

HOUSTON LIGHTING AND POWER COMPANY  
SOUTH TEXAS PROJECT  
ELECTRIC GENERATING STATION  
PLANT PROCEDURES MANUAL

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STATION PROCEDURE

NON SAFETY-RELATED (Q)

Emergency Classification

0ERP01-ZV-IN01  
Rev. 3 (General)  
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APPROVED:

\_\_\_\_\_  
PLANT MANAGER

\_\_\_\_\_  
DATE APPROVED

\_\_\_\_\_  
DATE EFFECTIVE

PROCEDURE USE CONTROL: **IN HAND** (ADDENDUM 1 ONLY)

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Attachment 1

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 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.
- 2.2 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.]
- 2.3 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.
- 2.4 EPA PAG: Environmental Protection Agency Protective Action Guidelines for exposure to a release of radioactive material.
- 2.5 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.

- 2.6 Facility: The area and buildings within the Protected Area and the switchyard.
- 2.7 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
- 2.8 Functional: A component is fully capable of meeting its design function. It would be declared inoperable if unable to meet Technical Specifications.
- 2.9 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.
- 2.10 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.
- 2.11 Inoperable: A component does not meet Technical Specifications. The component may be functional, capable of meeting its design function.
- 2.12 Loss: A component is inoperable and not functional.
- 2.13 Protected Area: That area inside the physical security boundary of the site which includes the nuclear reactor plant.
- 2.14 Radiological Release: Any radiological release from the plant that exceeds the EAL limits established for an Unusual Event.

- 2.15 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.
- 2.16 Security Alert: A security related situation which requires an increased level of readiness on the part of the Security Force.
- 2.17 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.
- 2.18 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.
- 2.19 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 which exceed EPA Protective Action Guidelines exposure levels outside the Exclusion Area Boundary.
- 2.20 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.
- 2.21 Termination: Exiting the emergency condition.
- 2.22 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.
- 2.23 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.
- 2.24 Vital Area: Locations within the Protected Area as defined by security procedures which contain equipment that directly affect the safety of the plant.



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 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.

5.3 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.

- 5.4 Any person recognizing an emergency or potential emergency condition should notify the Emergency Director and/or Shift Supervisor.
- 5.5 The classification of an emergency may be downgraded by the Emergency Director if appropriate for the conditions.
- 5.6 Use the following criteria/guidance to determine entry into Recovery or Termination:
- 5.6.1 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.
- 5.6.2 Termination: One of the following applicable conditions exists
- 5.6.2.1 From Recovery
- Problems identified during the recovery phase are complete and the plant is ready to return to normal operations.

5.6.2.2 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.

5.7 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, Rev. 16
- 6.2 UFSAR, Revision 2
- 6.3 OPOP05-EO-EC00, Loss of All AC Power, Rev. 0
- 6.4 OPOP05-EO-FO02, Core Cooling Critical Safety Function Status Tree, Rev. 0
- 6.5 OPOP05-EO-FO04, Integrity Critical Safety Function Status Tree, Rev. 0
- 6.6 OPOP05-EO-FO05, Containment Critical Safety Function Status Tree, Rev. 0
- 6.7 OPOP05-EO-FRC1, Response to Inadequate Core Cooling, Rev. 0
- 6.8 OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink, Rev. 0
- 6.9 OPOP05-EO-FRS1, Response to Nuclear Power Generation - ATWS, Rev. 1
- 6.10 OPOP04-ZO-0002, Severe Weather Guidelines, Rev. 2
- 6.11 Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors."
- 6.12 NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," January, 1992, Rev. 2

6.13 OPOP01-ZA-0018, Emergency Operating Procedure User's Guide, Rev. 3

5.14 Safeguards Contingency Plan

6.15 OSDP01-73-0011, Implementing Procedures for Safeguards Contingency Events,  
Rev. 4

6.16 Calculation 91-RA-0001, Rev. 0

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

ADDENDUM 1  
EMERGENCY CLASSIFICATION TABLES  
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ADDENDUM IEMERGENCY CLASSIFICATION TABLES

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**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 IMMINENT (within 1 to 2 hours). In this IMMINENT 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	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 OR Potential Loss of EITHER Fuel Clad or RCS and Loss of ANY Additional Barrier	FG1 Loss of ANY Two Barriers AND Potential Loss or Loss of Third Barrier
FU2 Fuel Clad Degradation - See SL6			
FU3 RCS Leakage - See SL7			

**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 the table above.

## ADDENDUM 1

## EMERGENCY CLASSIFICATION TABLES

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**RECOGNITION CATEGORY F  
FISSION PRODUCT BARRIER DEGRADATION  
INITIATING CONDITION MATRIX**

FUEL CLAD		RCS		CONTAINMENT	
LOSS (4)	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (3)	LOSS (2)	POTENTIAL LOSS (1)
<u>CSF</u> Core Cooling - Red	Core Cooling - Orange or Heat Sink - Red	<u>CSF</u> Core Cooling - Yellow with subcooling < 0 °F	RCS Integrity - Red or Heat Sink - Red	<u>CSF</u> —	Containment - Red or Core Cooling - Orange > 15 min.
<u>RCS Activity</u> Dose Equivalent Iodine greater than 300µCi/gm	Failed Fuel Monitor, RT-8039, greater than 8.7E2 µCi/ml	<u>RCS Leak Rate</u> —	Unsoluble leak greater than 240 gpm.	<u>Containment Pressure</u> Initial increase followed by rapid unexplained decrease OR containment pressure or sump level not increasing as expected with LOCA conditions.	Greater than 6% hydrogen concentration in containment OR containment pressure greater than 9.5 psig with neither containment spray nor RCTC running.
—	—	<u>SG Tube Rupture</u> SG Tube is ruptured and has a non-isolable secondary steam release	SG Tube has ruptured and the primary to secondary leak rate is greater than 240 gpm.	<u>SG Tube Leak</u> Primary to secondary leakage greater than 500 gpd or 1 gpm with direct secondary side leakage to atmosphere	Primary to secondary leakage greater than 500 gpd or 1 gpm.
—	—	—	—	<u>Containment Isolation</u> Containment isolation signal AND Valves not closed AND A pathway to the environment exists.	<u>Containment Bypass</u> Unexplained VALID increase in reading on area or ventilation monitors in adjacent areas with known LOCA
<u>RCS Rad Monitor</u> RT-80350 or 80351 greater than 1.0E2 R/hr	—	<u>RCS Rad Monitor</u> RT-80350 or 80351 greater than 1.0E2 R/hr	—	<u>RCS Rad Monitor</u> —	RT-80350 or 80351 greater than 1.0E3 R/hr

Note:

- 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 S16 and S17.
- CSF indicators must be valid, outside the immediate control of the operator.





