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

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

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

In accordance with 10CFR50.4(b)(5) and 10CFR50, Appendix E, Section V, the STP Nuclear Operating Company hereby submits the attached revisions to the Technical Manager and Emergency Classification Procedures.

If there are any questions regarding this matter, please contact either Mr. Morgan at (361) 972-7004 or myself at (361) 972-8053.

P. L. Serra
Manager, Plant Protection

AM/mk
Enclosure: Letter of Receipt
Summary of Changes
0ERP01-ZV-TS07, Technical Manager, Rev. 5
0ERP01-ZV-IN01, Emergency Classification, Rev. 5

A045

cc:

*Ellis W. Merschoff
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

John A. Nakoski
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555-0001

Mohan C. Thadani
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555

*Cornelius F. O'Keefe
c/o U. S. Nuclear Regulatory Commission
P. O. Box 910
Bay City, TX 77404-0910

A. H. Gutterman, Esquire
Morgan, Lewis & Bockius
1800 M. Street, N.W.
Washington, DC 20036-5869

M. T. Hardt/W. C. Gunst
City Public Service
P. O. Box 1771
San Antonio, TX 78296

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Jon C. Wood
Matthews & Branscomb
112 East Pecan, Suite 1100
San Antonio, Texas 78205-3692

Institute of Nuclear Power
Operations - Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

R. L. Balcom/D. G. Tees
Reliant Energy, Inc.
P. O. Box 1700
Houston, TX 77251

C. A. Johnson/R. P. Powers
AEP - Central Power and Light Company
P. O. Box 289, Mail Code: N5012
Wadsworth, TX 77483

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

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To: P. L. Serra
Manager, Emergency Response
STP Nuclear Operating Company
P. O. Box 289
Wadsworth, TX 77483

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

Subject: **Receipt Acknowledgment for Changes to STP Emergency Plan Implementing Procedure(s)**

I hereby acknowledge having received changes to the STP Nuclear Operating Company's Emergency Classification Procedure transmitted by STP letter NOC-AE-01001161.

_____ _____
Signature Date

Summary of Changes
Technical Manager
0ERP01-ZV-TS07, Rev. 5

This revision does not reduce the effectiveness or change the intent of the Emergency Response Program.

This revision addresses Editorial corrections on Data Sheet 1, page 5, step 1.4, Technical Status Board Keeper and Technical Communicator were removed from the TSC last year, however the titles were inadvertently missed until now.

Summary of Changes
Emergency Classification
0ERP01-ZV-IN01, Rev. 5

This revision does not reduce the effectiveness or change the intent of the Emergency Response Program.

This revision addresses Condition Reports 99-886, 00-12164, 00-10629, 00-15547.

Changes are designated by revision bars on the following pages:

6	7	10	13	14	15	18	19	20	21	22	23	24
29	30	40	44	51	54	58	64	70	71	73	74	79
80	82	83										

The changes are noted in the following table:

Change No.	Change to Revision 4	Reason
1.	Page 6, Steps 6.10, 6.11, & 6.12, Revised procedure titles.	Editorial Change.
2.	Page 7, Step 6.17, Added reference to 01-RA-0001	Editorial Change.
3.	Addendum 1, Page 10, Containment Loss Column, SG Tube Leak, changed from "SG Tube Leak Primary to secondary leakage greater than 500 gpd or 1 gpm with direct secondary side leakage to atmosphere" **TO** "SG Tube Leak Primary to secondary leakage greater than 150 gpd through any one steam generator with direct secondary side leakage to atmosphere."	Addresses CR 99-886-2 & CR 00-10629-2, During simulator training the improper emergency action level was identified during a steam generator tube leak. This was based on misinterpreting the wording in the fission product barrier degradation table. The primary-to-secondary leakage limit of TS 3.4.6.2.c was lowered from 500 gpd in any single steam generator (combined leakage limited to 1 gpm or 1440 gpd) to 150 gpd in any single steam generator.
4.	Addendum 1, Page 10, added Emergency Action Level (EAL) Column.	Editorial Change.
5.	Addendum 1, Page 13, IC SA2, added from the Control Room.	This statement was in the Bases, moved to clarify IC, editorial change.

Change No.	Change to Revision 4	Reason
6.	Addendum 1, Page 14, Initiating Condition SS6, EAL-1, step .b & Initiating Condition SA4, EAL-1, step .b, added ICS and deleted Proteus.	Editorial Change.
7.	Addendum 1, Page 15, Initiating Condition SU3, EAL 1, Step c, added ICS.	Editorial Change.
8.	Addendum 1, Page 18, added Alert Classification Initiating Condition SA6, "EAL-1, Failed Fuel Monitor, RT-8039, indicates greater than or equal to 8.70 E+2 µCi/ml and this reading is not the result of a crud burst as confirmed by a grab sample. EAL-2, Dose Equivalent Iodine (DEI) sample greater than 300 µCi/gm."	Addresses CR 99-886-1, Added to match Addendum 1, page 2, Fission Product Barrier Degradation Table that has action levels up to an alert based on dose equivalent iodine.
9.	Addendum 1, Pages 19, 20, 21, & 22 removed Condenser Air Removal System EAL for monitor RT-8027.	Addresses CR 00-15547-1, Normal Condenser Air Removal System (CARS) exhaust is routed through the Unit Vent. Monitor RT-8027 has been recalibrated to detect Steam Generator Tube Leak in gpd instead of µCi/sec.
10.	Addendum 1, Page 19, revised Unit Vent Release Rate EAL from 3E9 µCi/sec to 2E8 µCi/sec.	Addresses CR 00-12164, Radiological Release calculation assumptions have changed for classifying emergencies based on radiological conditions. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
11.	Addendum 1, Page 19, revised Main Steam Line Release Rate EAL from 3.0E3 µCi/ML to 50 µCi/ML.	Addresses CR 00-12164, Radiological Release calculation assumptions have changed for classifying emergencies based on radiological conditions. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
12.	Addendum 1, bottom of pages 19 & 20, added *Main Steam Line Monitors RT-8046 thru RT-8049 assumes a Gap Inventory and a steam release into the environment of 1.05 E+6 lbs./hr.	This information is also in the Bases section. Moved to help understanding, editorial change.

Change No.	Change to Revision 4	Reason
13.	Addendum 1, Page 20, removed Unit Vent Release Rate EAL for monitor RT-8010A.	This monitor is only used during normal operations.
14.	Addendum 1, Page 20, revised Unit Vent Release Rate from 3E8 µCi/sec to 2E7 µCi/sec.	Addresses CR 00-12164, Radiological Release calculation assumptions have changed for classifying emergencies based on radiological conditions. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
15.	Addendum 1, Page 20, revised Main Steam Line Release Rate EAL from 3.0E2 µCi/ML to 5 µCi/ML.	Addresses CR 00-12164, Radiological Release calculation assumptions have changed for classifying emergencies based on radiological conditions. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
16.	Addendum 1, Page 21, Revised RA1 initiating condition, changed "radiological effluent limits" to "concentrations at the site boundary".	Wording change to enhance understanding.
17.	Addendum 1, Page 21, removed Unit Vent Release Rate EAL for monitor RT-8010A.	This monitor is only used during normal operations.
18.	Addendum 1, Page 21, revised Unit Vent Release Rate EAL from 1E7 µCi/sec to 2.5E6 µCi/sec.	Addresses CR 00-12164, Radiological Release calculation assumptions have changed for classifying emergencies based on radiological conditions. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
19.	Addendum 1, Page 21, EAL-2 changed "radiological effluent limits" to "2.50 E-5 µCi/ml".	Inserted the actual value so it would not have to be looked up in another procedure.
20.	Addendum 1, Page 21, EAL-4, revised >10 mrem/hr with >3 mrem/hr.	Addresses CR 00-12164 see 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.
21.	Addendum 1, Page 22, removed Unit Vent Release Rate EAL for monitor RT-8010A.	This monitor is only used during normal operations.
22.	Addendum 1, Page 22, EAL-2 changed "radiological effluent limits" to "1.00 E-6 µCi/ml".	Inserted the actual value so it would not have to be looked up in another procedure.

