

October 15, 2001

US Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT**  
Docket Nos. 50-282 License Nos. DPR-42  
Docket Nos. 50-306 License Nos. DPR-60

**Prairie Island Emergency Plan**  
**Implementing Procedures - F3**

**Emergency Response Plan Implementing Procedures**

Furnished with this letter are the Prairie Island Nuclear Generating Plant Emergency Plan Implementing Procedures F3. This revision includes the following procedures:

**INDEXES:**      Emergency Plan Implementing Procedures TOC

**REVISIONS**

F3-2              Classification of Emergencies  
F3-11            Search & Rescue

Rev 28  
Rev 7

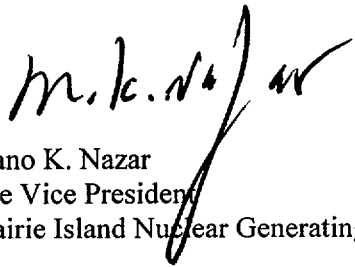
**INSTRUCTIONS:**

Please post changes in your copy of the Prairie Island Nuclear Generating Plant Emergency Plan Implementing Procedures. Procedures, which have been superseded or deleted, should be destroyed.

A045

Please sign and return the acknowledgment of this update to Bruce Loesch, Prairie Island Nuclear Generating Plant, 1717 Wakonade Drive East, Welch, MN 55089.

If you have any questions, please contact Mel Agen at 651-388-1121 Extension 4240.

A handwritten signature in black ink, appearing to read "m.k. nazar", with a large, stylized flourish extending from the end of the signature.

Mano K. Nazar  
Site Vice President  
Prairie Island Nuclear Generating Plant

- c: USNRC – James Foster, Region III (2 copies)
- NRC Resident Inspector (w/o attachment)
- J Silberg (w/o attachment)
- M Agen (w/o attachment)
- Records Management (Doc Control Copy) (w/o attachment)
- NL File (w/o attachment)

Mfst Num: 2001 - 0685 Date : 10/12/01  
FROM : Bruce Loesch/Mary Gadiant Loc : Prairie Island  
TO : UNDERWOOD, BETTY J  
Copy Num: 515 Holder : US NRC DOC CONTROL DESK  
SUBJECT : Revisions to CONTROLLED DOCUMENTS  
\*\*\*\*\*  
Procedure # Rev Title  
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Revisions:

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F3-2	28	CLASSIFICATIONS OF EMERGENCIES
F3-11	7	SEARCH & RESCUE

UPDATING INSTRUCTIONS

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Place this material in your Prairie Island Controlled Manual or File. Remove revised or cancelled material and recycle it. Sign and date this letter in the space provided below within ten working days and return to Bruce Loesch or Mary Gadiant, Prairie Island Nuclear Plant, 1717 Wakonade Drive E., Welch, MN 55089.

Contact Bruce Loesch (ext 4664) or Mary Gadiant (ext 4478) if you have any questions.

Received the material stated above and complied with the updating instructions

\_\_\_\_\_ Date \_\_\_\_\_

PRAIRIE ISLAND NUCLEAR GENERATING PLANT	Title: Emergency Plan Implementing Procedures TOC  Effective Date : 10/12/01
Approved By: <i>Joyce Chitty/m6</i> BPS Supt	

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**REFERENCE USE**

- *Procedure segments may be performed from memory.*
- *Use the procedure to verify segments are complete.*
- *Mark off steps within segment before continuing.*
- *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
092801 SC	M. Werner	10-12-01

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**LIST OF ATTACHMENTS**

Attachment 1 – Summary of Emergency Action Levels



<b>F3</b>	<b>CLASSIFICATIONS OF EMERGENCIES</b>	NUMBER:
		<b>F3-2</b>
		REV: <b>28</b>

## 1.0 PURPOSE

The purpose of this procedure is to specify the Emergency Action Levels that indicate an emergency condition exists and to properly classify the emergency into one of the four graded levels of emergency classifications. This procedure partially satisfies the requirement of 10CFR50.47 concerning the existence of an emergency classification and action level scheme.

## 2.0 APPLICABILITY

This instruction **SHALL** apply to all Shift Managers (SM), Shift Supervisors (SS), Control Room Operators (CRO), Emergency Directors (ED) and Emergency Manager (EM).

## 3.0 PRECAUTIONS

- 3.1 Attempt to verify the indications by checking secondary or coincident indicators.
- 3.2 An emergency classification should be made based on current plant conditions described in Attachment 1 of this procedure.
- 3.3 These emergency classifications do not apply to offsite transportation incidents that do NOT affect safe operation of the plant. Currently, the Radiation Protection group is responsible for offsite transportation incident assessment involving plant related shipments.
- 3.4 Rapidly Escalating Then De-escalating Events
  - 3.4.1 In the case of an event that rapidly escalates then de-escalates or begins at a higher emergency class then rapidly de-escalates, the initial emergency classification should be based on current plant conditions.
  - 3.4.2 During initial notifications to the NRC, the NRC should be informed of the current emergency classification and also the highest emergency classification reached during the course of the event. Emphasize the current emergency classification.

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**3.4.3** It may be discovered that a condition existed which met the emergency plan criteria but no emergency was declared and the basis for the emergency class no longer exists at the time of this discovery. This may be due to a rapidly concluded event or an oversight in the emergency classification made during the event or it may be determined during a post-event review. The NRC staff does not consider actual declaration of the emergency class to be necessary in these circumstances; an ENS notification (or an ENS update if the previously reported event was misclassified) within one hour of the discovery of the undeclared (or misclassified) event provides an acceptable alternative.

**3.5** Continuously monitor the Control Room instrumentation, radiation monitors, or any other developments which would be indicative of further system degradation. Be prepared to escalate to a more severe emergency classification.

#### **4.0 RESPONSIBILITIES**

**4.1** Duty Shift Manager has the responsibility to authorize the initial emergency classification.

**4.2** Shift Supervisor of the unaffected unit has the responsibility to assist the Shift Manager as necessary including authorization of an emergency classification.

**4.3** Shift Supervisor of the affected unit has the responsibility to direct activities related to the operation of the affected unit.