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EMERGENCY CLASSIFICATION TABLES  
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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 <b>Modes: 1-4</b>	<u>EAL-1</u>  Entry into 0POP05-EO-EC00, "Loss of <u>ALL</u> AC Power," for greater than 15 minutes. <b>AND</b> Either of the following conditions exists: a. Restoration of at least one 4160V AC ESF Bus within 8 hours is not likely. <b>OR</b> 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 and Onsite Power to All Three 4160V AC ESF Busses <b>Modes: 1-4</b>	<u>EAL-1</u>  Entry into 0POP05-EO-EC00, "Loss of <u>ALL</u> AC Power," for greater than 15 minutes.	SAE
SS3  Loss of All Class 1E DC Power <b>Modes: 1-4</b>	<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 and Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling <b>Modes: 5, 6, and Defueled</b>	<u>EAL-1</u>  Loss of <u>ALL ONSITE AND OFFSITE</u> power to <u>ALL</u> AC ESF Busses for greater than 15 minutes.	ALERT

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**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. <b>Modes: 1-4</b>	<u>EAL-1</u>  Only one AC ESF Bus is energized and no redundant power supply is available for greater than 15 minutes.  <u>EAL 2</u>  All energized AC ESF Busses are powered from the same source with <u>NO OTHER</u> power source available for greater than 15 minutes.	ALERT
SU1  Loss Of Offsite Power to All Three 4160V AC ESF Busses for Greater than 15 Minutes <b>Modes: 1-4</b>	<u>EAL-1</u>  Loss of <u>ALL OFFSITE</u> power to <u>ALL</u> ESF Busses for greater than 15 minutes.	UE
SU5  Unplanned Loss of Class 1E DC Power During Cold Shutdown or Refueling for Greater than 15 Minutes <b>Modes: 5 and 6</b>	<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



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RECOGNITION CATEGORY S  
SYSTEMS  
 INITIATING CONDITION MATRIX  
 REACTOR PROTECTION/TECHNICAL SPECIFICATION SHUTDOWNS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SG2 Failure of the Reactor Protection System to Complete an Automatic Reactor Trip AND Manual Reactor Trip Was <b>NOT</b> Successful AND There is Indication of an Extreme Challenge to the Ability to Cool the Core <b>Modes: 1 and 2</b>	<u>EAL-1</u> Entry into OPOP05-EO-FRS1, "Response to Nuclear Power Generation - ATWS" AND Either of the following: a. Degradation of core cooling is indicated by a valid Red or Orange path on the Core Cooling Critical Safety Function Status Tree. OR b. Degradation of heat sink is indicated by a valid Red or Orange path on the Heat Sink Critical Safety Function Status Tree.	GE
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 <b>NOT</b> Successful <b>Modes: 1 and 2</b>	<u>EAL-1</u> Entry into OPOP05-EO-FRS1, "Response to Nuclear Power Generation - ATWS"	SAE
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 <b>Modes: 1-3</b>	<u>EAL-1</u> Reactor Protection System <u>setpoint exceeded</u> with <u>NO</u> automatic trip. AND A manual reactor trip was <u>required</u> for plant shutdown.	ALERT
SU2 Operation Outside the Plant Safety Envelope As Defined By Technical Specifications <b>Modes: 1-4</b>	<u>EAL-1</u> The plant cannot be brought to the required operating mode within Technical Specifications LCO Action Statement Time.	UE



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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  <b>Modes: 1-4</b>	<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 (i.e. QDPS, ERFDADS, Proteus, Control Board, Local, etc.). 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  <b>Modes: 1-4</b>	<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, ERFDADS, Plant Computer) 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

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**RECOGNITION CATEGORY 5  
 SYSTEMS  
 INITIATING CONDITION MATRIX**

**COMMUNICATIONS/ALARMS/ASSESSMENT**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>SU3</p> <p>Unplanned Loss of Most Control Room Safety System Annunciation or Indication for Greater than 15 Minutes</p> <p><b>Modes: 1-4</b></p>	<p><u>EAL-1</u></p> <p>The following conditions exist:</p> <ul style="list-style-type: none"> <li>a. Loss of most (&gt;50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes.</li> </ul> <p align="center">AND</p> <ul style="list-style-type: none"> <li>b. Compensatory indications are available and can be adequately monitored with on-shift personnel.</li> </ul> <p align="center">AND</p> <ul style="list-style-type: none"> <li>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, ERFDADS, Plant Computer) to safely operate the unit.</li> </ul> <p align="center">AND</p> <ul style="list-style-type: none"> <li>d. Annunciator or indicator loss is not the result of planned action.</li> </ul>	<p>UE</p>
<p>SU4</p> <p>Unplanned Loss of All Onsite or Offsite Communications Capabilities</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>Unplanned loss of <u>ALL</u> onsite telephone, radio and headset communications capability affecting the ability to perform routine operations.</p> <p><u>EAL 2</u></p> <p>Unplanned loss of <u>ALL</u> onsite to offsite telephone and FAX communications capability: Plant telephone system, DPS/MCSO Ringdown Line, HL&amp;P Corporate Line, ECDC Lines, NRC ENS Line.</p>	<p>UE</p>





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**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  <b>Modes: 3 and 4</b>	<u>EAL-1</u>  Loss of ALL RCS Loops and/or loss of ALL RHR Loops as defined by T.S. 3.4.1.3, Action b, or T.S. 3.4.1.2, Action c.	SAE
SS5  Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel  <b>Modes: 5 and 6</b>	<u>EAL-1</u>  Loss of Reactor Vessel Water Level as indicated by: <ul style="list-style-type: none"> <li>a. Loss of all Decay Heat Removal Cooling as determined by entry into OPOP04-RH-0001, "Loss of Residual Heat Removal."</li> </ul> <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> <li>b. The necessity for establishing a secondary heat sink.</li> </ul> <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> <li>c. The Core is or will be uncovered as indicated by:               <ul style="list-style-type: none"> <li>• RCS Narrow Range Hot Leg Level less than -2 inches (Elev. 32'-1").</li> </ul> <p style="text-align: center;">OR</p> <li>• RCS is saturated or approaching saturation uncontrollably based on RCS Temperature and Pressure.</li> </li></ul>	SAE

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**RECOGNITION CATEGORY S  
 SYSTEMS  
 INITIATING CONDITION MATRIX**

**SHUTDOWN MAINTENANCE**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>SA1</p> <p>Loss of Offsite <u>and</u> Onsite Power to All Three 4160V AC ESF Busses During Cold Shutdown or Refueling</p> <p><b>Modes: 5, 6, and Defueled</b></p>	<p><u>EAL-1</u></p> <p>Loss of <u>ALL ONSITE AND OFFSITE</u> power to <u>ALL</u> three 4160 V AC ESF Busses for greater than 15 minutes.</p>	ALERT
<p>SA3</p> <p>Inability to Maintain Plant in Cold Shutdown</p> <p><b>Modes: 5</b></p>	<p><u>EAL-1</u></p> <p>1. The following conditions exist:</p> <p>a. Loss of Technical Specifications required functions to maintain Cold Shutdown (T.S. 3.4.1.4.1, Action a., or T.S. 3.4.1.4.2, Action b).</p> <p align="center">AND</p> <p>b. Temperature increase that either:</p> <ul style="list-style-type: none"> <li>• Results in Tavg exceeding 200°F.</li> </ul> <p align="center">OR</p> <ul style="list-style-type: none"> <li>• Results in uncontrolled temperature rise, causing Tavg to approach 200°F.</li> </ul>	ALERT
<p>SU5</p> <p>Unplanned Loss of Class 1E DC Power during Cold Shutdown or Refueling for Greater than 15 Minutes</p> <p><b>Modes: 5 and 6</b></p>	<p><u>EAL 1</u></p> <p>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.</p>	UE