Change No.	Change to Revision 4	Reason
23.	Addendum 1, Page 22, EAL-2 & EAL-3, changed "radiological effluent limits" to "concentrations at the site boundary".	Wording change to enhance understanding.
24.	Addendum 1, Page 23 & 24, Added type and location to radiological monitors.	Changed to make areas easier to identify.
25.	Addendum 1, Page 24, added footer to define uncontrolled, "Outside the immediate control of the operator".	Editorial clarification.
26.	Addendum 1, Page 29 & 30, Changed Natural Phenomena to Natural or Destructive Phenomena.	Change to match HA4 & HU4 EAL bases descriptions.
27.	Addendum 2, Pages 35-41, added Emergency Action Levels (EALs) to descriptions.	Editorial Change.
28.	Addendum 2, Page 40, Revised bases for EAL-3 SG Tube Leak.	Added examples of when this EAL does not apply.
29.	Addendum 2, Page 44, Added ICS.	Editorial Change.
30.	Addendum 1, Page 51, IC SA2, added from the Control Room.	This statement is in the Bases, moved to clarify IC, editorial change.
31.	Addendum 2, Page 54, Added ICS.	Editorial Change.
32.	Addendum 2, Page 58, Added Bases for an Alert Classification due to RCS gross activity ≥ 870 μCi/ml or DEI greater than 300 μCi/gm (SA6).	Added to match Addendum 1, page 2, Fission Product Barrier Degradation Table that has action levels up to an alert based upon RCS Activity.
33.	Addendum 2, Page 64, Deleted Proteus and added ICS.	Editorial Change.
34.	Addendum 2, Page 70 & 71, Revised Bases for initiating condition RU1.	Addresses CR 00-12164, Revised due to changes in computer models and the assumptions currently used to perform offsite dose calculations. See change description for Addendum 1, Page 22. See 01-RA-0001, Radiation Monitor Calculations for Emergency Action Levels.

Change No.	Change to Revision 4	Reason
35.	Addendum 2, Pages 70, 73, 79, & 82, Removed monitor RT-8027.	Addresses CR 00-15547-1, Normal Condenser Air Removal System (CARS) exhaust is routed through the Unit Vent. Monitor RT-8027 has been recalibrated to detect Steam Generator Tube Leak in gpd instead of µCi/sec.
36.	Addendum 2, Page 73 & 74, Revised Bases for initiating condition RA1.	Revised due to changes in computer models and the assumptions currently used to perform offsite dose calculations. See change description for Adden. 1, Page 21.
37.	Addendum 2, Page 79 & 80, Revised Bases for initiating condition RS1.	Revised due to changes in computer models and the assumptions currently used to perform offsite dose calculations. See change description for Adden. 1, Page 20.
38.	Addendum 2, Page 82 & 83, Revised Bases for initiating condition RG1.	Revised due to changes in computer models and the assumptions currently used to perform offsite dose calculations. See change description for Addendum 1, Page 19.

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Technical Manager			
Quality	Non Safety-Related	Usage: N/A	Effective Date: 08/07/01

Max Keyes	N/A	N/A	Emergency Response Division
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of Contents Page

1.0 Purpose and Scope

1.1 This procedure specifies the actions to be completed by the Technical Manager in the Technical Support Center (TSC) during a declared emergency.

1.2 This procedure implements the requirements of the South Texas Project Electric Generating Station (STPEGS) Emergency Plan specific to the Technical Manager.

2.0 Responsibilities

2.1 The Technical Manager is responsible for:

2.1.1 Monitoring the status of plant systems.

2.1.2 Identifying potential failures of key systems.

2.1.3 Monitoring the status of the three fission product barriers (fuel cladding, reactor coolant system, and containment).

2.1.4 Evaluating vital station parameters on ICS/ERFDADS or from backup sources as required.

2.1.5 Evaluating Emergency Action Levels against current plant conditions including Emergency Operating Procedures and Off Normal Operating Procedures in effect.

2.1.6 Assisting in the determination of priorities for repair efforts.

2.1.7 Assigning activities to the Engineering Supervisor and staff.

3.0 Precautions and Limitations

3.1 The Technical Support Center will be activated when an Alert or higher classification has been declared in accordance with Procedure 0ERP01-ZV-IN01, Emergency Classification, or when instructed by the Emergency Director.

4.0 References

4.1 STPEGS Emergency Plan

4.2 0PGP05-ZV-0004, Emergency Plan Implementing Procedure Users Guide

4.3 0ERP01-ZV-IN01, Emergency Classification

4.4 0PGP04-ZO-0007, Aircraft Crash Onsite

4.5 0POP05-EO-F001, Subcriticality Critical Safety Function Status Tree

4.6 0POP05-EO-F002, Core Cooling Critical Safety Function Status Tree

4.7 0POP05-EO-F003, Heat Sink Critical Safety Function Status Tree

4.8 0POP05-EO-F004, Integrity Critical Safety Function Status Tree

4.9 0POP05-EO-F005, Containment Critical Safety Function Status Tree

4.10 0POP05-EO-F006, Inventory Critical Safety Function Status Tree

4.11 0PEP02-ZG-0007, Post Accident Failed Fuel Guidelines

4.12 0ERP01-ZV-RE01, Recovery Operation

4.13 0ERP01-ZV-RE02, Documentation

4.14 LCTS 9101252-936, CR 91-762

5.0 Procedure

5.1 At an Alert or higher emergency notification or as directed by the Emergency Director, report to the affected Unit's Technical Support Center and implement Data Sheet 1, Step 1.0, Initial Activities.

5.2 Complete Checklist activities as follows:

5.2.1 Use the right column to log the time an activity is performed.

5.2.2 Reoccurring activities should be documented using the Emergency Action Log.

5.2.3 Implement other activities as necessary, use checklists to help direct emergency activities.

6.0 Support Documents

6.1 Addendum 1, Shift Turnover Briefing

6.2 Data Sheet 1, Technical Manager Checklist

6.3 Form 1, TSC Manager Briefing Sheet

1.0 Provide a briefing of the event to the relief person including the following areas:

1.1 Basis of the current emergency classification and the EALs of importance.

1.2 Status of the primary fission product barriers and critical safety systems, include core damage assessment, if in progress.

1.3 Information on the status boards.

1.4 Completed checklists & logs.

1.5 Emergency Operating Procedures and Off Normal Operating Procedures that were initiated.

1.6 Evaluations underway concerning deviations from Tech Specs or Plant Procedures.

1.7 Recovery plans developed and corrective action items for plant recovery.

1.8 Current shift schedule.

2.0 Inform the following of the transfer of responsibilities to the oncoming shift replacement.

2.1 TSC Manager

2.2 Technical Support Center Technical Staff

2.3 NRC Counterpart

2.4 EOF Technical Director

3.0 Update the Technical Support Center Staffing Board.

4.0 Document the time of turnover and the identity of your relief on your log and provide copies to your replacement. Provide the original log sheets to the Administrative Manager.