**4.4** Emergency Director has the responsibility to authorize an emergency classification whenever an Alert, Site Area, or General Emergency is declared and the EOF is not activated.

**4.5** If the EOF is activated and fully functional, the Emergency Manager has the responsibility to authorize an emergency classification.

**4.6** Control Room Operators and affected unit Shift Supervisor have the responsibility to assist the Shift Manager or unaffected unit Shift Supervisor in the identification and verification of control board indications.

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## 5.0 DISCUSSION

### 5.1 Definitions

- 5.1.1** Notification of Unusual Event – events that 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.

- 5.1.2** Alert -- events are in progress or have occurred which involve actual or potential substantial degradation of the level of safety of the plant. It is the lowest level of emergency classification when some necessity for emergency planning and offsite response is necessary.

Any releases expected are limited to small fractions of the EPA Protective Action Guideline exposure levels.

- 5.1.3** Site Area Emergency – events are in progress or have occurred which involve actual or likely major failure of plant functions needed for protection of the public.

Any releases are not expected to exceed the EPA Protective Action Guideline exposure levels except near the site boundary.

- 5.1.4** General Emergency – events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with a potential for loss of containment integrity.

Releases during a General Emergency can be reasonably expected to exceed the EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

- 5.1.5** Emergency Action Levels (EAL) – specific instrument readings, surface or airborne contamination levels or radiation dose rates that designate a specific emergency class requiring emergency measures for that class.

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## 5.2 Emergency Action Levels

Attached to this procedure is a Summary of Emergency Action Levels, Attachment 1. This summary identifies the four emergency classifications, the initiating condition(s), emergency action levels for each classification, and, where applicable, specific instruments and indications to be used to detect and classify an emergency.

The emergency action levels for each classification and the instrument readings and indications listed do not reflect a complete list of instrumentation that will show abnormal indications but does list those key parameters useful in classifying the event.

The Summary of Emergency Action Levels lists are based on the initiating conditions as required by Appendix 1 of NUREG-0654, accidents analyzed in the Prairie Island USAR, and the NRC Branch Position on Acceptable Deviations From NUREG-0654/ FEMA-REP-1, July 11, 1994.

## 5.3 The Emergency Classification/Declaration/Implementation Process

There are three distinct phases to consider: Classification, Declaration and Implementation.

### 5.3.1 Classification:

The act of **assessing** the EALs to determine the appropriate classification which the ongoing events are categorized. This may take a reasonable length of time (5 to 15 minutes for most situations) depending upon the complexity of the situation. This assessment period is consistent with the NRC Branch Position on Timeliness of Classification of Emergency Conditions, EPPOS No. 2.

### 5.3.2 Declaration:

The act of formally **declaring** the classification based on the assessment of EALs. This is the point at which the classification time is set and the 10CFR50, App. E 15-minute offsite notification clock starts.

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**5.3.3 Implementation:**

The act of **making the notification and/or augmentation** of the emergency organizations.

**5.3.4** Ideally, the Emergency Notification Report Form (PINGP 577) should be filled out to near completion while the classification phase is being conducted. Once the declaration is made by the SM/ED/EM, the 15-minute offsite notification time starts. The SM/ED/EM should review the contents of the Emergency Notification Report Form (PINGP 577) to ensure its completeness, verify the correct declaration time and then sign the form which gives permission to the Shift Emergency Communicator (or Offsite Communicator in EOF) to implement the E-Plan notifications.

**5.3.5** Per 10CFR50.72 (a)(3) NRC notification is required immediately after the notification of the state and local agencies (which is completed within about 15 minutes) and not later than one hour after the emergency declaration.

**5.4 Technical Specification Required Shutdown NUES**

**5.4.1** In some cases, exceeding Technical Specification limits (e.g., RCS leakage, reactor coolant activity, etc.) is considered to be precursors to more serious events and warrant declaration of an NUE.

**5.4.2** In other cases, exceeding Technical Specification limits for the period designated in the action statement (**IT.S. ACTIONS Table**) is an analyzed condition of the plant and does not, by itself, represent an emergency. These events are reportable in accordance with 10 CFR 50.72 as a non-emergencies.

However, if the plant is not brought to the required operating mode within the allowable Technical Specifications action statement time limit (**IT.S. ACTIONS Table COMPLETION Time**), then a declaration of an Unusual Event should be declared.

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**5.4.3** With regard to Emergency Plan classifications, Operations should handle a Technical Specification required shutdown in the following manner:

- A. The conditions of the plant should come first. That is, if the condition warrants initiating power reduction immediately, do so. The E-Plan classification can appropriately follow.
- B. Following the initiation of the reduction in power or temperature, the classification phase of the E-Plan is started. Review of the EALs should be done to assess for proper classification. Once the Shift Manager has determined the appropriate classification for the event, the Shift Manager should declare the classification and note the time of declaration (this begins the 15-minute offsite notification clock).

This classification phase should be done within a reasonable time frame (5 to 15 minutes for most instances) determined by the circumstances.

- C. Once the declaration is made, the Shift Manager should review the contents of the Emergency Notification Report Form (PINGP 577) to ensure its completeness, verify the correct declaration time and then sign the form which gives permission to the Shift Emergency Communicator to implement the E-Plan notifications.

## **5.5 Rapidly Escalating then De-escalating Events**

In the case of an event that rapidly escalates then de-escalates or begins at a higher emergency class then rapidly de-escalates, the initial emergency classification should be based on current plant conditions.

It may be discovered that a condition existed which met the emergency plan criteria but no emergency was declared and the basis for the emergency class no longer exists at the time of this discovery. This may be due to a rapidly concluded event or an oversight in the emergency classification made during the event or it may be determined during a post-event review. The NRC staff does not consider actual declaration of the emergency class to be necessary in these circumstances; an ENS notification (or an ENS update if the previously reported event was misclassified) within one hour of the discovery of the undeclared (or misclassified) event provides an acceptable alternative.

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The NRC should be informed of the current emergency classification and the highest emergency classification reached during the course of the event during the initial NRC notification via the ENS phone. The Shift Manager should ensure that this notification be performed by an appropriate individual other than the SEC using PINGP Form 666, Event Notification Worksheet. To avoid possible confusion, other offsite authorities will be informed of the current classification during the initial notification and then given the full description of the highest emergency classification reached during the first update on the follow-up notification.