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**RECOGNITION CATEGORY 5  
 SYSTEMS  
 INITIATING CONDITION MATRIX  
 FISSION PRODUCT CARRIER - THRESHOLD LEVELS**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SU6  Fuel Clad Degradation  <b>Modes: 1-6</b>	<u>EAL-1</u>  Failed Fuel Monitor, RT-8039, indicates greater than or equal to 3.0E2 uC/ML and this reading is not the result of a crud burst as confirmed by a grab sample.	UE
SU7  RCS Leakage  <b>Modes: 1-4</b>	<u>EAL-1</u>  Unidentified or pressure boundary leakage greater than 10 gpm.  <u>EAL-2</u>  Identified leakage greater than 25 gpm.	UE



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**RECOGNITION CATEGORY R**  
**RADIOLOGICAL**  
**INITIATING CONDITION MATRIX**

**GASEOUS RELEASE**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>RG1</p> <p>Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mRem TEDE or 5000 mRem Thyroid for the Actual or Projected Duration of the Release Using Actual Meteorology</p> <p><b>Modes: At all times</b></p>	<p><u>EAL 1</u></p> <p>A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown indicating that the release may have exceeded the emergency criterion and indicating the need to assess the release with OERP01-ZV-TP01, Offsite Dose Calculations.</p> <p style="text-align: center;"><b>UNIT VENT</b></p> <p>RT-8010A &gt; 3E-3 uC/cc or RT-8010B &gt; 6E8 uC/S for 30 minutes</p> <p><b>CONDENSER AIR REMOVAL</b></p> <p>RT-8027 &gt; 6E8 uC/S for 30 minutes</p> <p style="text-align: center;"><b>MAIN STEAM LINE</b></p> <p>RT-8046 &gt; 5.0E2 uC/ML RT-8047 &gt; 5.0E2 uC/ML RT-8048 &gt; 5.0E2 uC/ML RT-8049 &gt; 5.0E2 uC/ML</p> <p><u>EAL-2</u></p> <p>Dose assessment indicates dose consequences greater than 1000 mRem TEDE and/or 5000 mRem thyroid.</p> <p><u>EAL-3</u></p> <p>Field survey results indicate site boundary dose rates exceeding 1000 mRem/hr expected to continue for more than one hour; OR Analysis of field survey samples indicate thyroid dose commitment of 5000 mRem for one hour of inhalation.</p>	<p>GE</p>

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**RECOGNITION CATEGORY R**  
**RADIOLOGICAL**  
**INITIATING CONDITION MATRIX**

**GASEOUS RELEASE**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>RS1</p> <p>Site Boundary Dose Rate Exceeding from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid for the Actual or Projected Duration of the Release</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with OERP01-ZV-TP01, "Offsite Dose Calculations."</p> <p align="center"><b>UNIT VENT</b>        RT-8010A &gt; 7E-4 uC/cc        or        RT-8010B &gt; 6E7 uC/S        for 30 minutes</p> <p align="center"><b>CONDENSER AIR REMOVAL</b>        RT-8027 &gt; 6E7 uC/S        for 30 minutes</p> <p align="center"><b>MAIN STEAM LINE</b>        RT-8046 &gt; 5.0E1 uC/ML        RT-8047 &gt; 5.0E1 uC/ML        RT-8048 &gt; 5.0E1 uC/ML        RT-8049 &gt; 5.0E1 uC/ML</p> <p><u>EAL-2</u></p> <p>Dose assessment indicates dose consequences greater than 100 mRem TEDE and/or 500 mRem thyroid.</p> <p><u>EAL-3</u></p> <p>Field survey results indicate site boundary dose rates exceeding 100 mRem/hr expected to continue for more than one hour;</p> <p align="center">OR</p> <p>Analysis of field survey samples indicate thyroid dose commitment of 500 mRem for one hour of inhalation.</p>	<p>SAE</p>



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**RECOGNITION CATEGORY R**  
**RADIOLOGICAL**  
**INITIATING CONDITION MATRIX**

**GASEOUS RELEASE**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>RA1</p> <p>Any Unplanned Release of Gaseous Radioactivity to the Environment that Exceeds 200 Times the Radiological Effluent Limits for 15 Minutes or Longer</p> <p><b>Modes: At all times</b></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 OPSP07-VE-0005, Unit Vent Effluent Permit.</p> <p align="center"><b>UNIT VENT</b></p> <p align="center">RT-8010A &gt; 2E-5 uC/cc or RT-8010B &gt; 1E7 uC/S</p> <p align="center"><b>CONDENSER AIR REMOVAL</b></p> <p align="center">RT-8027 &gt; 1E7 uC/S</p> <p><u>EAL-2</u></p> <p>Confirmed sample analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 200 times the radiological effluent limits.</p> <p><u>EAL-3</u></p> <p>Site boundary radiation dose &gt; 10 mRem/hr for greater than 15 minutes based on dose projections or field team measurements.</p>	<p>ALERT</p>

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**RECOGNITION CATEGORY R**  
**RADIOLOGICAL**  
**INITIATING CONDITION MATRIX**

**GASEOUS RELEASE**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p><b>RU1</b></p> <p>Any Unplanned Release of Gaseous Radioactivity to the Environment that Exceeds Two (2) Times the Radiological Effluent Limits for expected duration of 60 Minutes or Longer</p> <p><b>Modes: At all times</b></p>	<p><u><b>EAL-1</b></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 OPSP07-VE-0005, "Unit Vent Effluent Permit."</p> <p align="center"><b>UNIT VENT</b></p> <p align="center">RT-8010A &gt; 2E-7 uC/cc or RT-8010B &gt; 1E5 uC/S</p> <p align="center"><b>CONDENSER AIR REMOVAL</b></p> <p align="center">RT-8027 &gt; 1E5 uC/S</p> <p><u><b>EAL-2</b></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 two (2) times the radiological effluent limits.</p> <p><u><b>EAL-3</b></u></p> <p>Valid dose projection greater than 0.1 mRem/hr at the site boundary for 60 minutes or longer.</p>	<p><b>UE</b></p>



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**RECOGNITION CATEGORY R**  
**RADIOLOGICAL**  
**INITIATING CONDITION MATRIX**

**RADIATION LEVELS**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG2 Unexpected Increase in Containment Radiation <b>Modes: 1-4</b>	<u>EAL-1</u>  Valid reading on RT-8050 or 8051 greater than 1.0E3 R/hr.	GE
RS2 Unexpected Increase in Containment Radiation Levels <b>Modes: 1-4</b>	<u>EAL-1</u>  Valid reading on RT-8050 or 8051 greater than 1.0E2 R/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  <b>Modes: At all times</b>	<u>EAL-1</u>  Valid readings on one or more of the following monitors:  RT-8035 > 5 E-2 $\mu$ C/ML RT-8036 > 5 E-2 $\mu$ C/ML RT-8090 > 5.0 E3 mR/hr RT-8099 > 5.0 E3 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  <b>Modes: At all times</b>	Valid Readings on any of the following monitors:  <u>EAL-1</u> RT-8066 > 1.5 E1 mR/hr  <u>EAL-2</u> RT-8058 > 5.0 E3 mR/hr RT-8060 > 5.0 E3 mR/hr RT-8061 > 5.0 E3 mR/hr RT-8062 > 5.0 E3 mR/hr RT-8063 > 5.0 E3 mR/hr RT-8077 > 5.0 E3 mR/hr RT-8084 > 5.0 E3 mR/hr RT-8085 > 5.0 E3 mR/hr RT-8086 > 5.0 E3 mR/hr RT-8087 > 5.0 E3 mR/hr RT-8090 > 5.0 E3 mR/hr	ALERT

