is a Loss of Coolant Accident, Fuel Handling Accident inside the Reactor Containment Building, Control Rod Ejection or Reactor Coolant Pump Shaft Seizure and Containment Leakage directly to the environment is the release pathway, THEN Addendum 4, Containment Leakage Nomograph, may be used to estimate containment source term in the absence of better indications of a release.
- 5.7 STAMPEDE may be used for performing offsite dose calculations, implement Addendum 5, Use of STAMPEDE Program.
- 5.8 IF all computer based dose assessment methods are unavailable, THEN implement Addendum 6, Emergency Dose Rate Tables.
- 5.9 Complete Form 1, Offsite Dose Calculations Transmittal Form.
- 6.0 References
 - 6.1 STPEGS Emergency Plan
 - 6.2 0ERP01-ZV-EF15, Dose Assessment Specialist
 - 6.3 0ERP01-ZV-IN07, Offsite Protective Action Recommendations
 - 6.4 OPGP05-ZV-0004, Emergency Plan Implementing Procedure Users Guide
 - 6.5 ZV-0001, STAMPEDE Users Manual
 - 6.6 03-ZE-003, RT8050/RT8051 Contingency Conversion Constant for Post-Accident Failed Fuel Monitoring
- 7.0 Support Documents
 - 7.1 Form 1, Offsite Dose Calculations Transmittal Form (Sample)
 - 7.2 Addendum 1, Offsite Dose Calculation Input Worksheet
 - 7.3 Addendum 2, UFSAR Accident Assumptions
 - 7.4 Addendum 3, Use of OPDA Program
 - 7.5 Addendum 4, Containment Leakage Nomograph
 - 7.6 Addendum 5, Use of STAMPEDE Program
 - 7.7 Addendum 6, Emergency Dose Rate Tables
 - 7.8 Addendum 7, Method Selection Flowchart

	0ERP01-ZV-TP01	Rev. 14	Page 7 of 24
Offsite Dose Calculations			
Form 1	Offsite Dose Calculations Transmittal Form (Sample)		Page 1 of 1

RESULTS

Method of Projection:

☐ STAMPEDE
☐ OPDA
☐ EMERGENCY DOSE RATE TABLES

Offsite Dose Projection:

	1 mile	2 mile	5 mile	10 mile
TEDE (Rem) _____	_____	_____	_____	_____
CDE (Rem) _____	_____	_____	_____	_____

Projected duration of release _____

IF dose assessment results indicate PAGs exceeded at >10 miles, AND the Emergency Director resides in the TSC, THEN verify dose assessment results with field teams and notify the Radiological Manager. Discuss with the Radiological Manager expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.

IF dose assessment results indicate PAGs exceeded at >10 miles, AND the Emergency Director resides in the EOF, THEN verify dose assessment results with field teams and notify the Radiological Director. Discuss with the Radiological Director expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.

PERFORMED BY:

_____	_____
Name	Date/Time

REVIEWED BY:

_____	_____
Radiological Director	Date/Time

	0ERP01-ZV-TP01	Rev. 14	Page 8 of 24
Offsite Dose Calculations			
Addendum 1	Offsite Dose Calculation Input Worksheet		Page 1 of 2

1.0 Atmospheric Stability Classification

<u>Stability Classification</u>	<u>Class</u>	<u>Delta T (60m-10m)^oF</u>	<u>*Sigma-Theta</u>
Extremely Unstable	A	< -1.71	≥ 22.5
Moderately Unstable	B	-1.71 to -1.53	17.5 to 22.5
Slightly Unstable	C	-1.52 to -1.35	12.5 to 17.5
Neutral	D	-1.34 to -0.45	7.5 to 12.5
Slightly Stable	E	-0.44 to 1.35	3.8 to 7.5
Moderately Stable	F	1.36 to 3.60	2.1 to 3.8
Extremely Stable	G	> 3.60	< 2.1

* Do not use Sigma-Theta if wind speed is less than 5 mph, use default Stability Class D.