### 5.6 The Emergency Action Level Reference Manual Number

Prairie Island Nuclear Generating Plant has prepared a written manual (EAL Reference Manual) to provide general information about Emergency Action Levels to offsite authorities who are involved in nuclear plant emergency planning. This manual provides a description with text and drawings of the various conditions that might cause the Prairie Island Nuclear Generating Plant to classify an event. By understanding what a particular condition or event means, emergency workers at the various offsite agencies should develop a clear idea of what is occurring at the plant during the emergency.

Each initiating condition in this procedure is followed by a cross reference number that corresponds to the appropriate classification condition in the EAL Reference Manual. When the Emergency Notification Report Form (PINGP 577) is completed, the initiating condition statement and the EAL Reference Manual cross reference number should be included on the form by using the label from "Emergency Initiating Conditions Labels – PINGP 1189" or writing this information as it appears in the shaded box on the appropriate page in the Summary of Emergency Action Levels.

## 6.0 PREREQUISITES

An off-normal condition corresponding to one of the initiating events described in Attachment 1 of this procedure is occurring or has occurred.

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## 7.0 PROCEDURE

- 7.1 Any significant event that may be classified as an emergency condition **SHALL** be reported to the Shift Supervisor, Shift Manager and/or Emergency Director immediately.

**NOTE:**

The events may be instrumentation readings or visual observations made by plant personnel.

- 7.2 Attempt to verify the initial indication by comparing the indication to redundant instrument channels or to other related parameters, visual observations, and field reports as applicable.
- 7.3 The Shift Manager, unaffected Shift Supervisor or Emergency Director **SHALL** assess the situation and determine the emergency classification, using the guidelines of Attachment 1.
- 7.4 In those cases when an event rapidly escalates, then de-escalates or begins at a higher classification, then rapidly de-escalates, the initial emergency classification should be based on current plant conditions.
- 7.4.1 Inform the NRC of the current emergency classification and the highest emergency classification reached during the course of the event during the initial NRC ENS notification.
- 7.4.2 It may be discovered that a condition existed which met the emergency plan criteria but no emergency was declared and the basis for the emergency class no longer exists at the time of this discovery. This may be due to a rapidly concluded event or an oversight in the emergency classification made during the event or it may be determined during a post-event review. The NRC staff does not consider actual declaration of the emergency class to be necessary in these circumstances; an ENS notification (or an ENS update if the previously reported event was misclassified) within one hour of the discovery of the undeclared (or misclassified) event provides an acceptable alternative.



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**7.5** The Shift Supervisor of the affected unit should take immediate actions, using applicable plant operating procedures to return the plant to normal (or Mode 5, Cold Shutdown, if determined to be necessary).

**7.6** If the EOF is not activated, the Shift Manager or Emergency Director **SHALL** declare the appropriate emergency classification and perform actions as specified in the appropriate responsibility procedure applicable to emergency classification:

**7.6.1** For a Notification of Unusual Event, proceed to F3-3.

**7.6.2** For an Alert, Site or General Emergency, proceed to F3-4.

If the EOF is activated, contact the Emergency Manager for consultation on whether or not to change the emergency classification. The Emergency Director is responsible to formulate the new classification while the Emergency Manager is responsible to authorize the reclassification.

**7.7** Continue to assess and watch for changing parameters or visual indication of further system degradation and be prepared to escalate to a more severe emergency classification as indicated by the Emergency Action Levels in Attachment 1.

**7.8** As plant conditions stabilize during a Notification of an Unusual Event (NUE) or Alert, consider terminating the event classification.

**7.8.1** For the NUE and Alert classifications, the event may be terminated once the following criteria are met:

- A. The plant is in stable condition with at least one fission product barrier intact, and
- B. Radioactive gaseous and liquid effluent are being controlled within the following limits:
  - 1. Gaseous effluent release rates (or resulting dose rates) are within plant limits as defined in Section 3.1 of H4, Offsite Dose Calculation Manual (ODCM), and

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2. Liquid effluent release rates (or resulting concentrations) are within the plant limits as defined in "Old 10CFR20 Appendix B in Table II, Column 2 (April 1992)" located in H4, ODCM, Table 4.3 and

C. The potential for future degradation of plant conditions is small.

**7.8.2** Termination of an NUE classification may be performed by the Shift Manager.

**7.8.3** Termination of an Alert classification may be performed by the Emergency Director if the EOF is not activated. Once the EOF is fully functional, the Emergency Manager **SHALL** terminate the Alert classification when the conditions are met for termination.

**7.8.4** Termination of an Alert classification includes the dismissal of the site Emergency Response Organization. Any necessary in-plant or on-site follow-up activities should be coordinated and managed by the normal plant site organization. In some cases, conditions may require the establishment of a Recovery Organization in which case the Emergency Director and Emergency Manager should make this determination based on the extent of damage or other considerations.

**7.9** As plant conditions stabilize during a Site Area or General Emergency, consider transition to the Recovery phase.

<b>NOTE:</b>	If the Site Area Emergency event does not require significant repairs or analysis beyond the capabilities of the normal plant site organization and the conditions of 7.8.1. A, B, & C are met, then the Site Area Emergency may be terminated without a transition to Recovery.
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Transition to Recovery should be directed by the Emergency Manager with coordinated recovery planning by the site Emergency Response Organization. See F3-30, "Recovery", for instruction on transition to Recovery.

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**SUMMARY**  
**OF**  
**EMERGENCY ACTION LEVELS**

<b>F3</b>	<b>CLASSIFICATION OF EMERGENCIES ATTACHMENT 1</b>	NUMBER:
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INITIATING CONDITION INDEX

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### Condition 1 : Safety System Functions

Failure of a safety or relief valve in a safety related system to close following reduction of applicable pressure.