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**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 monitors-RT-8052 through RT-8101 greater than 1000 Times 24 hr. average.	
<b>Modes: At all times</b>	<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)	



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**RECOGNITION CATEGORY H**  
HAZARDS  
**INITIATING CONDITION MATRIX**

**SECURITY**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<b>HG1</b>  Security Event Resulting in Loss of Ability to Reach and Maintain Cold Shutdown  <b>Modes: 1-6</b>	<u><b>EAL-1</b></u>  Loss of physical control of the Control Room due to security event.  <u><b>EAL-2</b></u>  Loss of physical control of the remote shutdown capability due to security event.	<b>GE</b>
<b>HS1</b>  Security Event in a Plant Vital Area  <b>Modes: At all times</b>	<u><b>EAL-1</b></u>  Intrusion into a Vital Area by a hostile force.  <u><b>EAL-2</b></u>  Security Emergency which in the judgement of the Emergency Director could prevent safe shutdown or interfere with maintaining safe shutdown conditions.  <u><b>EAL-3</b></u>  Confirmed presence of an explosive device in a Vital Area.	<b>SAE</b>

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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**SECURITY**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA1	<u>EAL-1</u>	ALERT
Security Event in the Protected Area	Intrusion into the Protected Area by a hostile force.	
	<u>EAL-2</u>	
Modes: At all times	Sabotage attempt in Protected Area (plant equipment or security equipment).	
	<u>EAL-3</u>	
	Hostage situation inside Protected Area.	
	<u>EAL-4</u>	
	Security Alert as identified by the Security Force Supervisor (SFS) which in the judgement of the Emergency Director may affect safe plant operation.	
	<u>EAL-5</u>	
	Security Emergency	
	<u>EAL-6</u>	
	Explosive device discovered within the Protected Area and outside a Vital Area.	
	<u>EAL-7</u>	
	Overt threat or attack as identified by SFS.	
	<u>EAL-8</u>	
	Intentional intrusion into Protected Area as identified by SFS.	



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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**SECURITY**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<b>HUI</b>  Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant  <b>Modes: At all times</b>	<u>EAL-1</u>  Extortion threat.	UE
	<u>EAL-2</u>  Hostage situation onsite outside Protected Area.	
	<u>EAL-3</u>  Security Alert.	
	<u>EAL-4</u>  Civil disturbance outside Protected Area which in the judgement of the SFS or Emergency Director could adversely affect security or plant operations.	
	<u>EAL-5</u>  Credible bomb threat as identified by the SFS.	



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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**FIRE/EXPLOSION**

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

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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  <b>Modes: At all times</b>	<u>EAL-1</u>  Fire within the areas below which could affect normal plant operation and 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"> <li>• Switchyard</li> <li>• Turbine Generator Building</li> <li>• Mechanical/Electrical Auxiliary Building</li> <li>• Fuel Handling Building</li> <li>• Reactor Containment Building</li> <li>• Essential Cooling Water Intake Structure</li> <li>• Isolation Valve Cubicle</li> <li>• Diesel Generator Building</li> </ul>	UE

TOXIC/FLAMMABLE  
GAS

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**RECOGNITION CATEGORY II  
 HAZARDS  
 INITIATING CONDITION MATRIX**

**TOXIC/FLAMMABLE GAS**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>HA3</p> <p>Toxic/Flammable Gases Potentially Affecting Safe Operation</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>Confirmed entry of toxic gas into Control Room envelope as indicated by Hi Toxic Gas Alarm on panel 22MO3, Window D1 or F1.</p> <p><u>EAL-2</u></p> <p>Uncontrolled entry of flammable gas into a Vital Area.</p> <p><u>EAL-3</u></p> <p>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.</p>	ALERT
<p>HU3</p> <p>Toxic/Flammable Gases Affecting Plant Operation</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>Onsite toxic or flammable gas release which requires evacuation of areas within the Protected Area.</p> <p><u>EAL-2</u></p> <p>Report by Local, County or State Officials for potential evacuation of site personnel based on offsite event.</p>	UE



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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**NATURAL PHENOMENA**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>HA4</p> <p>Natural or Destructive Phenomena Potentially Affecting Safe Operation</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u> Seismic motion exceeding Operating Basis Earthquake (OBE) as indicated by Seismic monitor alarm and confirmed by 1/2POP04-SY-0001.</p> <p><u>EAL-2</u> Tornado or high wind causing visible structural damage which potentially affects the safety function of any of the following plant structures:</p> <ul style="list-style-type: none"> <li>• Reactor Containment Building</li> <li>• ECW Intake Structure</li> <li>• Mechanical/Electrical Auxiliary Building</li> <li>• Isolation Valve Cubicle</li> <li>• Fuel Handling Building</li> <li>• Diesel Generator Building</li> <li>• Switchyard</li> </ul> <p><u>EAL-3</u> Unmitigated entry of flood water into safety related structures.</p> <p><u>EAL-4</u> Loss of all off-site power to <u>all</u> ESF busses concurrent with conditions which are predicted to make site inaccessible for more than 72 hours.</p> <p><u>EAL-5</u> Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall.</p> <p><u>EAL-6</u> Essential Cooling Pond level less than 23.0 ft. msl with no make-up available.</p> <p><u>EAL-7</u> Turbine failure generated missiles result in any visible structural damage potentially affecting the functionality of safety related structures, systems, or components.</p>	<p>ALERT</p>



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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**NATURAL PHENOMENA**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU4  Natural or Destructive Phenomena Affecting Plant Operations  <b>Modes: At all times</b>	<u>EAL-1</u>  Earthquake detected by seismic monitoring system and confirmed by 1/2POP04-SY-0001, "Seismic Event."	UE
	<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 OPOP04-ZO-0002, "Severe Weather Guidelines".	
	<u>EAL-4</u>  Essential Cooling Pond level less than 25.0 ft. msl.	
	<u>EAL-5</u>  Report of main turbine failure resulting in casing penetration  OR  damage to turbine or generator seals.	