2.0 Estimating Release Rates:

2.1 If the release point is the unit vent

2.1.1 The release rate can be obtained from the RM-11 channel (1 or 2) UV610.

2.1.2 If the Unit Vent release rate channel is unavailable, the following calculation applies

$$\text{Release Rate} = \text{Flow Rate} \times \text{Concentration} \times \text{Conversion Factor}$$

(μCi/sec) (scfm) (μCi/cc) (4.72 E + 2)

2.2 If the release point is the Main Steam Line PORV or Safety Valve, either of the following calculations applies.

NOTE

Use .2% Iodine for coolant leakage through the S/G.

2.2.1

$$\text{Release Rate} = \text{MSL Flow} \times \text{MSL Activity} \times \text{Conversion Factor}$$

(μCi/Sec) (lb. mass/hr) (μCi/cc) (2.54)

ICS (FW Display) RT-8046-49

FW-15

	0ERP01-ZV-TP01	Rev. 14	Page 10 of 24
Offsite Dose Calculations			
Addendum 2	UFSAR Accident Assumptions		Page 1 of 1

<u>Type of Accident</u>	<u>UFSAR Section/Table</u>	<u>Release Locations</u>
LOCA	15.6.5/15.6-10	RCB Leakage Unit Vent
Fuel Handling Accident	15.7.4/15.7-9	RCB Leakage Unit Vent
Parameters For Other Accidents Listed Below:	Misc. Chapter 15	As Indicated Below
Mainsteam Line Break	15.1.5/15.1-2	Turbine Building Isolation Valve Cubicles
Locked Rotor	15.3.3/15.3-3	RCB Leakage Unit Vent (*)
RCCA Ejection	15.4.8/15.4-4	RCB Leakage Unit Vent (*)
CVCS Letdown Line Break Outside RCB	15.6.2/15.6-13	Unit Vent
Steam Generator Tube Rupture	15.6.2/15.6-13	PORV's Turbine Building Isolation Valve Cubicles Unit Vent
Recycle Holdup Tank Rupture	15.7.1/15.7-1	Unit Vent
Liquid Tank Rupture	15.7-2	Ground Seepage Unit Vent

(*) IF primary-to-secondary leakage is present, THEN the Turbine Building, Isolation Valve Cubicles, and Power Operated Relief Valves (PORV's) are additional release points.

	0ERP01-ZV-TP01	Rev. 14	Page 11 of 24
Offsite Dose Calculations			
Addendum 3	Use of OPDA Program		Page 1 of 1

OPDA is a computerized calculation loaded into selected computers at STPEGS. The Met Data entry button allows the operator to set the stability class, affected zones and sectors by entering a delta temperature and wind direction. If the release rate is known, push Unit Vent Release button, enter the monitored release rate, and push the Calculate Projection button. If the release rate is not know but may be estimated from other information, select the most appropriate of the following buttons:

- MAJOR LEAK FROM RCB
- S/G TUBE RUPTURE
- SLOW PRESSURE DROP - RCB

After entering the required information, click on the Calculate Projection button.

The results are displayed for review. They may be printed if a printer is available by selecting the Print button.

IF dose assessment results indicate Protective Action Guides (PAGs) exceeded at >10 miles, AND the Emergency Director resides in the affected Unit Control Room, THEN as available, verify dose assessment results with field teams and notify the Emergency Director. Discuss with the Emergency Director expanded PARs for downwind sectors >10 miles in 2 mile increments until PAGs are not exceeded.

NOTE

Four hours is automatically used by the OPDA dose projection programs for the release duration.

	0ERP01-ZV-TP01	Rev. 14	Page 12 of 24
Offsite Dose Calculations			
Addendum 4	Containment Leakage Nomograph	Page 1 of 3	

1. The containment activity concentration may be estimated by use of the High Range Containment Monitor (RT-8050, RT-8051 or Hatch Monitor):

RT-8050 _____ R/hr @ Time _____

RT-8051 _____ R/hr @ Time _____

Hatch Monitor _____ mR/hr x .450 = CTMT R/hr @ Time _____
2. Time after reactor trip (in hours): _____
3. Estimate the release rate by recording the initial pressure in containment:
 - a. Record the initial pressure and time [ICS Screen Z]

pressure P_1 _____ at T_1 _____
 - b. Record the subsequent pressure and time [ICS Screen Z]

pressure P_2 _____ at T_2 _____

Calculate pressure drop:

P_1 _____ - P_2 _____ = _____ P

Calculate time in hours:

T_2 _____ - T_1 _____ = _____ T(hrs)
 - c. IF a decrease in pressure is recorded, AND containment spray is NOT in progress, THEN calculate decrease in pressure per hour:

$P /$ _____ T(hrs) = _____ P/hr
4. Using the Containment Leakage Nomograph (page 3 of 3), connect point for radiation level on line A THRU time after reactor trip on line B, to concentration (Ci/m³ or μ Ci/cc) on line C. Connect point on line C THRU point on line D (decrease in pressure per hour) to value on line E (μ Ci/sec release rate).
5. Complete dose projections using Addendum 5, Use of STAMPEDE Program or Addendum 6, Emergency Dose Rate Tables.