(EAL Ref Manual 1B)

SG safety or relief  
valve opens and  
fails to reseal

Visual and/or audible  
indication at discharge of  
open steam generator  
safety or relief valve

As determined by SS or SM

Notification of  
Unusual Event

PZR safety or relief valve opens and then fails to reseal

Pressurizer safety  
valve outlet  
temperature, TI-436

> 185 °F & NOT  
decreasing

Pressurizer safety  
valve outlet  
temperature, TI-437

> 185 °F & NOT  
decreasing

Pressurizer relief  
valve outlet  
temperature, TI-438

> 185 °F & NOT  
decreasing

Acoustic Monitors  
indicate flow from  
either the pressurizer  
PORV's or safeties

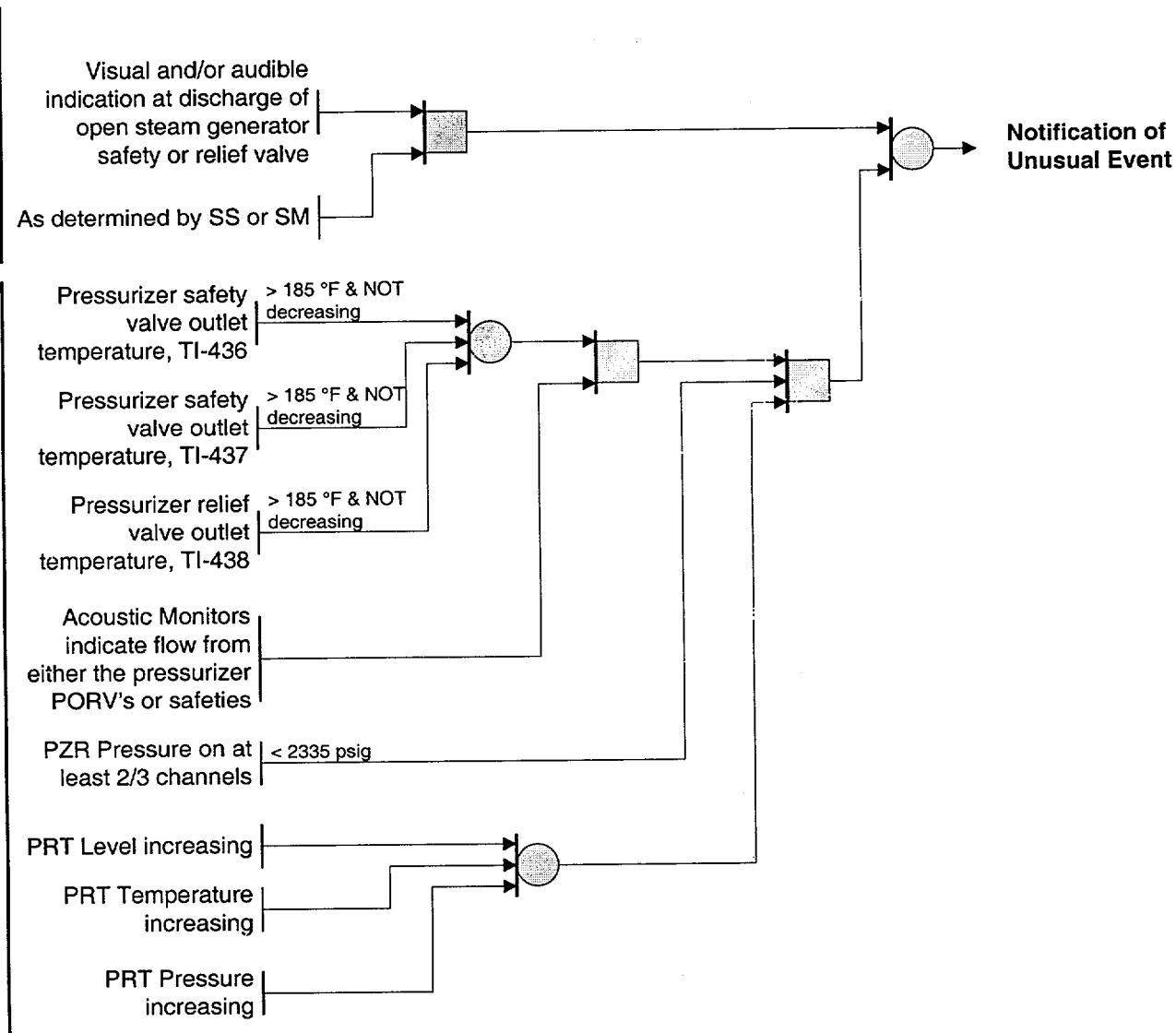
PZR Pressure on at  
least 2/3 channels

< 2335 psig

PRT Level increasing

PRT Temperature  
increasing

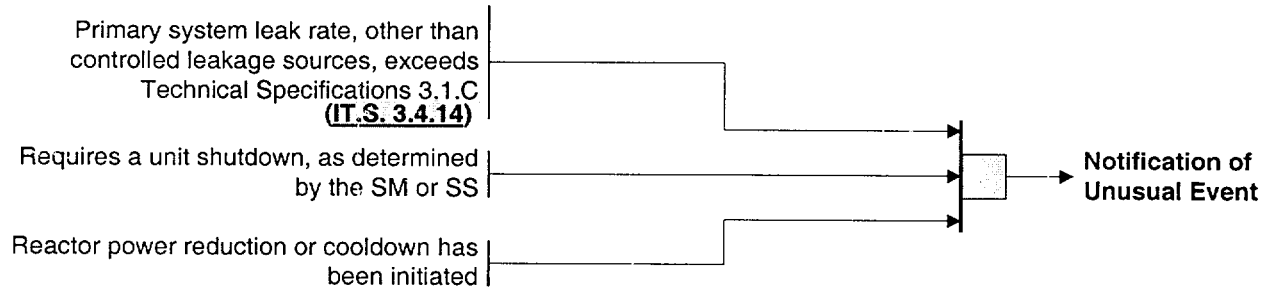
PRT Pressure  
increasing



### Condition 2: Abnormal Primary Leak

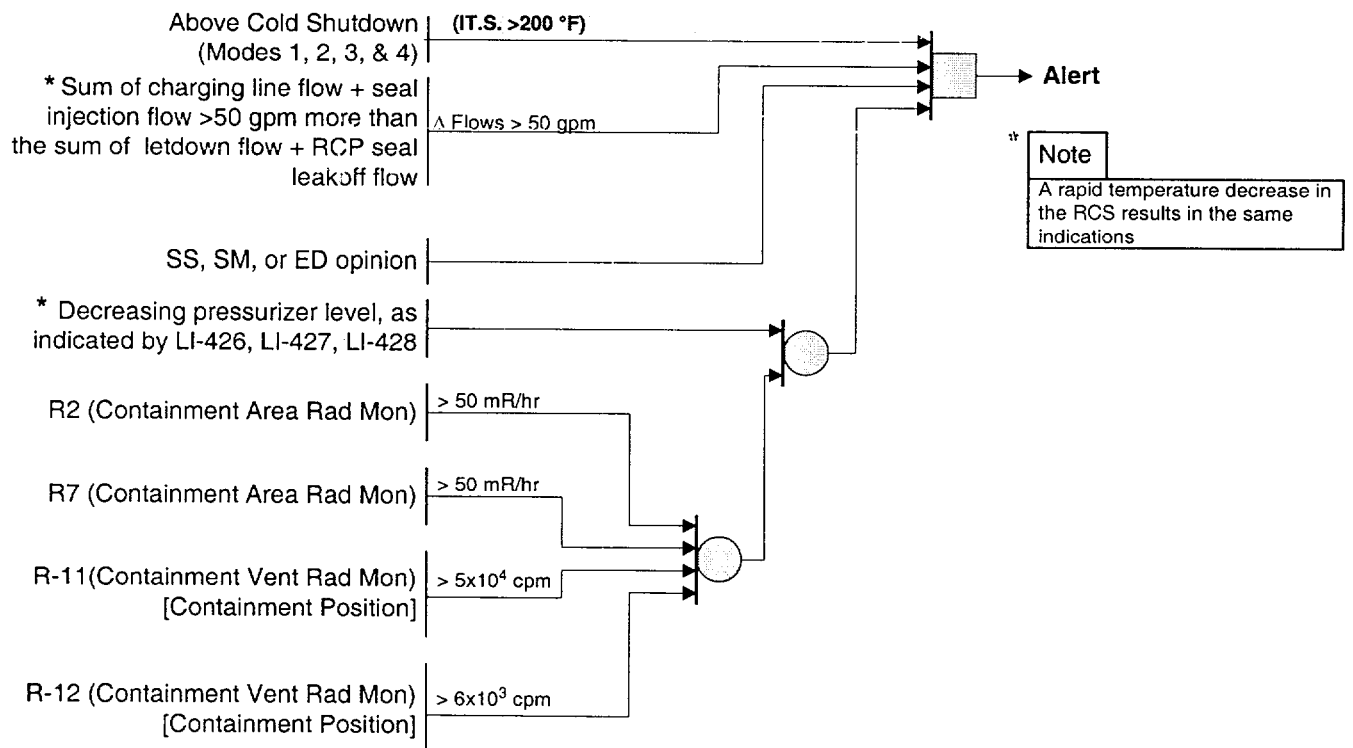
**Primary system leak rate from unidentified or uncontrolled sources exceeding Technical Specifications.**

(EAL Ref Manual 2A)



**Primary coolant leak rate greater than 50 gpm.**

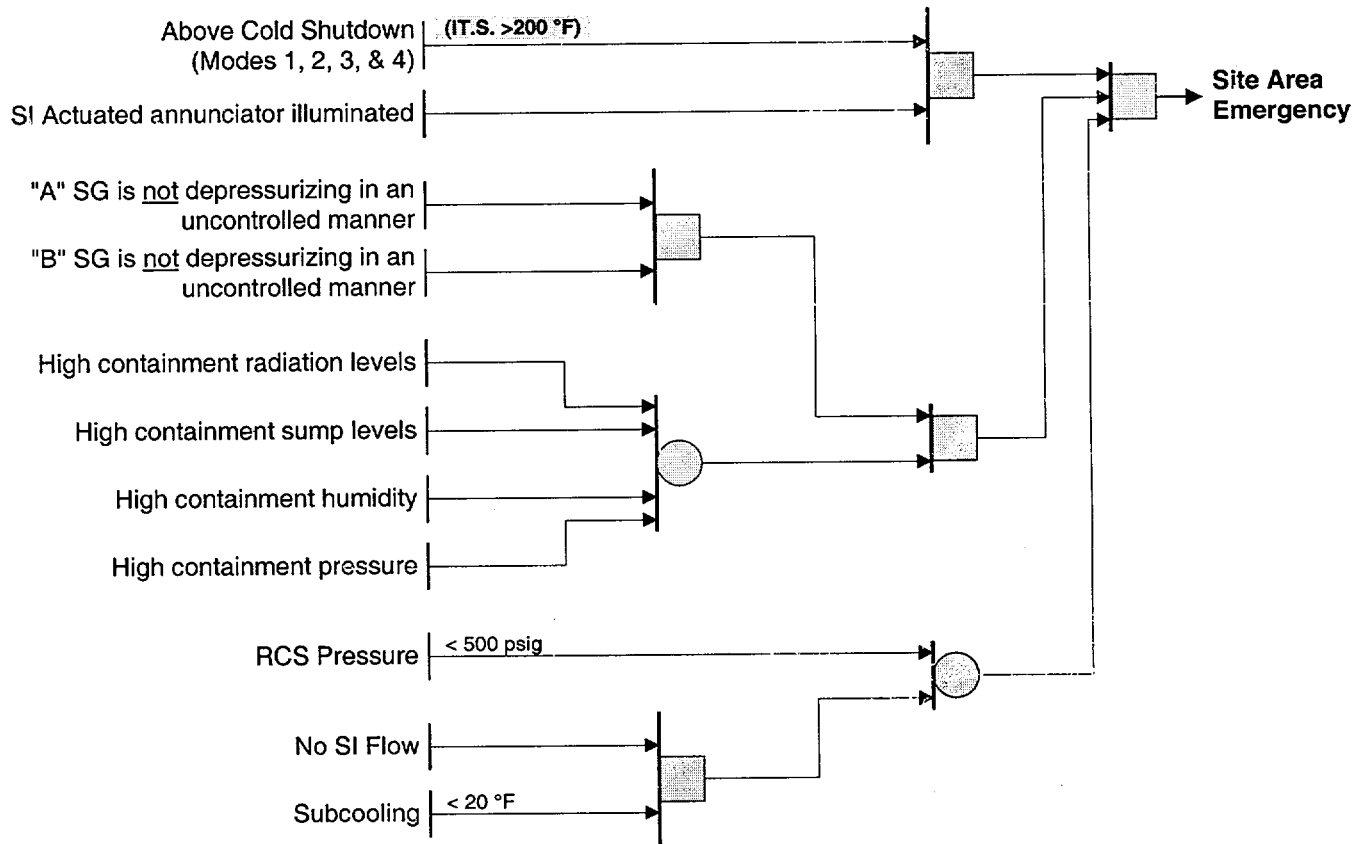
(EAL Ref Manual 2B)