5.0 Verify your telephone number on the shift schedule. If the telephone number is inside the 10-mile EPZ, then provide an alternate telephone number for contact should evacuation of the EPZ be necessary.

6.0 Take a copy of your shift schedule.

7.0 Verify possession of a STPNOC picture badge for access through possible roadblocks when returning to site on the next shift or request a replacement picture badge from the Administrative Manager.

8.0 Inform the Security Manager of the shift change and sign out when leaving the Technical Support Center.

_____ (Name) _____ (Date) _____ (Unit)

ACTION **TIME**

1.0 INITIAL ACTIVITIES

1.1 Report to the Technical Support Center of the affected Unit and sign in on the Staffing Board. _____

1.2 Ensure the Technical Manager's Emergency Response Manual is available. _____

1.3 Ensure the Technical Manager telephone has a dial tone. _____

1.4 Verify the following individuals have responded:

1.4.1 Nuclear Engineer _____

1.4.2 Electrical Engineer _____

1.4.3 Mechanical Engineer _____

1.4.4 I&C Engineer _____

1.4.5 Engineering Supervisor _____

1.5 Direct the Administrative Manager to call out any of the above individuals as required. _____

ACTION **TIME**

1.6 Direct the Nuclear Engineer to perform the following:

1.6.1 Plot the following graphs for Fission Product Barrier Trending:

1.6.1.1 Containment Pressure _____

1.6.1.2 Highest Core Exit Thermocouple Temperature _____

1.6.1.3 Subcooling Margin _____

1.6.1.4 High Range Containment Radiation _____

1.6.1.5 Criticality _____

1.6.2 Monitor the Critical Safety Function Status Trees for:

1.6.2.1 Subcriticality (0POP05-EO-FO01) _____

1.6.2.2 Core Cooling (0POP05-EO-FO02) _____

1.6.2.3 Heat Sink (0POP05-EO-FO03) _____

1.6.2.4 Integrity (0POP05-EO-FO04) _____

1.6.2.5 Containment (0POP05-EO-FO05) _____

1.6.2.6 Inventory (0POP05-EO-FO06) _____

1.6.3 Perform core damage calculations using 0PEP02-ZG-0007, Post Accident Failed Fuel Guidelines, whenever parameters indicate core damage may have occurred. _____

1.7 Direct the Electrical Engineer to review the status of electrical systems including:

1.7.1 Standby Diesel Generator Status _____

1.7.2 Offsite Power Availability _____

ACTION		TIME
	1.7.3 Vital Instrumentation Power	_____
	1.7.4 Vital D. C. Power	_____
1.8	Direct the Mechanical and I&C Engineers to review the status of systems which are out of service and their impact on the ability to maintain the plant in a safe condition.	_____
1.9	Discuss with the Engineering Supervisor, if available, the need to activate additional engineering personnel or Nuclear Steam Supply System (NSSS) and Architect Engineer (AE) support. Ensure adequate resources to support engineering activities are maintained.	_____
1.10	Determine the need to deviate from plant procedures as per 10CFR50.54(x), and inform the TSC Manager.	_____
2.0	ASSESSMENT ACTIVITIES	
2.1	Review the current technical parameters and 0ERP01-ZV-IN01, Emergency Classification, with the Technical Staff and the System Status Evaluator to confirm the correct Emergency Classification is declared. Determine the EALs which could cause an escalation and the conditions which must be met to Terminate or enter Recovery.	N/A
2.2	Evaluate plant parameters to determine if plant conditions are improving or worsening. Identify additional plant parameters which should be monitored by the Technical Staff.	N/A
2.3	Brief the TSC Manager, Operations Manager, and Assistant Technical Support Center Manager of the assessment.	N/A
3.0	EMERGENCY REPAIR ACTIVITIES	
3.1	When informed by the Maintenance Manager of the need to use a repair part which may not be fully qualified for use, perform an evaluation of the suitability for the repair part for its intended application. Evaluate the urgency of the repair, the time required to obtain a qualified part, and the possible consequence of the unqualified part failing in service.	N/A

ACTION		TIME
4.0	SECURITY THREATS ACTIVITIES	
4.1	When informed of a bomb threat in the plant or acts of sabotage, assist the Security Manager and the Operations Manager in performing an evaluation of the consequences of the damage which may result/has resulted and any compensatory actions which should be taken.	N/A
4.2	Evaluate potential threats to plant systems:	
4.2.1	Possible critical targets	N/A
4.2.2	Contingency actions	N/A
4.3	Advise the TSC Manager and Security Manager of recommended additional security actions which should be taken to protect key equipment.	N/A
5.0	AIRCRAFT CRASH ACTIVITIES	
5.1	Assist the Control Room in implementing procedure 0PGP04-ZO-0007, Aircraft Crash Onsite.	N/A
5.1.1	Assess the impact on current plant conditions	N/A
6.0	EVACUATION OF THE TECHNICAL SUPPORT CENTER	
6.1	Collect your Emergency Response Manual, completed checklists, and logs.	N/A
6.2	Direct the Technical Staff to collect their logs and necessary documents.	N/A
6.3	Follow any special precautions issued by the Radiological Manager.	N/A
6.4	When directed by the TSC Manager, proceed to the unaffected Unit's Technical Support Center or Emergency Operations Facility.	N/A

ACTION		TIME
7.0	ONGOING ACTIVITIES	
7.1	Function as the primary Technical Support Center liaison with the NRC Operations Coordinator, Core Damage Assessor, and Reactor Systems Specialists. Ensure NRC personnel are cognizant of all information that is transmitted to NRC Headquarters.	N/A
7.2	Evaluate corrective actions planned by the Operations and/or Maintenance Manager(s) for returning systems or equipment to service when approved procedures do not exist or equipment will be operated in a less than fully operable condition.	N/A
7.3	Monitor Control Room implementation of Emergency Operating Procedures and/or Off Normal Operating Procedures via periodic briefings from the Operations Manager.	N/A
7.4	Periodically confer with the Technical Staff and System Status Evaluator to compare plant conditions versus the EALs in 0ERP01-ZV-IN01, Emergency Classification. Review the status of the three fission product barriers (fuel cladding, reactor coolant system, and containment) and verify the current Emergency Classification is still correct.	N/A
7.5	Periodically brief the TSC Manager on plant status using Form 1, TSC Manager Briefing Sheet. (LCTS 9101252-936)	N/A
7.6	Ensure adverse trends identified by the Technical Staff are reported to the TSC Manager and the Operations Manager.	N/A
8.0	SHIFT CHANGE ACTIVITIES	
8.1	Upon arrival of your shift replacement, complete all actions listed in Addendum 1, Shift Turnover Briefing. Include the Technical Staff in the briefing.	N/A