	0ERP01-ZV-TP01	Rev. 14	Page 13 of 24
Offsite Dose Calculations			
Addendum 4	Containment Leakage Nomograph	Page 2 of 3	

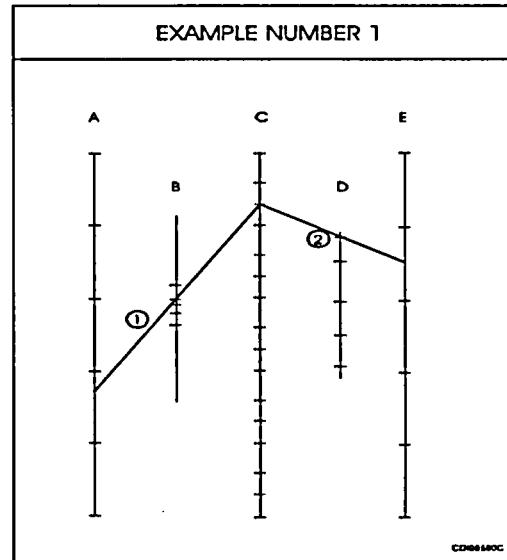
NOTE

Scales are logarithmic or nonlinear

EXAMPLE CALCULATIONS:

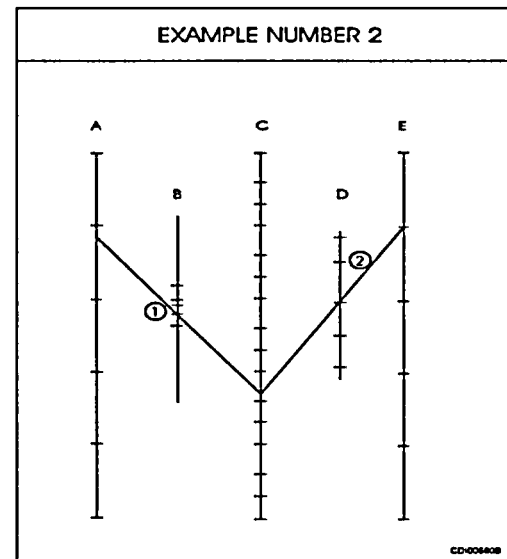
- Data: RT-8050/8051 = $2E+4$ R/hr,
10 hrs after reactor trip.
No RCB pressure decreases
are noted!

Find: RT-8050 reading of $2E+4$ R/hr
on A scale, and 10 hrs on B
scale. Connect the two points
with a straight line through C
scale to find 2000 Ci/m^3 (2000
 $\mu\text{Ci/cc}$). Connect the point at
 2000 Ci/m^3 to FSAR LEAK LIMIT
(0.3% containment volume/day)
on D scale. Extend line from
C scale through D scale to read
 $4.0E+6 \mu\text{Ci/sec}$ release rate.