Condition 2: Abnormal Primary Leak

LOCA with leak rate in excess of available pump capacity.  
(Small LOCA with failure of SI or Large LOCA greater than  
SI flow.)

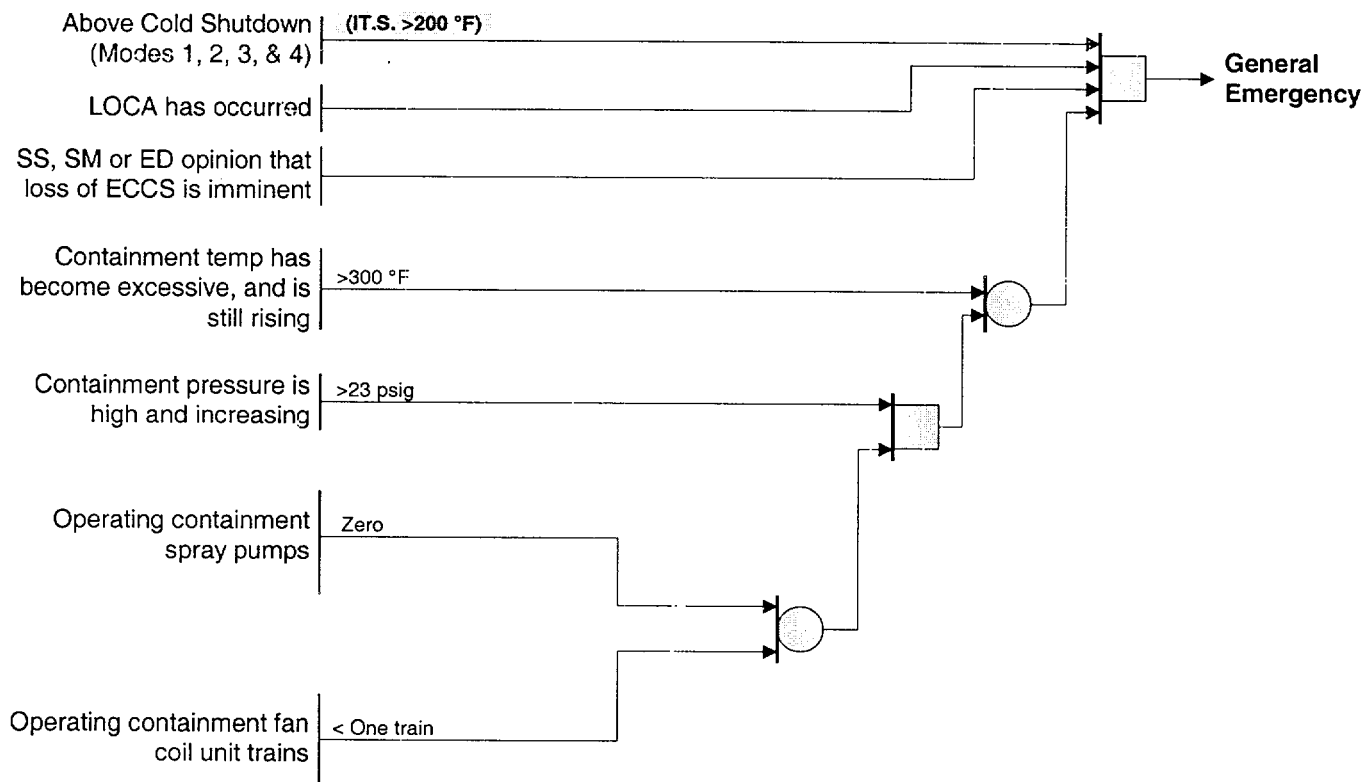
(EAL Ref Manual 2C)



### Condition 2: Abnormal Primary Leak

**Small LOCA and initially successful ECCS.  
Subsequent failure of containment heat removal  
systems over several hours could lead to core melt  
and likely failure of containment.**

(EAL Ref Manual 2D)