ACTION		TIME
9.0	RECOVERY ACTIVITIES	
9.1	Determine the manpower requirements necessary for upcoming technical activities. Request the Administrative Manager notify additional personnel, if necessary.	N/A
9.2	Continue to monitor the status of ongoing technical activities until termination.	N/A
9.3	Develop a list of activities and tasks which should be completed using 0ERP01-ZV-RE02, Documentation, Form 1, Corrective Action Items List, and provide a copy of the list to the TSC Manager.	N/A
9.4	Assist in the development of recovery plans and procedures using the guidance in 0ERP01-ZV-RE01, Recovery Operations.	N/A
10.0	TERMINATION ACTIVITIES	
10.1	Provide a list of any supplies or forms needing replenishment to the Administrative Manager.	N/A
10.2	Develop a list of activities and tasks which should be completed using 0ERP01-ZV-RE02, Documentation, Form 1, Corrective Action Items List, and provide a copy of the list to the Assistant TSC Manager.	N/A
10.3	Collect and organize in chronological order all documentation, checklists, logs, and status board data sheets.	N/A
10.4	With the assistance of the Technical Staff, write an Emergency Response Summary report using the guidance in 0ERP01-ZV-RE02, Documentation. Provide this report and all documentation to the Assistant TSC Manager.	N/A

1.0 Critical Safety Function Status Date/Time _____

S Subcriticality _____
C Core Cooling _____
H Heat Sink _____
P Integrity _____
Z Containment _____
I Inventory _____
R Radiation _____

2.0

Status of Boundaries	Cladding	RCS	Containment
Unavailable	( )	( )	( )
Intact	( )	( )	( )
Potential Loss	( )	( )	( )
Imminent Loss	( )	( )	( )
Breached/Stable	( )	( )	( )
Breached/Degrading	( )	( )	( )
Re-Established	( )	( )	( )

3.0 Assessment of Core Damage

_____ % Damage based on

PASS

____ RCS
____ RCB Atmos
____ RCB Sump

Available Indicator

____ CETC
____ RVWL
____ RCB H_2 Conc
____ RCB Rad Levels

4.0 Major Systems Problems

_____

_____

_____

5.0 Conversations with NRC

_____

_____

_____

Table of Contents Page

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 that 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 that 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 that 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 Thyroid Committed Dose Equivalent (CDE): Total committed dose from internally deposited radionuclide over subsequent 50 year period to the Thyroid.

2.23 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.

2.24 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.

2.25 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

- Repairs 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

6.2 UFSAR

6.3 0POP05-EO-EC00, Loss of All AC Power

6.4 0POP05-EO-FO02, Core Cooling Critical Safety Function Status Tree

6.5 0POP05-EO-FO04, Integrity Critical Safety Function Status Tree

6.6 0POP05-EO-FO05, Containment Critical Safety Function Status Tree

6.7 0POP05-EO-FRC1, Response to Inadequate Core Cooling

6.8 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink

6.9 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS

6.10 0POP04-ZO-0002, Natural and Destructive Phenomena Guidelines

6.11 0POP04-SY-0001, Seismic Event

6.12 0POP04-ZO-0001, Control Room Evacuation.

6.13 Regulatory Guide 1.101, Emergency Planning and Preparedness for Nuclear Power Reactors.

6.14 NUMARC/NESP-007. Methodology for Development of Emergency Action Levels, January, 1992

6.15 0POP01-ZA-0018, Emergency Operating Procedure User's Guide

6.16 Safeguards Contingency Plan

6.17 0SDP01-ZS-0011, Implementing Procedures for Safeguards Contingency Events

6.18 Calculation No. 91-RA-0001

6.19 Calculation No. 01-RA-001, Radiation Monitor Calculations for Emergency Action Levels

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

TABLE OF CONTENTS

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 **FU2** Fuel Clad Degradation See SU6 **FU3** RCS Leakage - See SU7	**FA1** ANY Loss or ANY Potential Loss of Fuel Clad or RCS	**FS1** Loss of BOTH Fuel Clad and RCS OR Potential Loss of BOTH Fuel Clad and RCS 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

Operating Modes 1 through 4

Note:

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

Determination of Emergency Classification Level

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

RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

EAL	FUEL CLAD		RCS		CONTAINMENT	
	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (3)	LOSS (4)	POTENTIAL LOSS (1)	LOSS (2)
1	CSF Core Cooling - Orange OR Heat Sink - Red[2]	CSF Core Cooling - Red	CSF RCS Integrity – Red OR Heat Sink - Red[2]	CSF Core Cooling - Yellow with subcooling < 0 °F	CSF Containment - Red OR Core Cooling - Orange > 15 min.	–
2	RCS Activity Failed Fuel Monitor, RT-8039, equal to or greater than 870 µCi/ml	RCS Activity Dose Equivalent Iodine greater than 300 µCi/gm	RCS Leak Rate Unisolable leak exceeding the capacity of one centrifugal charging pump in the normal charging mode.	RCS Leak Rate Leak rate greater than CVCS System's ability to maintain RCS inventory as indicated by loss of RCS subcooling.	Containment Pressure Greater than 6% hydrogen concentration in containment OR containment pressure greater than 9.5 psig with neither containment spray nor RCFC running.	Containment Pressure Initial increase followed by rapid unexplained decrease OR containment pressure or sump level not increasing as expected with LOCA conditions.
3	Core Exit Thermocouple ≥ 708°F	Core Exit Thermocouple 1200°F	SG Tube Rupture SG Tube has ruptured and the primary to secondary leak rate is greater than the capacity of one centrifugal charging pump.	SG Tube Rupture SG Tube is ruptured and has a non-isolable secondary steam release	–	SG Tube Leak Primary to secondary leakage greater than 150 gpd through any one steam generator with direct secondary side leakage to atmosphere
4	Reactor Vessel Water Level Plenum level less then 20%	–	–	–	Containment Bypass VALID increase in reading on area or ventilation monitors in areas adjacent to the containment boundary with a known LOCA inside containment.	Containment Isolation Containment isolation signal AND Valves not closed AND A pathway to the environment exists.
5	–	RCB Rad Monitor RT-8050 or 8051 greater than 100 rem/hr	–	RCB Rad Monitor RT-8050 or 8051 greater than 100 rem/hr	RCB Rad Monitor RT-8050 or 8051 greater than 1000 rem/hr	–

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

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

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

ELECTRICAL

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

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

ELECTRICAL

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

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 NOT Successful AND There is Indication of an Extreme Challenge to the Ability to Cool the Core **Modes: 1 and 2**	**EAL-1** Entry into 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS AND Either of the following: a. Degradation of core cooling is indicated by a valid Red path on the Core Cooling Critical Safety Function Status Tree. OR b. Degradation of heat sink is indicated by a valid Red path on the Heat Sink Critical Safety Function Status Tree.	**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 NOT Successful **Modes: 1 and 2**	**EAL-1** Entry into 0POP05-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 from the Control Room **Modes: 1-3**	**EAL-1** Reactor Protection System setpoint exceeded with NO automatic trip. AND A manual reactor trip was required for plant shutdown.	**ALERT**
SU2 Operation Outside the Plant Safety Envelope As Defined By Technical Specifications **Modes: 1-4**	**EAL-1** The plant cannot be brought to the required operating mode within Technical Specifications LCO Action Statement Time.	**UE**

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

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

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

COMMUNICATIONS/ALARMS/ASSESSMENT

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SU3 Unplanned Loss of Most Control Room Safety System Annunciation or Indication for Greater than 15 Minutes **Modes: 1-4**	**EAL-1** The following conditions exist: a. Loss of most (>50%) of Control Room Safety System annunciators or indicators for greater than 15 minutes. AND b. Compensatory indications are available and can be adequately monitored with on-shift personnel. AND c. The Shift Supervisor determines that the loss of the annunciators or indicators requires increased surveillance of compensatory indications (e.g. Control Board Indicators, Local Indicators, QDPS, ICS, ERFDADS) to safely operate the unit. AND d. Annunciator or indicator loss is not the result of planned action.	**UE**
SU4 Unplanned Loss of All Onsite or Offsite Communications Capabilities **Modes: At all times**	**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.	**UE**