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RECOGNITION CATEGORY H  
HAZARDS  
INITIATING CONDITION MATRIX

CONTROL ROOM EVACUATION

INITIATING CONDITIONS	EMERGENCY ACTION LEVEL	CLASS
<p>HS2</p> <p>Control Room Evacuation and Plant Control Cannot be Established</p> <p><b>Modes: 1-6</b></p>	<p><u>EAL-1</u></p> <p>1. The following conditions exist:</p> <p>a. Control Room evacuation has been initiated per OPOP04-ZO-0001, "Control Room Evacuation".</p> <p style="text-align: center;"><b>AND</b></p> <p>b. Control of the plant cannot be established by completion of step 12 within 15 minutes.</p>	<p>SAE</p>
<p>HA5</p> <p>Control Room Evacuation</p> <p><b>Modes: 1-6</b></p>	<p><u>EAL-1</u></p> <p>The Control Room is evacuated and the plant is being controlled within 15 minutes per OPOP04-ZO-0001, "Control Room Evacuation".</p>	<p>ALERT</p>



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**RECOGNITION CATEGORY H**  
**HAZARDS**  
**INITIATING CONDITION MATRIX**

**MISCELLANEOUS EVENTS**

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
<p>HG2</p> <p>Miscellaneous Events which May Potentially Result in a Hazard to the Public</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>Other conditions exist which in the judgement of the Emergency Director indicate:</p> <p>a. Actual or imminent substantial core degradation with potential for loss of containment.</p> <p style="text-align: center;">OR</p> <p>b. Potential for uncontrolled radionuclide releases. These releases can reasonably be expected to exceed EPA PAG plume exposure levels outside the site boundary.</p>	GE
<p>HS3</p> <p>Miscellaneous Events Affect the Ability to Shutdown the Plant or Maintain it in a Safe Shutdown Condition</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>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.</p>	SAE
<p>HA6</p> <p>Miscellaneous Events Potentially Affecting Safe Plant Operation</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>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.</p>	ALERT
<p>HU5</p> <p>Miscellaneous Events Affecting Plant Operations</p> <p><b>Modes: At all times</b></p>	<p><u>EAL-1</u></p> <p>Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.</p>	UE

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BASES FOR EMERGENCY ACTION LEVELS  
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ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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FISSION PRODUCT BARRIER DEGRADATION TABLE

FUEL CLAD BARRIER

1. Critical Safety Function (CSF) Status

Loss

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

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.

2. Primary Coolant (RCS) Activity Level

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.

Potential Loss

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

3. Containment Radiation Monitoring

Loss

A reading of greater than 100 R/hr on the RCB Accident Monitors 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 #4 and this EAL indicates a loss of both the fuel clad and RCS barriers.

Potential Loss

None



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FISSION PRODUCT BARRIER DEGRADATION TABLE

REACTOR COOLANT SYSTEM (RCS) BARRIER

1. CSF Status

Loss

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

Potential Loss

A RED path on these Critical Safety Functions indicates an extreme challenge and a potential loss of the RCS barrier.

2. RCS Leak Rate

Loss

None.

Potential Loss

Normal RCS make up capacity of 1 CCP is unable to maintain RCS liquid inventory. 240 gpm is chosen because this is the approximate design flow of a CCP with the RCS at 2235 psig and is the maximum charging flow identified in OPOP01-ZA-0018, "Emergency Operating Procedure User's Guide."

3. SG Tube Rupture

Loss

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

Potential Loss

Normal operation of CVCS is unable to maintain RCS liquid inventory. 240 gpm is chosen because this is the approximate design flow of a CCP with the RCS at 2235 psig and is the maximum charging flow identified in OPOP01-ZA-0018.

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FISSION PRODUCT BARRIER DEGRADATION TABLE

REACTOR COOLANT SYSTEM (RCS) BARRIER, CONTINUED

4. Containment Radiation Monitoring

Loss

A reading of greater than 100 R/hr on the RCB Accident Monitors 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 #4 and this EAL indicates a loss of both the fuel clad and RCS barriers.

Potential Loss

None.

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FISSION PRODUCT BARRIER DEGRADATION TABLE

CONTAINMENT BARRIER

1. CSF Status

Loss

None.

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.

2. Containment Pressure

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.

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.

ADDENDUM 2  
BASES FOR EMERGENCY ACTION LEVELS  
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FISSION PRODUCT BARRIER DEGRADATION TABLE

CONTAINMENT BARRIER, CONTINUED

3. SG Tube Leak

Loss

Direct secondary side releases to atmosphere are from main steam PORVs, main steam safeties, or steam leaks. For small SG tube leaks which don't exceed RCS Barrier EALs, this would result in an Unusual Event declaration.

Potential Loss

A steam generator tube leak greater than Technical Specification Limits of 500 gallons per day or 1 gallon per minute represents a potential loss of the containment barrier.

4. Containment Isolation Valve Status After Containment Isolation

Loss

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

Potential Loss

None.

5. Containment Bypass

Loss

None.

ADDENDUM 2  
BASES FOR EMERGENCY ACTION LEVELS  
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FISSION PRODUCT BARRIER DEGRADATION TABLE

CONTAINMENT BARRIER, CONTINUED

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 (eg. 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. Increases in monitor readings without a LOCA should be classified in accordance with the Radiological section.

6. Containment Radiation Monitoring

Loss

None.

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 loss of containment, which would lead to a classification of General Emergency.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SUI                      Loss of Offsite Power to All Three 4160V AC ESF Busses for  
Greater than 15 Minutes

OPERATING MODE APPLICABILITY:    1-4

EMERGENCY ACTION LEVELS:

EAL-1      Loss of ALL OFFSITE power to ALL ESF Busses for greater than 15 minutes.

BASES:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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, ERFDADS, Plant Computer) 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.



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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, HL&P Corporate Line, ECDC Lines, 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.).

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 uCi/cc and this reading is not the result of a crud burst as confirmed by a grab sample.

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 uCi/cc reading on RT-8039 is based on 0.1% failed fuel. Grab sample verification is required in case of rad monitor failures or high background radiation errors. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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. A reasonable time is allowed to determine the source and curtail the leakage prior to declaring this event (loss of inventory <500 gal). 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."

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 Loss of ALL ONSITE AND OFFSITE power to ALL AC 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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

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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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SYSTEM MALFUNCTIONS

ALERT

SA3      Inability to Maintain Plant in Cold Shutdown

OPERATING MODE APPLICABILITY:    5

EMERGENCY ACTION LEVELS:

EAL-1    The following conditions exist:

- a.    Loss of Technical Specifications required functions to maintain Cold Shutdown. (Technical Specification 3.4.1.4.1 Action a, or Technical Specification 3.4.1.4.2, Action b).

AND

- b.    Temperature increase that either:

- Results in Tavg exceeding 200°F.

OR

- Results in uncontrolled temperature rise causing Tavg 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.



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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, ERFDADS, Plant Computer) 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 Only one AC ESF Bus is energized and no redundant power supply is available for greater than 15 minutes.

OR

EAL-2 All energized AC ESF Busses are powered from the same source with NO OTHER power source available for greater than 15 minutes.

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."

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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      Entry into 0POP05-EO-EC00, "Loss Of All AC Power", 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."

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

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

OPERATING MODE APPLICABILITY: 3 and 4

EMERGENCY ACTION LEVELS:

EAL-1 Loss of ALL RCS Loops and/or Loss of ALL RHR Loops as defined by T.S. 3.4.1.3, Action b. or T.S. 3.4.1.2, Action c.

BASES:

This EAL addresses 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. Escalation to General Emergency would be via Radiological or Fission Product Barrier Degradation ICs.



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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, OPOP04-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").

OR

- RCS is saturated or approaching saturation uncontrollably based on RCS Temperature and Pressure.

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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 (i.e. QDPS, ERFDADS, Proteus, Control Board, Local, etc.).

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., rad monitors, etc.)

"Compensatory non-alarming indications" in this context includes computer based information such as QDPS, ERFDADS, PROTEUS, 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 8 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 eight hours to restore AC power is based on a site blackout coping analysis performed in conformance with 10CFR50.63 and Regulatory Guide 1.1.55, "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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 OPOP05-EO-FRS1, "Response to Nuclear Power Generation - ATWS".