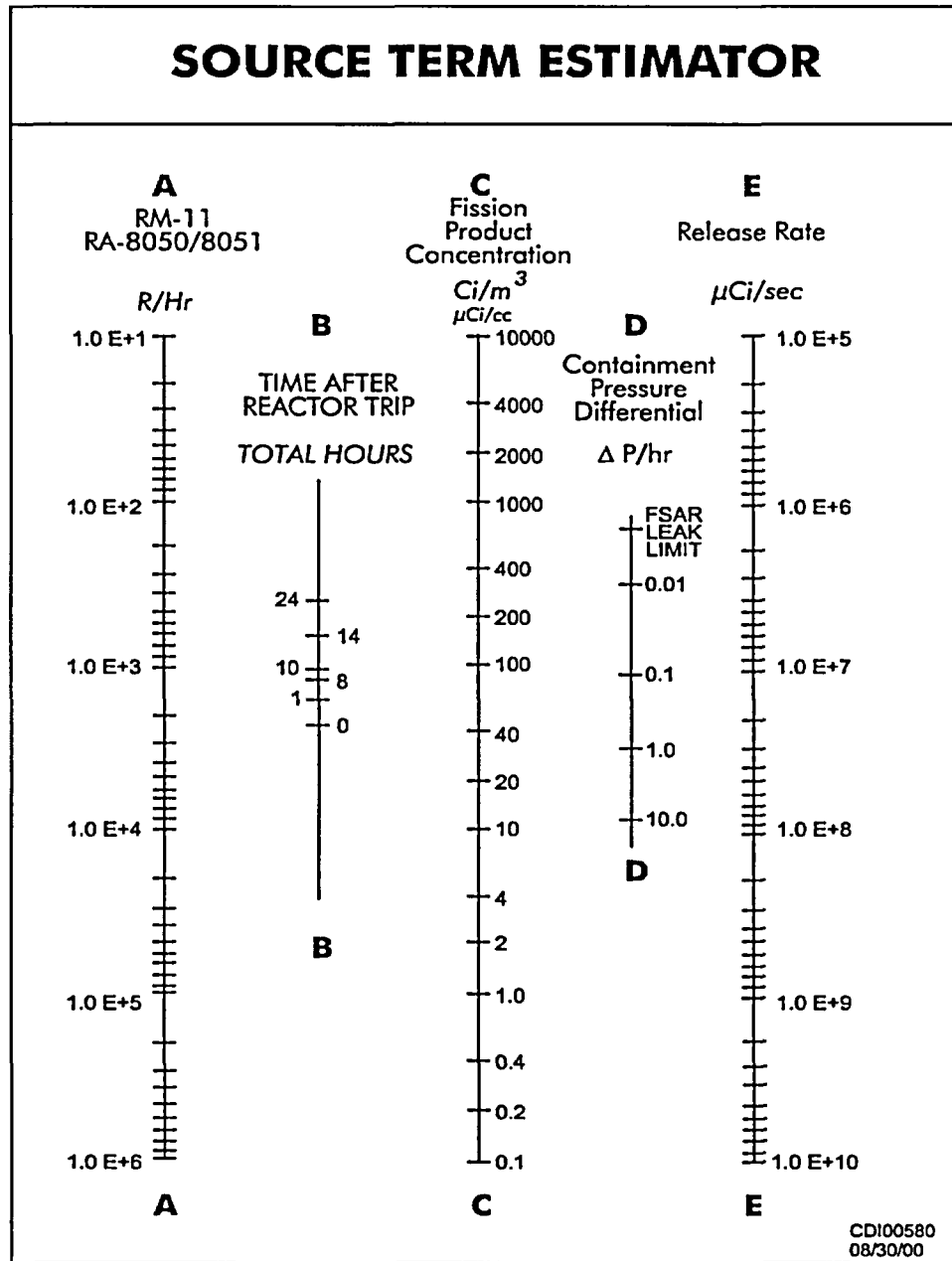


- Data: RT-8050/8051 = $1.1E+2$ R/hr,
1 hour after the reactor trip,
with 0.1 psi pressure drop per
hour.

Find: $1.1E+2$ R/hr on A scale. Draw a
line through 1 hour on B scale to
find 5 Ci/m^3 ($5 \mu\text{Ci/cc}$) on C scale.
Connect the point from C scale
through 0.1 psi/hr on D scale to
find $1E+6 \mu\text{Ci/sec}$ release rate on
E scale.



	0ERP01-ZV-TP01	Rev. 14	Page 14 of 24
Offsite Dose Calculations			
Addendum 4	Containment Leakage Nomograph	Page 3 of 3	



WARNING

Do NOT use this Nomograph greater than 24 hours after reactor shutdown due to isotopic decay.

	0ERP01-ZV-TP01	Rev. 14	Page 15 of 24
Offsite Dose Calculations			
Addendum 5	Use of STAMPEDE Program		Page 1 of 1

NOTE

Four hours is automatically used by the STAMPEDE dose projection programs for the release duration.