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

SHUTDOWN MAINTENANCE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
SS4 Complete Loss of Any Function Needed to Achieve or Maintain Hot Shutdown **Modes: 1-4**	**EAL-1** Modes 1-3 - Loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in ALL SGs AND total feedwater flow less than 576 gpm. **EAL-2** Mode 4 - Loss of RHR function indicated by entry into 0POP04-RH-0001, Loss of Residual Heat Removal, AND loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in ALL SGs AND total feedwater flow less than 576 gpm.	**SAE**
SS5 Loss of Water Level in the Reactor Vessel That Has or Will Uncover Fuel in the Reactor Vessel **Modes: 5 and 6**	**EAL-1** Loss of Reactor Vessel Water Level as indicated by: a. Loss of all Decay Heat Removal Cooling as determined by entry into, 0POP04-RH-0001, Loss of Residual Heat Removal. AND b. The Core is or will be uncovered as indicated by: RCS Narrow Range Hot Leg Level less than -2 inches (Elev. 32'-1").	**SAE**

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX

SHUTDOWN MAINTENANCE

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

RECOGNITION CATEGORY S
SYSTEMS
INITIATING CONDITION MATRIX
FISSION PRODUCT BARRIER - THRESHOLD LEVELS

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

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG1 Site Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity that Exceeds 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology **Modes: At all times**	**EAL 1** A valid reading on one or more of the following monitors that exceeds the value shown. AND An offsite dose assessment using 0ERP01-ZV-TP01, Offsite Dose Calculations, using actual meteorology cannot be completed within 15 minutes. If an offsite dose assessment is completed, refer to EAL-2. **UNIT VENT** RT-8010B > 2.00 E+8 μCi/sec ***MAIN STEAM LINE** RT-8046 > 50 μCi/ml RT-8047 > 50 μCi/ml RT-8048 > 50 μCi/ml RT-8049 > 50 μCi/ml **EAL-2** Dose assessment indicates dose consequences greater than 1000 mrem TEDE and/or 5000 mrem thyroid CDE. **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.	**GE**

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

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

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

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

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RA1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 25 Times the Unusual Event EALs at the site boundary for 15 Minutes or Longer **Modes: At all times**	**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. **UNIT VENT** RT-8010B > 2.50 E+6 μCi/sec for 15 minutes **EAL-2** Confirmed sample analysis for gaseous releases indicates concentrations or release rates with a release duration of 15 minutes or longer in excess of 2.50 E-5 μCi/ml at the site boundary. **EAL-3** Confirmed sample analysis of liquid releases indicates concentration or release rates in excess of 25 times the Effluent Concentration Limit at the site boundary. **EAL-4** Site boundary radiation dose rate ≥ 3 mrem/hr for greater than 15 minutes based on dose projections or field team measurements.	**ALERT**

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIOLOGICAL RELEASE

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RU1 Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two (2) Times the ODCM Limit at the site boundary for expected duration of 60 Minutes or Longer **Modes: At all times**	**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. **UNIT VENT** RT-8010B > 1.00 E+5 μCi/sec for 60 minutes **EAL-2** Confirmed sample analyses for gaseous releases indicates concentrations or release rates with a release duration of 60 minutes or longer in excess of 1.00 E-6 μCi/ml (two times the Effluent Concentration Limit*) at the site boundary. **EAL-3** Confirmed sample analysis for liquid releases indicates concentration or release rates with a release duration of 60 minutes or longer in excess of two (2) times the Effluent Concentration Limit at the site boundary. **EAL-4** Valid dose rate projection ≥ 0.1 mrem/hr at the site boundary for 60 minutes or longer.	**UE**

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

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RG2 Unexpected Increase in Containment Radiation **Modes: 1-4**	**EAL-1** Valid reading on RCB High Range Monitors, RT-8050 or 8051 greater than 1000 rem/hr.	**GE**
RS2 Unexpected Increase in Containment Radiation Levels **Modes: 1-4**	**EAL-1** Valid reading on RCB High Range Monitors, RT-8050 or 8051 greater than 100 rem/hr.	**SAE**
RA2 Major Damage to Irradiated Fuel or Loss of Water Level that has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel **Modes: At all times**	**EAL-1** Valid readings on one or more of the following monitors: FHB Exhaust, RT-8035 > 5.00 E-2 µCi/ml FHB Exhaust, RT-8036 > 5.00 E-2 µCi/ml Area Monitor (68' FHB), RT-8090 > 5000 mrem/hr Area Monitor (68' RCB), RT-8099 > 5000 mrem/hr **EAL-2** Irradiated fuel uncovered (actual or potential) based on observation OR water level below top of fuel storage racks.	**ALERT**
RA3 Release of Radioactive Material or Increases in Radiation Levels that Impedes Operation of Systems Required to Maintain Safe Operation or to Establish or Maintain Cold Shutdown **Modes: At all times**	Valid Readings on any of the following Area Monitors: **EAL-1** RT-8066 > 15 mrem/hr (35' EAB) **EAL-2** RT-8058 > 5.00 E+3 mrem/hr (10' MAB) RT-8060 > 5.00 E+3 mrem/hr (10' MAB) RT-8061 > 5.00 E+3 mrem/hr (10' MAB) RT-8062 > 5.00 E+3 mrem/hr (10' MAB) RT-8063 > 5.00 E+3 mrem/hr (29' MAB) RT-8077 > 5.00 E+3 mrem/hr (60' MAB) RT-8084 > 5.00 E+3 mrem/hr (-21' FHB) RT-8085 > 5.00 E+3 mrem/hr (-21' FHB) RT-8086 > 5.00 E+3 mrem/hr (-21' FHB) RT-8087 > 5.00 E+3 mrem/hr (-21' FHB) RT-8090 > 5.00 E+3 mrem/hr (68' FHB)	**ALERT**

RECOGNITION CATEGORY R
RADIOLOGICAL
INITIATING CONDITION MATRIX

RADIATION LEVELS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
RU2 Unexpected Increase in Plant Radiation Levels or Airborne Concentrations **Modes: At all times**	**EAL-1** Valid Readings on any of the following Area Monitors greater than 1000 Times 24 hr. average. RT-8052, (-11' RCB) RT-8053, (-11' RCB) RT-8054, (19' RCB) RT-8055, (68' RCB) RT-8056, (52' RCB) RT-8057, (10' EAB) RT-8058, (10' MAB) RT-8059, (10' MAB) RT-8060, (10' MAB) RT-8061, (10' MAB) RT-8062, (10' MAB) RT-8063, (29' MAB) RT-8064, (29' MAB) RT-8065, (29' MAB) RT-8066, (35' EAB) RT-8067, (35' EAB) RT-8068, (41' MAB) RT-8069, (41' MAB) RT-8070, (41' MAB) RT-8071, (41' MAB) RT-8072, (41' MAB) RT-8073, (41' MAB) RT-8074, (41' MAB) RT-8075, (41' MAB) RT-8076, (60' EAB) RT-8077, (60' MAB) RT-8078, (60' MAB) RT-8079, (60' MAB) RT-8080, (41' MAB) RT-8081, (68' FHB) RT-8082, (60' MAB) RT-8083, (41' MAB) RT-8084, (-21' FHB) RT-8085, (-21' FHB) RT-8086, (-21' FHB) RT-8087, (-21' FHB) RT-8088, (30' FHB) RT-8089, (68' FHB) RT-8090, (68' FHB) RT-8091, (68' FHB) RT-8092, (29' TGB) RT-8093, (29' TGB) RT-8094, (72' EAB) RT-8095, (OSC) RT-8096, (EOF) RT-8097, (68' FHB) RT-8098, (60' MAB) RT-8099, (60' RCB) RT-8100, (35' EAB) RT-8101, (35' EAB) **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)	**UE**