AND

Either of the following:

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

OR

- b. Degradation of heat sink is indicated by a valid Red or Orange 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.

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BASES FOR EMERGENCY ACTION LEVELS

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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.

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BASES FOR EMERGENCY ACTION LEVELS

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

RUI Any Unplanned Release of Gaseous Radioactivity to the Environment that Exceeds Two (2) Times the Radiological Effluent Limits for expected duration of 60 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 0PSP07-VE-0005, "Unit Vent Effluent Permit".

RT8010A	Unit Vent (Iodine Conc.)	>2E-7 uCi/cc
RT8010B	Unit Vent (Release Rate)	>1E5 uCi/sec
RT8027	Condenser Air Removal	>1E5 uCi/sec

Note: If the monitor reading(s) 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 two (2) times radiological effluent limits.

EAL-3 Valid dose projection greater than 0.1 mRem/hr at the site boundary 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.



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BASES FOR EMERGENCY ACTION LEVELS  
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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

EAL 1 is set at 2 times the annual dose limits (ie 200 mRem/yr). The release rate  $1 \text{ E}+5$  uCi/sec produces dose rates at the site boundary slightly less than 200 mrem in a year. This EAL assumes a routine isotopic mixture of noble gases and I-131. With the EAL established at  $1 \text{ E}+5$  uCi/sec, 10-15% conservatism is built into the EAL to compensate for isotopic mixture changes and minor variations in instrument response.

Previously, the release rate EALs were based solely on noble gas. In this EAL, iodine release rates or concentrations are also evaluated. The iodine content is based on an estimated peak iodine content seen in effluents during startup and shutdown. At a continuous release rate of  $1 \text{ E}+5$  uCi/sec, 0.01% I-131 would result in 500 mrem in a year to the thyroid or 25 mrem TEDE. Comparing these results with the limitation of the current ODCM Control of 1500 mrem/yr to the thyroid and the new 10CFR20 limitation of 50 mrem in a year and  $2 \text{ E}-10$  uCi/cc in unrestricted areas, the presumed release rate for iodine could be doubled without exceeding these limits. Increasing the presumed release rate for iodine by a factor of two and dividing by the unit vent flow rate yields an iodine release concentration of  $1 \text{ E}-7$  uCi/cc at the Unit Vent to produce the annual dose limit. The recommendation for UE EAL is 2 times the limit, therefore, a UE EAL of  $2 \text{ E}-7$  uCi/cc was chosen.

Unplanned releases in excess of two times the site radiological effluent limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the Unusual Event emergency class) is not the primary concern here; 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 four times radiological effluent limits for 30 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.

10CFR50.72 requires a non-emergency four hour report for release that exceeds two times concentration limits specified in 10CFR Part 20 in unrestricted areas averaged over a period of one hour. 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 Limits.

Monitor indications are calculated on the basis of the methodology of the site Offsite Dose Calculation Manual (ODCM), or other site procedures that are used to demonstrate compliance with 10CFR20 and/or 10CFR50 Appendix I requirements. Annual average meteorology is used.

In EAL-3, the 0.10 mRem/hr value is based on a proration of two times the 500 mR/yr basis of the 10CFR20 non-occupational dose limits, rounded down to 0.10 mR/hr.

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BASES FOR EMERGENCY ACTION LEVELS

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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 monitors - RT-8052 through RT-8101 greater than 1000 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.

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BASES FOR EMERGENCY ACTION LEVELS  
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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

RA1 Any Unplanned Release of Gaseous Radioactivity to the Environment that Exceeds 200 Times Radiological Effluent Limits 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".

RT8010A	Unit Vent (Iodine Conc.)	>2E-5 uCi/cc
RT8010B	Unit Vent (Release Rate)	>1E7 uCi/sec
RT8027	Condenser Air Removal	>1E7 uCi/sec

NOTE: If the monitor reading(s) 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 analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 200 times radiological effluent limits.

EAL-3 Dose projection or a valid reading from radiation monitoring teams at the site boundary are greater than 10.0 mRem/hr sustained for 15 minutes or longer.

BASES:

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

EAL 1 is set at 200 times the annual dose limits (20 Rem/yr). The release rate  $1 \text{ E}+7 \text{ uCi/sec}$  would produce dose rates at the site boundary slightly less than 20 rem in a year. This EAL assumes a routine isotopic mixture of noble gases and I-131. With the EAL established at  $1 \text{ E}+7 \text{ uCi/sec}$ , 10-15% conservatism would be built into the EAL to compensate for isotopic mixture changes and minor variations in instrument response.

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Previously, the release rate EALs were based solely on noble gas. In this EAL, iodine release rates or concentrations are also evaluated. The iodine content was based on an estimated peak iodine content seen in effluents during startup and shutdown. At a continuous release rate of  $1 \text{ E}+5 \text{ uCi/sec}$ , 0.01% I-131 would result in 600 mrem in a year to the thyroid or 25 mrem TEDE. Comparing these results with the limitation of the current ODCM Control of 1500 mrem/yr to the thyroid and the new 10CFR20 limitation of 50 mrem in a year and  $2 \text{ E}-10 \text{ uCi/cc}$  in unrestricted areas, the presumed release rate for iodine could be doubled without exceeding these limits. Increasing the presumed release rate for iodine by a factor of two and dividing by the unit vent flow rate yields an iodine release concentration of  $1 \text{ E}-7 \text{ uCi/cc}$  at the Unit Vent to produce the annual dose limit. The recommendation for ALERT is 200 times the limit, therefore, an ALERT EAL of  $2 \text{ E}-5 \text{ uCi/cc}$  was chosen.

Monitor indications are calculated on the basis of the methodology of the site Offsite Dose Calculation Manual (ODCM), or other site procedures that are used to demonstrate compliance with 10CFR20 and/or 10CFR50 Appendix I requirements -- adjusted upwards by a factor of 200. Annual average meteorology is used.

In EAL-3, the 10 mR/hr value is based on a proration of 200 times the 500 mR/yr basis of the 10CFR20 non-occupational dose limits, rounded down to 10 mR/hr.

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BASES FOR EMERGENCY ACTION LEVELS

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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 >5E-2 uCi/ml
Fuel Bridge Area Radiation Monitor	RT8090 >5E3 mR/hr
Refuel Floor Area Radiation Monitor	RT8099 >5E3 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.

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BASES FOR EMERGENCY ACTION LEVELS

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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.

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BASES FOR EMERGENCY ACTION LEVELS

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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 mR/hr in areas requiring continuous occupancy to maintain plant safety functions:

RT8066 - 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 mR/hr in the Control Room or TSC may be a problem in itself.

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BASES FOR EMERGENCY ACTION LEVELS

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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 mR/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 mR/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.



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BASES FOR EMERGENCY ACTION LEVELS

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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 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 or is expected to exceed the value shown indicating that the release may have exceeded the emergency criterion and indicates the need to assess the release with 0ERP01-ZV-TP01, "Offsite Dose Calculations."

RT8010A	Unit Vent (Iodine Conc.)	>7E-4 uCi/cc for 30 min
RT8010B	Unit Vent (Release Rate)	>6E7 uCi/sec for 30 min
RT8027	Condenser Air Removal	>6E7 uCi/sec for 30 min
RT8046-8049	Main Steam Line Monitors	>5.0 EI uCi/ml

NOTE: If the monitor readings are sustained for longer than 15 minutes and required assessments cannot be completed within this period, then the declaration must be made based on the reading.