- 1.0 The STAMPEDE computer program and its associated data tables are loaded on the LAN and onto selected computers at STPEGS and the Texas Bureau of Radiation Control. The program is accessed from the MicroSoft Windows display by clicking on the appropriate icon.
- 2.0 Although the code is generally self-explanatory. Detailed operating instructions (User Manual) are located at each work station as an aid to operation. Default values are provided for all entries should actual data not be available.
- 3.0 Should the work area require evacuation, stored data should be copied to a diskette transported and loaded into a computer at an alternate location as described in Desktop Guide Instruction ZV-0001, STAMPEDE Users Manual.

	0ERP01-ZV-TP01	Rev. 14	Page 16 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 1 of 8

- 1.0 Use the following Emergency Dose Rate Table that corresponds to the current stability class.
[DEFAULT: Stability Class D]
- 2.0 Locate the TEDE and thyroid CDE dose rate (Rem/hr) for the one, two, five and ten-mile radii that corresponds to the release rate.
- 3.0 Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)
- 4.0 Data in the tables was generated by STAMPEDE, Revision 7.0, using the GAP Inventory at time 00:00 after reactor trip.

	0ERP01-ZV-TP01	Rev. 14	Page 17 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 2 of 8

STABILITY CLASS A
Delta T °F < -1.71

NOTE

IF the release rate is between two values, THEN interpolate.

Release Rate ($\mu\text{Ci/sec}$)	DOSE RATE (Rem/hour)							
	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+08	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
2.00E+08	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00
4.00E+08	0.01	0.03	0.01	0.03	0.00	0.01	0.00	0.01
1.00E+09	0.03	0.12	0.01	0.06	0.01	0.02	0.00	0.01
2.00E+09	0.06	0.24	0.03	0.13	0.01	0.05	0.00	0.02
4.00E+09	0.12	0.50	0.06	0.26	0.02	0.10	0.01	0.05
1.00E+10	0.29	1.20	0.14	0.62	0.05	0.24	0.02	0.12
2.00E+10	0.58	2.44	0.27	1.26	0.10	0.49	0.04	0.23
4.00E+10	1.16	4.76	0.54	2.45	0.19	0.96	0.08	0.46

TEDE = Total Effective Dose Equivalent
 (External + Internal)

Wind Speed: 14.8 mph

CDE = Committed Dose Equivalent
 (Thyroid)

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 18 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 3 of 8

STABILITY CLASS B
(Delta T °F -1.71 to -1.53)

NOTE

IF the release rate is between two values, THEN interpolate.

Release Rate ($\mu\text{Ci/sec}$)	DOSE RATE (Rem/hour)							
	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+06	0.001	0.00	0.00	0.00	0.0	0.00	0.00	0.00
1.00E+07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+07	0.01	0.04	0.00	0.01	0.00	0.00	0.00	0.00
1.00E+08	0.02	0.09	0.01	0.02	0.00	0.00	0.00	0.00
2.00E+08	0.04	0.19	0.01	0.05	0.00	0.01	0.00	0.00
4.00E+08	0.09	0.38	0.02	0.09	0.00	0.01	0.00	0.01
1.00E+09	0.22	0.92	0.05	0.22	0.01	0.03	0.00	0.02
2.00E+09	0.43	1.78	0.09	0.43	0.01	0.07	0.01	0.03
4.00E+09	0.86	3.62	0.19	0.88	0.03	0.13	0.01	0.06
1.00E+10	2.17	9.29	0.48	2.25	0.06	0.34	0.03	0.16
2.00E+10	4.31	17.94	0.94	4.35	0.13	0.66	0.05	0.31
4.00E+10	8.65	36.49	1.90	8.85	0.25	1.33	0.11	0.62

TEDE = Total Effective Dose Equivalent
(External + Internal)

Wind Speed: 14.2 mph

CDE = Committed Dose Equivalent
(Thyroid)

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 19 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 4 of 8

STABILITY CLASS C
(Delta T °F -1.52 to -1.35)

NOTE

IF the release rate is between two values, THEN interpolate.