*Outside the immediate control of the operator

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

SECURITY

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG1 Security Event Resulting in Loss of Ability to Reach and Maintain Cold Shutdown **Modes: 1-6**	**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.	**GE**
HS1 Security Event in a Plant Vital Area **Modes: At all times**	**EAL-1** Intrusion into a Vital Area by a hostile force. **EAL-2** Security Emergency that 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.	**SAE**
HA1 Security Event in the Protected Area **Modes: At all times**	**EAL-1** Intrusion into the Protected Area by a hostile force. **EAL-2** Security Emergency as defined by the Safeguards Contingency Plan.	**ALERT**
HU1 Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant **Modes: At all times**	**EAL-1** Security Alert as defined by the Safeguards Contingency Plan. **EAL-2** Bomb device discovered inside the plant Protected Area, but outside the Vital Area.	**UE**

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA2 Fire or Explosion in a Vital Area Potentially Affecting Safe Shutdown or Decay Heat Removal **Modes: See specific EAL**	**EAL-1** Fire or Explosion potentially affecting Safe Shutdown Equipment or systems required for decay heat removal. **(Modes: 1-6)** The following conditions exist: a. Fire or explosion in any of the following areas: • Mechanical/Electrical Auxiliary Building • Reactor Containment Building • Isolation Valve Cubicle • Diesel Generator Building • Essential Cooling Water Intake Structure AND b. Affected system parameter indications show degraded performance or plant personnel report visible damage to systems structures or components within the specified area required for safe shutdown. **EAL-2** Fire or explosion in one or more of the areas listed below which impacts ability to maintain cooling for spent fuel. • Fuel Handling Building • Mechanical/Electrical Auxiliary Building **(Modes: At all times)**	**ALERT**

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

FIRE/EXPLOSION

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HU2 Fire or Explosion in the Protected Area or Switchyard which Affects Normal Operation **Modes: At all times**	**EAL-1** Fire within the areas below which is not under control within 15 minutes of initial notification. **EAL-2** Explosion in or adjacent to any of the following areas which damages equipment necessary for normal plant operation. Areas considered for EAL-1 and EAL-2: • Switchyard • Turbine Generator Building • Mechanical/Electrical Auxiliary Building • Fuel Handling Building • Reactor Containment Building • Essential Cooling Water Intake Structure • Isolation Valve Cubicle • Diesel Generator Building • Circulating Water Intake Structure	**UE**

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

TOXIC/FLAMMABLE GAS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA3 Toxic/Flammable Gases Potentially Affecting Safe Operation **Modes: At all times**	**EAL-1** Confirmed entry of toxic gas into Control Room envelope. **EAL-2** Uncontrolled entry of flammable gas into a Vital Area. **EAL-3** Uncontrolled entry of toxic gas into the facility in life threatening concentration or into a Vital Area where lack of access constitutes a safety problem.	**ALERT**
HU3 Toxic/Flammable Gases Affecting Plant Operation **Modes: At all times**	**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.	**UE**

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX
NATURAL OR DESTRUCTIVE PHENOMENA

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HA4 Natural or Destructive Phenomena Potentially Affecting Safe Operation **Modes: At all times**	**EAL-1** Seismic motion exceeding Operating Basis Earthquake (OBE) as indicated by Seismic monitor alarm and confirmed by 0POP04-SY-0001. **EAL-2** Tornado or high wind causing visible structural damage to any of the following plant structures: • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building **EAL-3** Entry of floodwater into safety related structures such that the function of safety related equipment is jeopardized. **EAL-4** Predicted or actual breach of Main Cooling Reservoir retaining dike along North Wall. **EAL-5** Vehicle crash affecting a plant Vital Area. **EAL-6** Turbine failure generated missiles result in any visible structural damage to or penetration of any of the following plant areas: • Reactor Containment Building • ECW Intake Structure • Mechanical/Electrical Auxiliary Building • Isolation Valve Cubicle • Fuel Handling Building • Diesel Generator Building	**ALERT**

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX
NATURAL OR DESTRUCTIVE PHENOMENA

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

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

CONTROL ROOM EVACUATION

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

RECOGNITION CATEGORY H
HAZARDS
INITIATING CONDITION MATRIX

MISCELLANEOUS EVENTS

INITIATING CONDITION	EMERGENCY ACTION LEVEL	CLASS
HG2 Miscellaneous Events which May Potentially Result in a Hazard to the Public **Modes: At all times**	**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.	**GE**
HS3 Miscellaneous Events Affect the Ability to Shutdown the Plant or Maintain it in a Safe Shutdown Condition **Modes: At all times**	**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.	**SAE**
HA6 Miscellaneous Events Potentially Affecting Safe Plant Operation **Modes: At all times**	**EAL-1** Essential Cooling Pond (ECP) level less than 23.0 ft. mean sea level with no make-up available. **EAL-2** Other conditions exist which in the judgement of the Emergency Director indicate that plant safety systems may be degraded and that increased monitoring of plant functions is warranted.	**ALERT**
HU5 Miscellaneous Events Affecting Plant Operations **Modes: At all times**	**EAL-1** Essential Cooling Pond (ECP) level less than 25.0 ft. mean sea level. **EAL-2** Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.	**UE**

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FUEL CLAD BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

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

Loss

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

EAL-2, Reactor Coolant System (RCS) Activity

Potential Loss

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

Loss

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

FUEL CLAD BARRIER, CONTINUED

EAL-3, Core Exit Thermocouple

Potential Loss

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

Loss

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

EAL-4, Reactor Vessel Water Level

Potential Loss

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

Loss

None

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

Potential Loss

None

Loss

A reading of greater than 100 rem/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 Loss EAL-5, and this EAL indicates a loss of both the fuel clad and RCS barriers.

REACTOR COOLANT SYSTEM (RCS) BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

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

Loss

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

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

Potential Loss

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

Loss

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

REACTOR COOLANT SYSTEM (RCS) BARRIER, CONTINUED

EAL-3, Steam Generator (SG) Tube Rupture

Potential Loss

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

Loss

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

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

Potential Loss

None

Loss

A reading of greater than 100 rem/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 Fuel Clad Barrier Loss EAL-5, and this EAL indicates a loss of both the fuel clad and RCS barriers.

CONTAINMENT BARRIER

EAL-1, Critical Safety Function (CSF) Status

Potential Loss

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

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

Loss

None

EAL-2, Containment Pressure

Potential Loss

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

Loss

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

CONTAINMENT BARRIER, CONTINUED

EAL-3, Steam Generator (SG) Tube Leak

Potential Loss

None

Loss

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

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

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

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

EAL-4, Containment Bypass

Potential Loss

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

CONTAINMENT BARRIER, CONTINUED

EAL-4, Containment Isolation

Loss

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

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

Potential Loss

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

Loss

None

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

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

OPERATING MODE APPLICABILITY: 1-6, Defueled

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

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

AND

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

BASES:

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

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.