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

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.

BASES:

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

EAL 1 uses a source term that is representative of a postulated accident mixture of noble gases. The mixture was assumed based on gap inventory decayed for two hours. For the purposes of evaluating the release rate channel indication (i.e. noble gas) the iodine component was initially ignored. The presumed isotopic mix causes an indication 40% to 50% higher than the true release rate. This would cause the EAL to be reached earlier than warranted by the release rate and is therefore conservative.

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

A dose rate of 100 mrem/hr at the site boundary would be generated by a noble gas release rate of  $8.8 \text{ E}+7 \text{ uCi/sec}$ . The 100 mrem/hr level is a suggested action level for SAE. However, when 0.2% I-131 is added to the mixture, the release rate required to generate 100 mrem/hr at the site boundary drops to  $6 \text{ E}+7 \text{ uCi/sec}$  and the iodine content becomes a significant fraction of the combined exposure as well as the thyroid exposure. (This level is above the ALERT EAL and the primary contributors to offsite dose are the krypton and iodine isotopes.) The iodine contained in the release could result in a dose of 0.8 Rem to the thyroid at the site boundary in an hour. The calculated combined exposure and the thyroid exposure is highly dependant on the iodine content of the plume. Therefore, separate EALs are used for noble gas and iodine.

Establishing a SAE release rate EAL at  $6 \text{ E}+7 \text{ uCi/sec}$  will be conservative in instances where the release is primarily noble gas with less than 0.2% iodine activity and non-conservative in instances where iodine activity is higher. Compensating for this situation is accomplished with a separate EAL corresponding to the iodine concentration that will generate 0.5 Rem/hr. Manipulating the release rate to generate 500 mrem to the thyroid in one hour then dividing the calculated isotopic release rate for I-131 by the Unit Vent flow rate yields  $7.66 \text{ E}-4 \text{ uCi/cc}$ .

The 500 mRem integrated thyroid dose was established in consideration of the 1:5 ratio of the EPA Protective Action Guidelines for TEDE and thyroid.

Integrated doses are generally not monitored in real-time. In establishing the emergency action levels, duration of one hour is assumed, and the EALs are based on a site boundary dose rate of 100 uRem/hour TEDE or 500 mRem/hour 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.

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BASES FOR EMERGENCY ACTION LEVELS

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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 8051 greater than 1.0E2 R/hr

BASES:

A reading of greater than 100 R/hr on the RCB Accident Monitors 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

GENERAL EMERGENCY

RG1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mRem TEDE or 5000 mRem Thyroid 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 or is expected to exceed the value shown indicates that the release may have exceeded the emergency criterion and indicating the need to assess the release with 0ERP01-ZV-TP01, "Offsite Dose Calculations".

RT8010A	Unit Vent (Iodine Conc.)	>3E-3 uCi/cc for 30 min
RT8010B	Unit Vent (Release Rate)	>6E8 uCi/sec for 30 min
RT8027	Condenser Air Removal	>6E8 uCi/sec for 30 min
RT8046-8049	Main Steam Line Monitors	>5.0E2 uCi/ml

NOTE: If the monitor reading 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 reading.

EAL-2 Dose assessment indicates dose consequences greater than 1000 mRem TEDE and/or 5000 mRem thyroid.

EAL-3 Field survey results indicate site boundary dose rates exceeding 1000 mRem/hr expected to continue for more than one hour; or analysis of field survey samples indicate thyroid dose commitment of 5000 mRem for one hour of inhalation.

BASES:

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

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BASES FOR EMERGENCY ACTION LEVELS

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Doses in excess of 1 Rem TEDE or 5 Rem to the thyroid at the site boundary warrant declaration of a General Emergency. The EAL for GE 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 to the thyroid at the site boundary. The iodine activity in the release affects the EAL determination for General Emergency as it did for SAE. A release rate of  $6 \text{ E}+8 \text{ uCi/sec}$  produces a dose of 1 Rem at the site boundary in 1 hour with 0.2% iodine. In this case, the dose to the thyroid is the more limiting factor and the corresponding I-131 concentration that will produce 5 Rem at the site boundary in 1 hour is  $7.65 \text{ E}-3 \text{ uCi/cc}$ . This value is above the theoretical maximum response of the iodine channel on the Unit Vent, so the EAL for iodine is administratively set near the maximum indication.

This level constitutes the upper level of the desirable gradient for the Site Area Emergency. 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.

Integrated doses are generally 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, whichever is more limiting (depends on source term assumptions). 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.

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BASES FOR EMERGENCY ACTION LEVELS

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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 8051 greater than 1.0E3 R/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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HUI 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 Extortion Threat.

EAL-2 Hostage situation onsite outside Protected Area.

EAL-3 Security Alert.

EAL-4 Civil disturbance outside Protected Area which in the judgement of the SFS or Emergency Director could adversely affect security or plant operations.

EAL-5 Credible bomb threat as identified by the SFS.

BASES:

These EALs are based on the STPEGS Safeguards Contingency Plan Events as indicated. 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.

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BASES FOR EMERGENCY ACTION LEVELS

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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 could affect normal plant operation and which is not under control within 15 minutes of initial notification. 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)

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

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, waste-basket 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 (i.e., warehouses) or areas that are not contiguous or immediately adjacent to plant Vital Areas. Verification of the alarm in this context means those actions taken in the Control Room to determine that the Control Room fire alarm is not spurious. 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."



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 (i.e., 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 1/2POP04-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, "Severe Weather Guidelines".
- EAL-4 Essential Cooling Pond (ECP) level less than 25.0 ft msl.
- 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 1/2POP04-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: Based on requirement to shutdown the facility for ECP level less than 25.5 ft msl (STPEGS UFSAR 2.5.1.1.5).



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU5 Miscellaneous Events Affecting Plant Operations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.

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 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
- Vehicle crash on-site
- Aircraft crash on-site.
- Train derailment on-site.
- 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 pre-conceived description.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 Sabotage attempt in Protected Area (plant equipment or security equipment).

EAL-3 Hostage situation inside Protected Area.

EAL-4 Security Alert as identified by the Security Force Supervisor (SFS) which in the judgement of the Emergency Director may affect safe plant operation.

EAL-5 Security Emergency

EAL-6 Explosive device discovered within the Protected Area and outside a Vital Area.

EAL-7 Overt threat or attack as identified by SFS.

EAL-8 Intentional intrusion into Protected Area as identified by SFS.

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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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HAZARDS & OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

HA2 Fire or Explosion in : 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
- Switchyard

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.

AND

c. More than one train of safe shutdown equipment is potentially affected.

EAL-2 Fire or explosion in one or more of the areas listed below which impacts ability to maintain cooling for spent fuel.

- Fuel Handling Building
  - Mechanical/Electrical Auxiliary Building
- (Mode: At all times)

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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. Because of the separation of the three safety trains, damage to a single safe shutdown train still allows for more than adequate redundancy.

Consequently, an Alert is not justified if only one train is affected. 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. As noted for fire, more than one train of safe shutdown equipment should be affected for entering an Alert.