Release Rate ($\mu\text{Ci/sec}$)	DOSE RATE (Rem/hour)							
	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+07	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00
2.00E+07	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00
4.00E+07	0.02	0.11	0.01	0.03	0.00	0.01	0.00	0.00
1.00E+08	0.06	0.24	0.01	0.07	0.00	0.01	0.00	0.00
2.00E+08	0.12	0.50	0.03	0.14	0.00	0.02	0.00	0.05
4.00E+08	0.24	1.01	0.06	0.28	0.01	0.05	0.00	0.01
1.00E+09	0.59	2.45	0.15	0.68	0.02	0.11	0.01	0.03
2.00E+09	1.18	5.01	0.29	1.38	0.04	0.23	0.01	0.06
4.00E+09	2.33	9.70	0.58	2.68	0.09	0.45	0.02	0.11
1.00E+10	5.88	25.04	1.47	6.91	0.22	1.16	0.05	0.29
2.00E+10	11.80	50.75	2.96	14.01	0.44	2.35	0.10	0.58
4.00E+10	23.43	98.62	5.84	27.23	0.86	4.57	0.20	1.13

TEDE = Total Effective Dose Equivalent
(External + Internal)
CDE = Committed Dose Equivalent
(Thyroid)

Wind Speed: 13.6 mph

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 20 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 5 of 8

STABILITY CLASS D
(Delta T °F -1.34 to -0.45)

NOTE

IF the release rate is between two values, THEN interpolate.

	DOSE RATE (Rem/hour)							
Release Rate ($\mu\text{Ci/sec}$)	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+06	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00
4.00E+06	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00
1.00E+07	0.02	0.08	0.01	0.03	0.00	0.01	0.00	0.00
2.00E+07	0.04	0.17	0.01	0.06	0.00	0.01	0.00	0.00
4.00E+07	0.08	0.33	0.03	0.12	0.01	0.03	0.00	0.01
1.00E+08	0.19	0.80	0.06	0.28	0.01	0.07	0.00	0.02
2.00E+08	0.39	1.65	0.12	0.58	0.03	0.13	0.01	0.04
4.00E+08	0.78	3.34	0.25	1.18	0.05	0.27	0.02	0.09
1.00E+09	1.95	8.15	0.62	2.87	0.12	0.66	0.04	0.21
2.00E+09	3.86	16.35	1.23	5.76	0.25	1.33	0.07	0.42
4.00E+09	7.75	33.18	2.47	11.69	0.50	2.70	0.15	0.86
1.00E+10	19.23	80.62	6.08	28.40	1.23	6.56	0.36	2.09
2.00E+10	38.72	161.74	12.34	58.38	2.52	13.49	0.74	4.30
4.00E+10	77.75	336.78	24.88	118.62	5.10	27.42	1.44	8.73

TEDE = Total Effective Dose Equivalent
(External + Internal)

Wind Speed: 13.2 mph

CDE = Committed Dose Equivalent
(Thyroid)

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 21 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 6 of 8

STABILITY CLASS E
(Delta T °F -0.44 to 1.35)

NOTE

IF the release rate is between two values, THEN interpolate.

	DOSE RATE (Rem/hour)							
Release Rate (μCi/sec)	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+06	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00
2.00E+06	0.01	0.04	0.00	0.02	0.00	0.00	0.00	0.00
4.00E+06	0.02	0.09	0.01	0.03	0.00	0.01	0.00	0.00
1.00E+07	0.05	0.21	0.02	0.08	0.00	0.02	0.00	0.01
2.00E+07	0.09	0.42	0.03	0.16	0.01	0.04	0.00	0.02
4.00E+07	0.18	0.83	0.06	0.31	0.01	0.08	0.00	0.03
1.00E+08	0.46	2.12	0.15	0.78	0.03	0.19	0.01	0.07
2.00E+08	0.92	4.16	0.30	1.54	0.07	0.38	0.02	0.13
4.00E+08	1.85	8.47	0.61	3.130	0.13	0.78	0.04	0.27
1.00E+09	4.56	20.47	1.49	7.57	0.32	1.88	0.10	0.64
2.00E+09	9.17	41.63	3.02	15.38	0.65	3.81	0.21	1.31
4.00E+09	18.50	88.17	6.12	31.47	1.33	7.80	0.42	2.68
1.00E+10	46.12	211.50	15.24	78.16	3.31	19.38	1.04	6.65
2.00E+10	91.24	411.27	29.93	151.98	6.46	37.69	2.03	12.93
4.00E+10	184.06	841.05	60.75	310.81	13.16	77.07	4.15	26.45

TEDE = Total Effective Dose Equivalent
(External + Internal)

Wind Speed: 9.3 mph

CDE = Committed Dose Equivalent
(Thyroid)

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 22 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 7 of 8

STABILITY CLASS F
(Delta T °F 1.36 to 3.60)

NOTE

IF the release rate is between two values, THEN interpolate.