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

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

AND

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

AND

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

AND

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

BASES:

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

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

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.

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.).

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.

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

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

BASES:

This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. 300 μCi/ml reading on RT-8039 is based on 0.1% of the gap inventory. Grab sample verification is required in case of radiation monitor failures or high background radiation errors. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs.

SYSTEM MALFUNCTIONS

UNUSUAL EVENT

SU7 RCS Leakage

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

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

EAL-2 Identified leakage greater than 25 gpm.

BASES:

This IC is included as an Unusual Event because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. The 10-gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Lesser values must generally be determined through the time-consuming RCS Inventory surveillance test. The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs or IC SA3, Inability to Maintain Plant in Cold Shutdown.

SYSTEM MALFUNCTIONS

ALERT

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

OPERATING MODE APPLICABILITY: 5 and 6, and Defueled

EMERGENCY ACTION LEVELS:

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

BASES:

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

SYSTEM MALFUNCTIONS

ALERT

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

OPERATING MODE APPLICABILITY: 1-3

EMERGENCY ACTION LEVELS:

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

AND

A manual reactor trip was required for plant shutdown.

BASES:

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

SYSTEM MALFUNCTIONS

ALERT

SA3 Inability to Maintain Plant in Cold Shutdown

OPERATING MODE APPLICABILITY: 5 and 6

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

a. Less than 2 RHR loops are functional

AND

b. Temperature increase that either:

- Results in 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 uncovery can occur. NRC analyses show sequences that can cause core uncovery 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.

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.

SYSTEM MALFUNCTIONS

ALERT

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

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

AND

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

AND

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

AND

d. Either of the following conditions exist:

1. A significant plant transient is in progress.

OR

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

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.

SYSTEM MALFUNCTIONS

ALERT

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1

The following conditions exist:

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

AND

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

OR

EAL-2

The following conditions exist:

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

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

AND

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

SYSTEM MALFUNCTIONS, CONTINUED

BASES:

This IC and the associated EALs provide an escalation from IC SU1, Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of two ESF diesel generators to supply power to their emergency busses. Another related condition could be the loss of all but one offsite power source, or the loss of two 4160V AC ESF busses. The subsequent loss of this single power source would escalate the event to a Site Area Emergency in accordance with IC SS1, Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses.

SYSTEM MALFUNCTIONS

ALERT

SA6 Fuel Clad Degradation

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

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

EAL-2 Dose Equivalent Iodine (DEI) sample greater than 300 μCi/gm.

BASES:

This IC is included as an Alert because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. 870 μCi/ml reading on RT-8039 is based on 1% of the gap inventory. Grab sample verification is required in case of radiation monitor failures or high background radiation errors.

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

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

BASES:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all AC power will cause core uncovery 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.

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.

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.

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 **Mode 1-3** - Loss of all feedwater function (main, startup, and auxiliary) indicated by SG narrow range level less than 14% [34%] in ALL SGs AND total feedwater flow less than 576 gpm.

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

BASES:

These EALs address complete loss of functions required for hot shutdown with the reactor at pressure and temperature. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. These EALs are only applicable in Modes 1-4. The conditions described above could be initiated in Modes 1 or 2 leading to a transition to Mode 3. Escalation to General Emergency would be via Radiological or Fission Product Barrier Degradation ICs. The SG narrow range level of 34%, as indicated by the brackets, is to be used as indication during adverse containment conditions.

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

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

OPERATING MODE APPLICABILITY: 5 and 6

EMERGENCY ACTION LEVELS:

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

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

AND

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

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

BASES:

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

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

SYSTEM MALFUNCTIONS

SITE AREA EMERGENCY

SS6 Inability to Monitor a Significant Transient in Progress

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

EAL-1 The following conditions exist:

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

AND

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

AND

c. Significant transient in progress.

BASES:

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

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

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

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

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.

SYSTEM MALFUNCTIONS

GENERAL EMERGENCY

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

OPERATING MODE APPLICABILITY: 1-4

EMERGENCY ACTION LEVELS:

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

AND

Either of the following conditions exist:

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

OR

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

BASES:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate Heat Sink. Prolonged loss of all AC power will lead to loss of fuel clad, RCS, and containment. The four hours to restore AC power is based on a site blackout coping analysis performed in conformance with 10CFR50.63 and Regulatory Guide 1.155, Station Blackout, with appropriate allowance for offsite emergency response. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory.

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

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.

SYSTEM MALFUNCTIONS

GENERAL EMERGENCY

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

OPERATING MODE APPLICABILITY: 1 and 2

EMERGENCY ACTION LEVELS:

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

AND

Either of the following:

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

OR

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

BASES:

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

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

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

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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

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

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

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

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

BASES:

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

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

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

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

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

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

EAL-4, the measured dose rate criteria is based on two times the ODCM Limits or 1000 mrem/yr. Typical exposure rate instruments may detect radiation at 1000 mrem/yr or 0.1 mrem/hr. Therefore, if radiation is detected, twice the Effluent Concentrations of 10CFR20, Appendix B are exceeded and the criterion of EAL-1 is also met.

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

UNUSUAL EVENT

RU2 Unexpected Increase in Plant Radiation Levels or Airborne Concentrations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Valid readings on any of the following Area Monitors RT-8052 through RT-8101 greater than 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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

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

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

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

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

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

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

Fuel Handling Building Ventilation Monitor	RT8035 or 8036 > 5.00 E-2 μCi/ml
Fuel Bridge Area Radiation Monitor	RT8090 >5000 mrem/hr
Refuel Floor Area Radiation Monitor	RT8099 >5000 mrem/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.

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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

ALERT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

RT8066 - Control Room

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

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

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

BASES:

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

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

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

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

SITE AREA EMERGENCY

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

AND

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

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

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

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

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

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

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

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

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

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

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

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

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

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 100 rem/hr

BASES:

A reading of greater than 100 rem/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.

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 CDE for the Actual or Projected Duration of the Release Using Actual Meteorology

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

AND

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

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

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

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

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

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

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.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

BASES:

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

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

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

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

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 1000 rem/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.

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

BASES:

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

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

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

Areas considered for EAL-1 and EAL-2:

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

BASES:

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

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU3 Toxic/Flammable Gases Affecting Plant Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

BASES:

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU4 Natural or Destructive Phenomena Affecting Plant Operations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Earthquake detected by seismic monitoring system and confirmed by 0POP04-SY-0001 Seismic Event.

EAL-2 Tornado striking facilities within the Protected Area.

EAL-3 Shutdown of the facility required due to actual or predicted natural phenomenon, in accordance with 0POP04-ZO-0002, Natural or Destructive Phenomena Guidelines.

EAL-4 Vehicle crash into plant structures or systems within the Protected Area.

EAL-5 Report of main turbine failure resulting in casing penetration or damage to turbine or generator seals.

BASES:

EAL-1: Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate. Method of detection can be based on instrumentation, validated by seismic event procedure 0POP04-SY-0001.

EAL-2: Based on the assumption that a tornado striking (touching down) within the Protected Area boundary may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.

EAL-3: This EAL raises awareness that the potential exists for loss of electrical power or station blackout. It also represents a threshold beyond which special provisions for additional support are likely.