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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

(Page 59 of 68)

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 as indicated by Hi Toxic Gas Alarm on panel 22M03, Window D1 or F1.

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 (i.e., 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.



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 1/2POP04-SY-0001.
- EAL-2 Tornado or high wind causing visible structural damage which potentially affects the safety function of 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
  - Switchyard
- EAL-3 Unmitigated entry of flood water into safety related structures.
- EAL-4 Loss of off-site power to ALL ESF busses concurrent with conditions which are predicted to make site inaccessible for more than 72 hours.
- EAL-5 Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall.
- EAL-6 Essential Cooling Pond level less than 23.0 ft. msl with no make-up available.
- EAL-7 Turbine failure generated missiles result in any visible structural damage potentially affecting the functionality of safety related structures, systems, or components.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

BASES:

- EAL-1: Based on STPEGS PSAR 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 flooding affecting systems required for safe shutdown of the plant.
- EAL-4: Based on potential for exhausting fuel supply for emergency diesel generators with no means for replenishment. If adequate fuel supply is assured this EAL is not necessary.
- EAL-5: Based on potential for a design basis flood event resulting from breach of the dike. (Ref. UFSAR 3.4.1)
- EAL-6: 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-7: 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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

(Page 62 of 68)

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).

As stated in NUREC-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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 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:

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 Alert emergency class.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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 within 15 minutes.

BASES:

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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.



ADDENDUM 2

BASES FOR EMERGENCY ACTION LEVELS

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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.

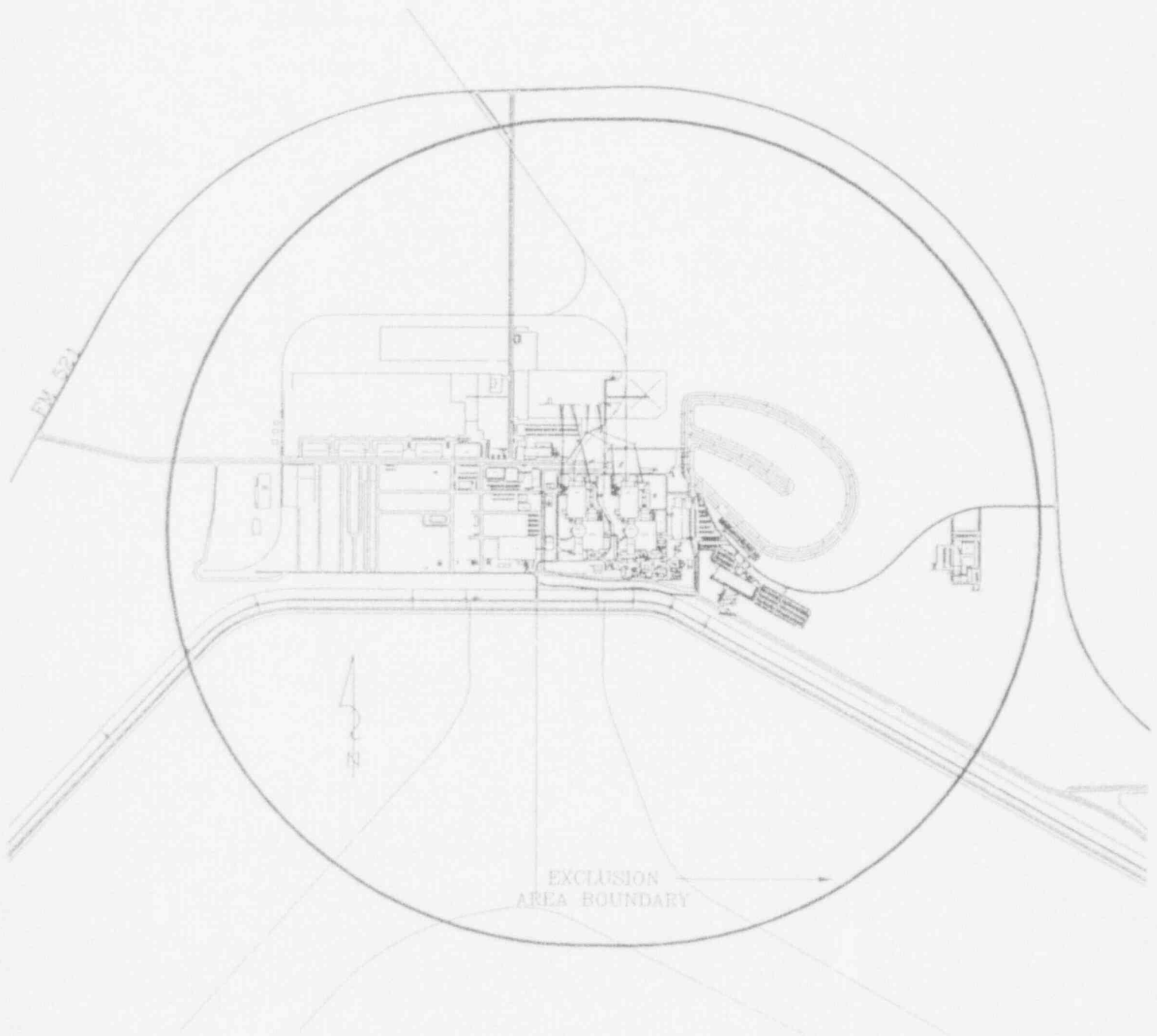
OR

- 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.

ADDENDUM 3  
EXCLUSION AREA BOUNDARY  
(Page 1 of 1)



Differences Between South Texas Project Emergency  
Classification Procedure, OERP-ZV-IN01, Rev 3 and NUMARC/NESP 007

1. Cross reference of Initiating Condition designation

<u>NUMARC</u>	<u>STP</u>
AU1	RU1
AU2	RU2
AA1	RA1
AA2	RA2
AA3	RA3
AS1	RS1
AG1	RG1
-	RG2 (New)
-	RS2 (New)
FU1	FU1
-	FU2 (New) (SU6)
-	FU3 (New) (SU7)
FA1	FA1
FS1	FS1
FG1	FG1
HU1	HU4
HU2	HU2
HU3	HU3
HU4	HU1
HU5	HU5
HA1	HA4

Differences Between South Texas Project Emergency  
Classification Procedure, OERP-2V-IN01, Rev 3 and NUMARC/NESP 007

HA2	HA2
HA3	HA3
HA4	HA1
HA5	HA5
HA6	HA6
HS1	HS1
HS2	HS2
HS3	HS3
HG1	HG1
HG2	HG2
SU1	SU1
SU2	SU2
SU3	SU3
SU4	SU6
SU5	SU7
SU6	SU4
SU7	SU5
SA1	SA1
SA2	SA2
SA3	SA3
SA4	SA4
SA5	SA5
SS1	SS1

Differences Between South Texas Project Emergency  
Classification Procedure, OERP-ZV-IN01, Rev 3 and NUMARC/NESP 007

SS2	SS2
SS3	SS3
SS4	SS4
SS5	SS5
SS6	SS6
SG1	SG1
SG2	SG2

2. Initiating Conditions RS2 and RG2 were added as unique symptoms of degraded plant conditions based on radiation levels in the containment building. These conditions are also captured in the Fission Product Barrier matrix.
3. Initiating Conditions SU6 and SU7 are also captured in the Fission Product Barrier table as FU2 and FU3.