Release Rate ($\mu\text{Ci/sec}$)	DOSE RATE (Rem/hour)							
	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
4.00E+05	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00
1.00E+06	0.01	0.07	0.01	0.03	0.00	0.01	0.00	0.00
2.00E+06	0.03	0.14	0.01	0.06	0.00	0.02	0.00	0.01
4.00E+06	0.05	0.27	0.02	0.11	0.01	0.03	0.00	0.01
1.00E+07	0.14	0.70	0.05	0.29	0.01	0.08	0.00	0.03
2.00E+07	0.27	1.38	0.10	0.58	0.02	0.16	0.01	0.06
4.00E+07	0.55	2.74	0.20	1.15	0.05	0.31	0.02	0.11
1.00E+08	1.36	6.78	0.51	2.85	0.12	0.77	0.04	0.28
2.00E+08	2.77	14.00	1.03	5.90	0.24	1.57	0.08	0.57
4.00E+08	5.47	27.29	2.03	11.50	0.48	3.12	0.16	1.12
1.00E+09	13.80	69.46	5.14	29.26	1.21	7.93	0.40	2.85
2.00E+09	27.13	134.70	10.04	56.73	2.35	15.38	0.78	5.51
4.00E+09	54.79	274.09	20.36	115.44	4.78	31.29	1.58	11.21
1.00E+10	138.64	699.83	51.72	294.76	12.17	79.89	4.04	28.63

TEDE = Total Effective Dose Equivalent
(External + Internal)
CDE = Committed Dose Equivalent
(Thyroid)

Wind Speed: 5.9 mph

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 23 of 24
Offsite Dose Calculations			
Addendum 6	Emergency Dose Rate Tables		Page 8 of 8

STABILITY CLASS G
(Delta T °F > 3.60)

NOTE

IF the release rate is between two values, THEN interpolate.

Release Rate ($\mu\text{Ci/sec}$)	DOSE RATE (Rem/hour)							
	1 Mile		2 Mile		5 Mile		10 Mile	
	TEDE	CDE	TEDE	CDE	TEDE	CDE	TEDE	CDE
1.00E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00E+04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1.00E+05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
2.00E+05	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00
4.00E+05	0.01	0.05	0.00	0.02	0.00	0.01	0.00	0.00
1.00E+06	0.03	0.13	0.01	0.06	0.00	0.02	0.00	0.01
2.00E+06	0.05	0.26	0.02	0.13	0.01	0.04	0.00	0.02
4.00E+06	0.10	0.51	0.05	0.26	0.01	0.08	0.00	0.03
1.00E+07	0.25	1.26	0.11	0.64	0.03	0.20	0.01	0.07
2.00E+07	0.50	2.58	0.23	1.31	0.06	0.40	0.02	0.15
4.00E+07	0.99	497	0.44	2.53	0.12	0.77	0.04	0.29
1.00E+08	2.49	12.63	1.12	6.43	0.30	1.97	0.10	0.73
2.00E+08	5.02	25.65	2.26	13.05	0.60	3.99	0.21	1.48
4.00E+08	9.84	49.56	4.39	25.24	1.16	7.71	0.40	2.86
1.00E+09	24.88	126.18	11.14	64.20	2.95	19.64	1.01	7.28
2.00E+09	50.23	256.47	22.57	130.48	5.99	39.92	2.05	14.80
4.00E+09	98.73	498.20	44.12	253.47	11.66	77.54	4.00	28.75
1.00E+10	249.38	1267.20	111.79	644.71	29.61	197.24	10.15	73.12

TEDE = Total Effective Dose Equivalent
(External + Internal)

Wind Speed: 5.5 mph

CDE = Committed Dose Equivalent
(Thyroid)

Multiply the dose rates by the expected duration of the release. (Use 4 hour release duration if actual duration not known.)

	0ERP01-ZV-TP01	Rev. 14	Page 24 of 24
Offsite Dose Calculations			
Addendum 7	Method Selection Flowchart		Page 1 of 1