EAL 4: Addresses events such as aircraft crash that may damage plant structures containing systems and functions required for safe shutdown. If the crash is confirmed to affect a Vital Area, the event may be escalated to an Alert.

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

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

NOTE

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

UNUSUAL EVENT

HU5 Miscellaneous Events Affecting Plant Operations

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Essential Cooling Pond (ECP) level less than 25.0 ft. mean sea level.

EAL-2 Other conditions exist which in the judgement of the Emergency Director indicate a potential degradation of the level of safety of the plant.

BASES:

EAL-1 Based on the requirement to shutdown the plant for ECP level less than 25.5 ft. mean sea level. (STPUFSAR 9.2.5.1.1.5).

EAL-2 This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Unusual Event emergency class.

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

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

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

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA1 Security Event in the Protected Area

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

BASES:

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SAFETY

ALERT

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

OPERATING MODE APPLICABILITY: See Specific EAL

EMERGENCY ACTION LEVELS:

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

The following conditions exist:

a. Fire or explosion in any of the following areas:

- Mechanical/Electrical Auxiliary Building
- Reactor Containment Building
- Isolation Valve Cubicle
- Diesel Generator Building
- Essential Cooling Water Intake Structure

AND

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

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

- Fuel Handling Building
- Mechanical/Electrical Auxiliary Building

(Mode: At all times)

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SAFETY

BASES:

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

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

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA3 Toxic/Flammable Gases Potentially Affecting Safe Operation

OPERATING MODE APPLICABILITY: At all times

EMERGENCY ACTION LEVELS:

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

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

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

BASES:

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA4 Natural or Destructive Phenomena Potentially Affecting Safe Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

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

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

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

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

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

EAL-5 Vehicle crash affecting a plant Vital Area.

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

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

BASES:

EAL-1: Based on STPEGS UFSAR design basis. Seismic events of this magnitude can cause damage to safety functions.

EAL-2: Based on actual evidence of wind damage regardless of wind speed.

EAL-3: Based on potential for uncontrolled or ineffectually controlled flooding of vital structures which potentially affects systems required for safe shutdown of the plant.

EAL-4: Based on potential for a design basis flood event resulting from breach of the dike. (Ref. UFSAR 3.4.1)

EAL-5: Addresses items such as airplane, helicopter, or machinery crash into plant vital areas.

EAL-6: Is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. This EAL is, therefore, consistent with the definition of an ALERT in that if missiles have damaged or penetrated areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA5 Control Room Evacuation

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

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

BASES:

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

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

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

ALERT

HA6 Miscellaneous Events Potentially Affecting Safe Plant Operation

OPERATING MODE APPLICABILITY: At All Times

EMERGENCY ACTION LEVELS:

EAL-1 Essential Cooling Pond (ECP) level less than 23.0 ft. mean sea level. with no make-up available.

EAL-2 Other conditions exist which in the judgement of the Emergency Director indicate that plant safety systems may be degraded and that increased monitoring of plant functions is warranted.

BASES:

EAL-1 Based on continued depletion of ECP with no make-up. EAL allows 1.5 ft. margin to minimum ECP level described in UFSAR Table 9.2.5.3.

EAL-2 Intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class.

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.

HAZARDS & OTHER CONDITIONS AFFECTING PLANT SYSTEMS

SITE AREA EMERGENCY

HS2 Control Room Evacuation and Plant Control Cannot be Established

OPERATING MODE APPLICABILITY: 1-6

EMERGENCY ACTION LEVELS:

EAL-1 1. The following conditions exist:

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

AND

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

BASES:

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

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

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.

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.

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:

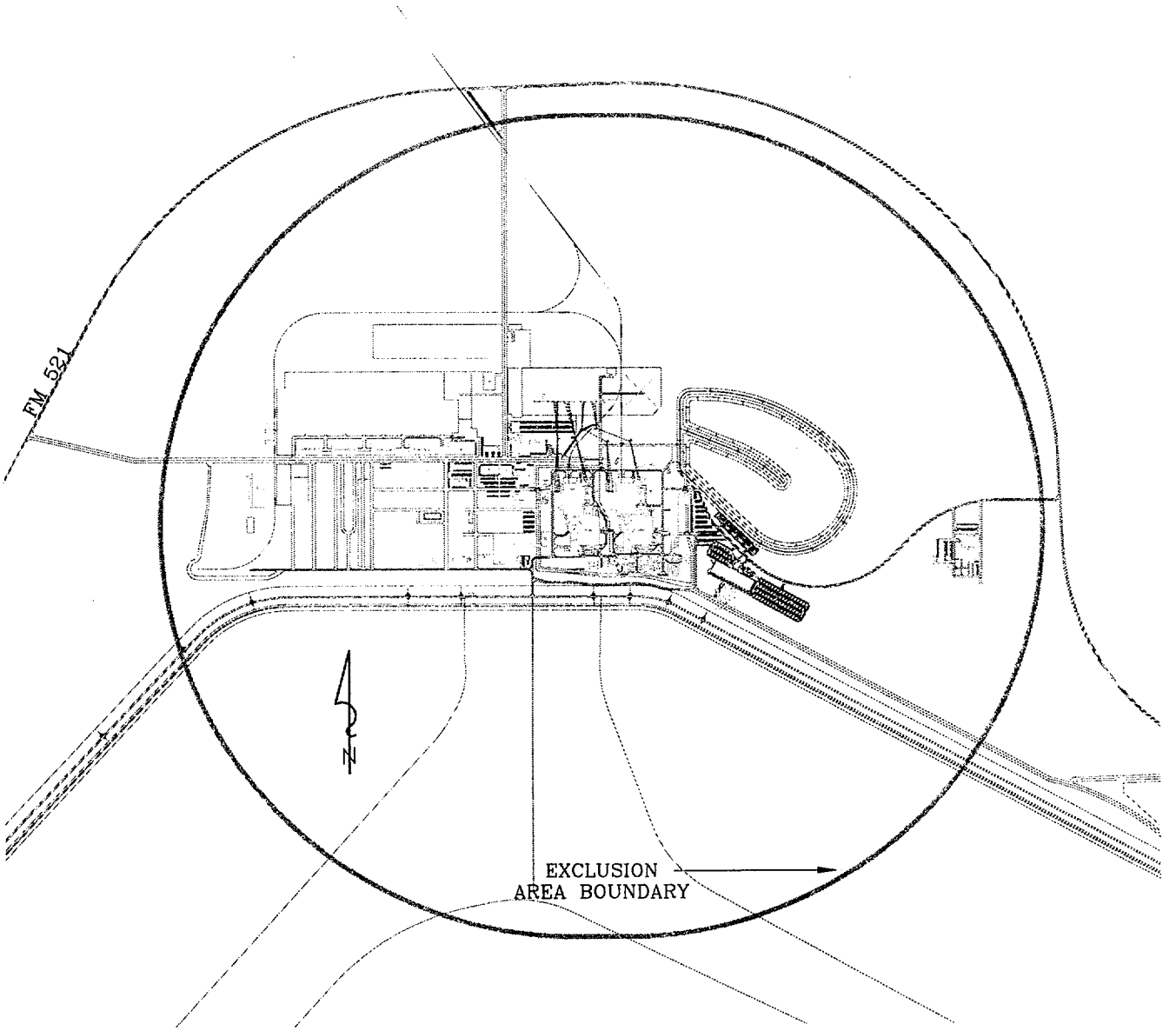
a. Actual or imminent substantial core degradation with potential for loss of containment.

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.



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