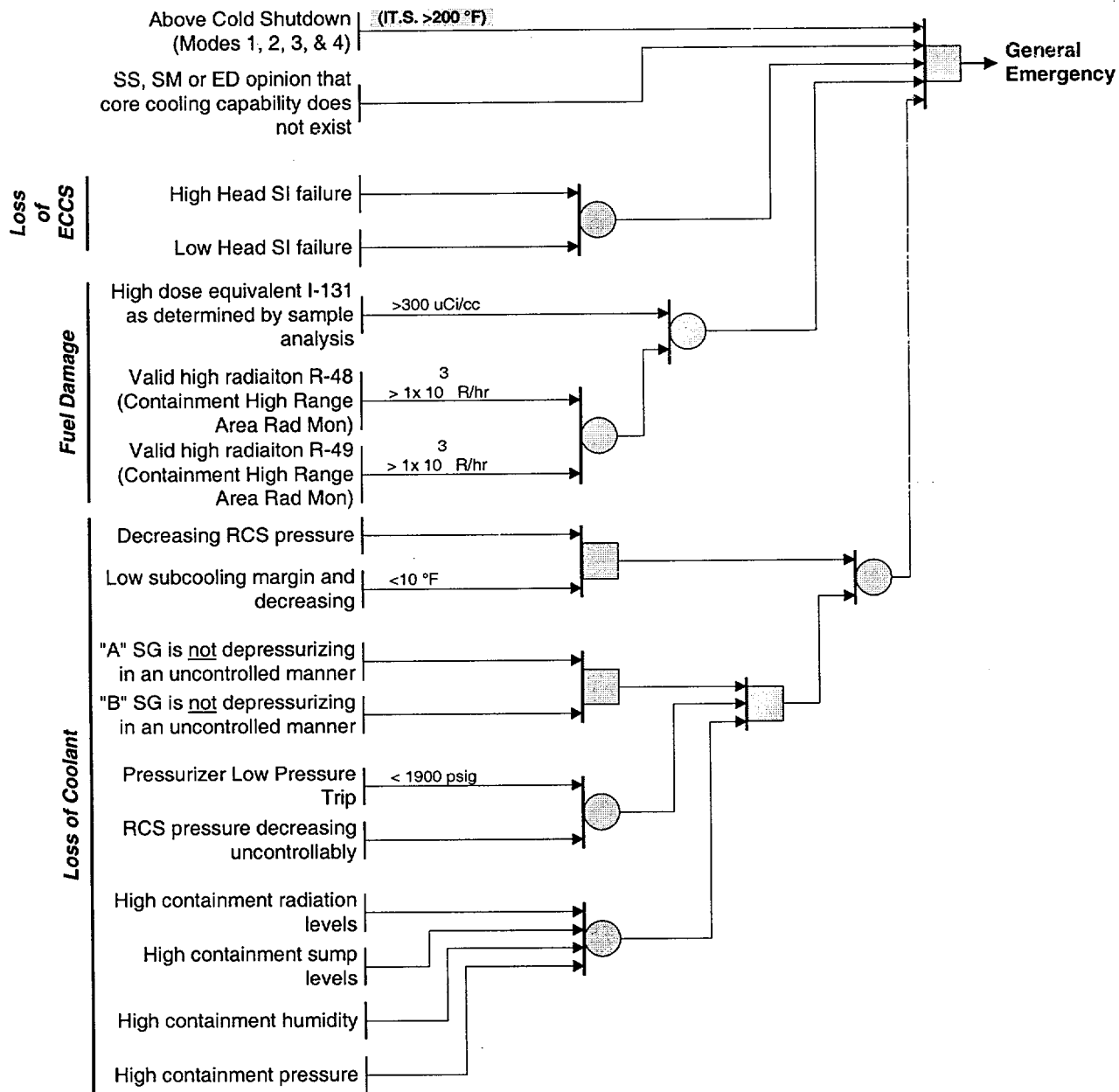




### Condition 2: Abnormal Primary Leak

Small and large LOCA's with failure of ECCS to perform leading to severe core degradation or melt in from minutes to hours. Ultimate failure of containment likely for melt sequences.

(EAL Ref Manual 2E)



**Condition 3 : Abnormal Coolant Temperature/Pressure**

DELETED

Deleted based on NRC Branch Position On Acceptable Deviations From Appendix 1 to NUREG-0654/FEMA-REP-1, July 11, 1994.

### Condition 4 : Abnormal Primary / Secondary Leak

Primary /Secondary leak rate exceeding Technical Specifications.

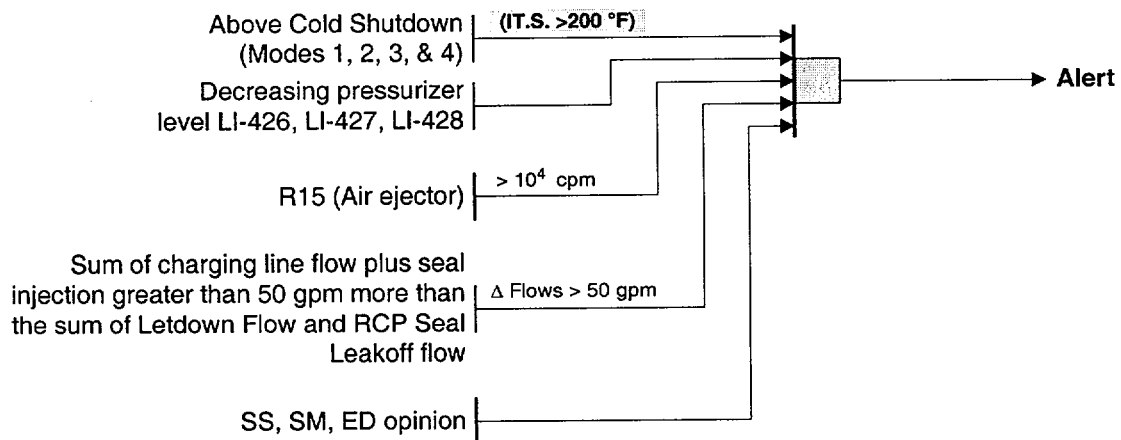
(EAL Ref Manual 4A)

SG primary to secondary leakage exceeds Tech Spec 3.1.C (IT.S. 3.4.14) limits > 150 GPD through any 1 SG

Notification of Unusual Event

Primary /Secondary leak rate greater than 50 gpm.

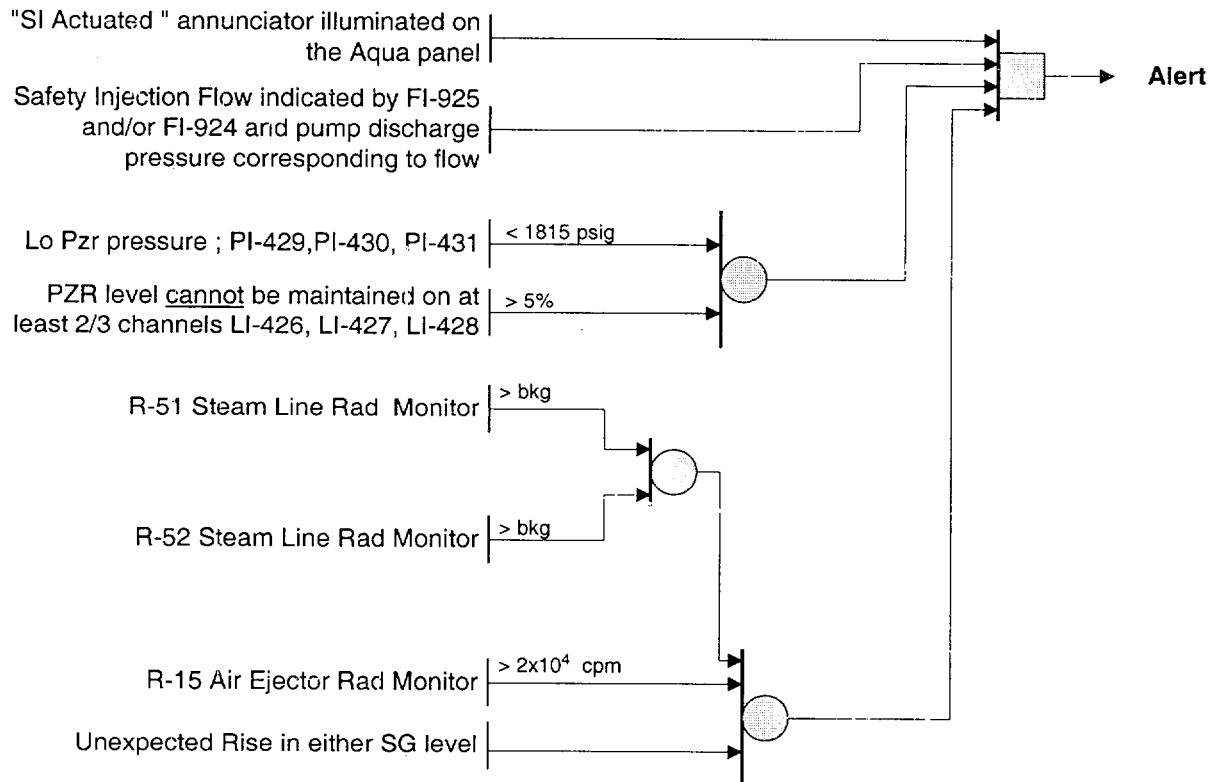
(EAL Ref Manual 4B)



### Condition 4 : Abnormal Primary /Secondary Leak

Failure of steam generator tube(s) resulting in ECCS actuation.

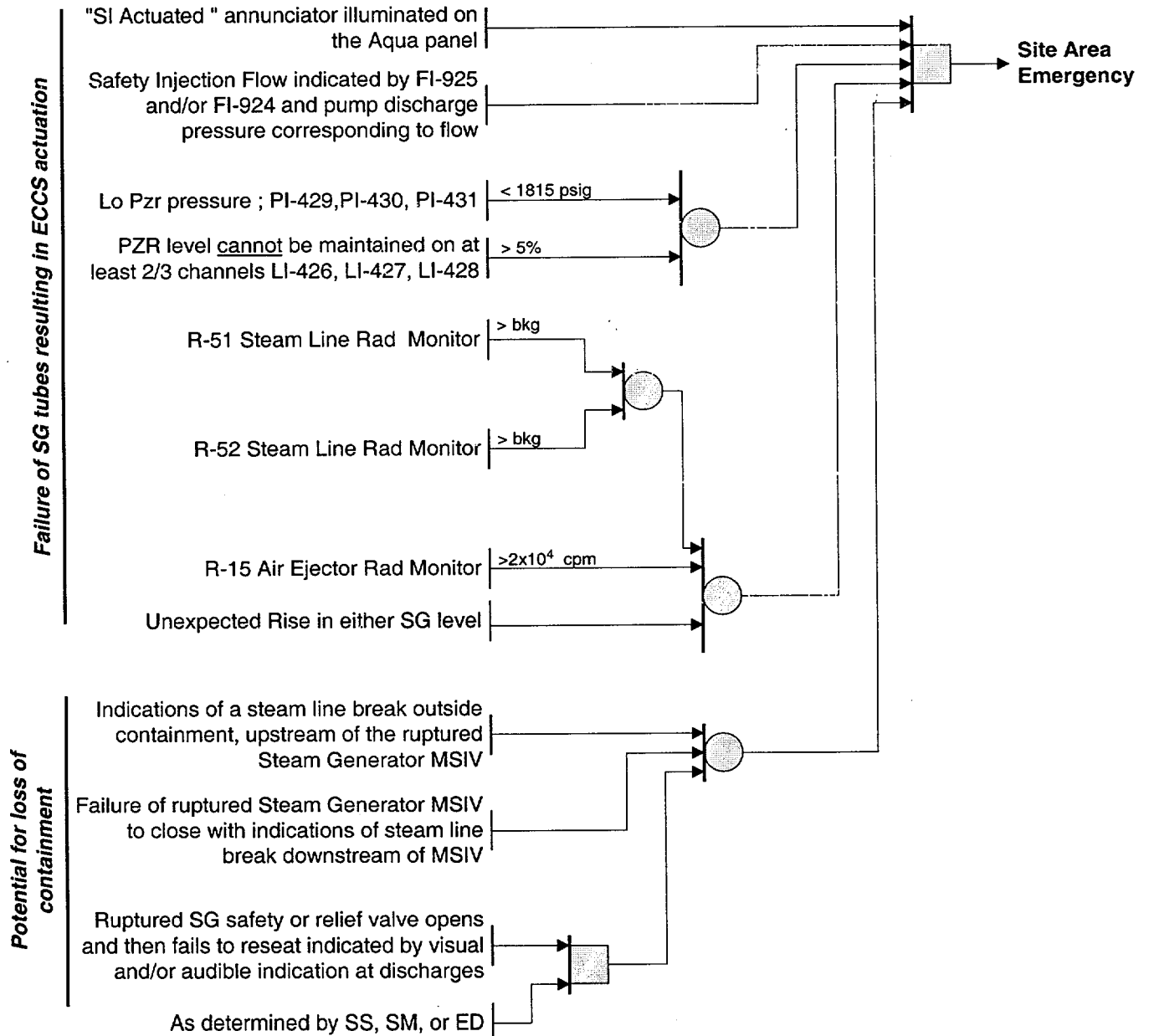
(EAL Ref Manual 4C)



### Condition 4 : Abnormal Primary /Secondary Leak

Failure of steam generator tube(s) resulting in ECCS actuation and high potential for loss of containment.

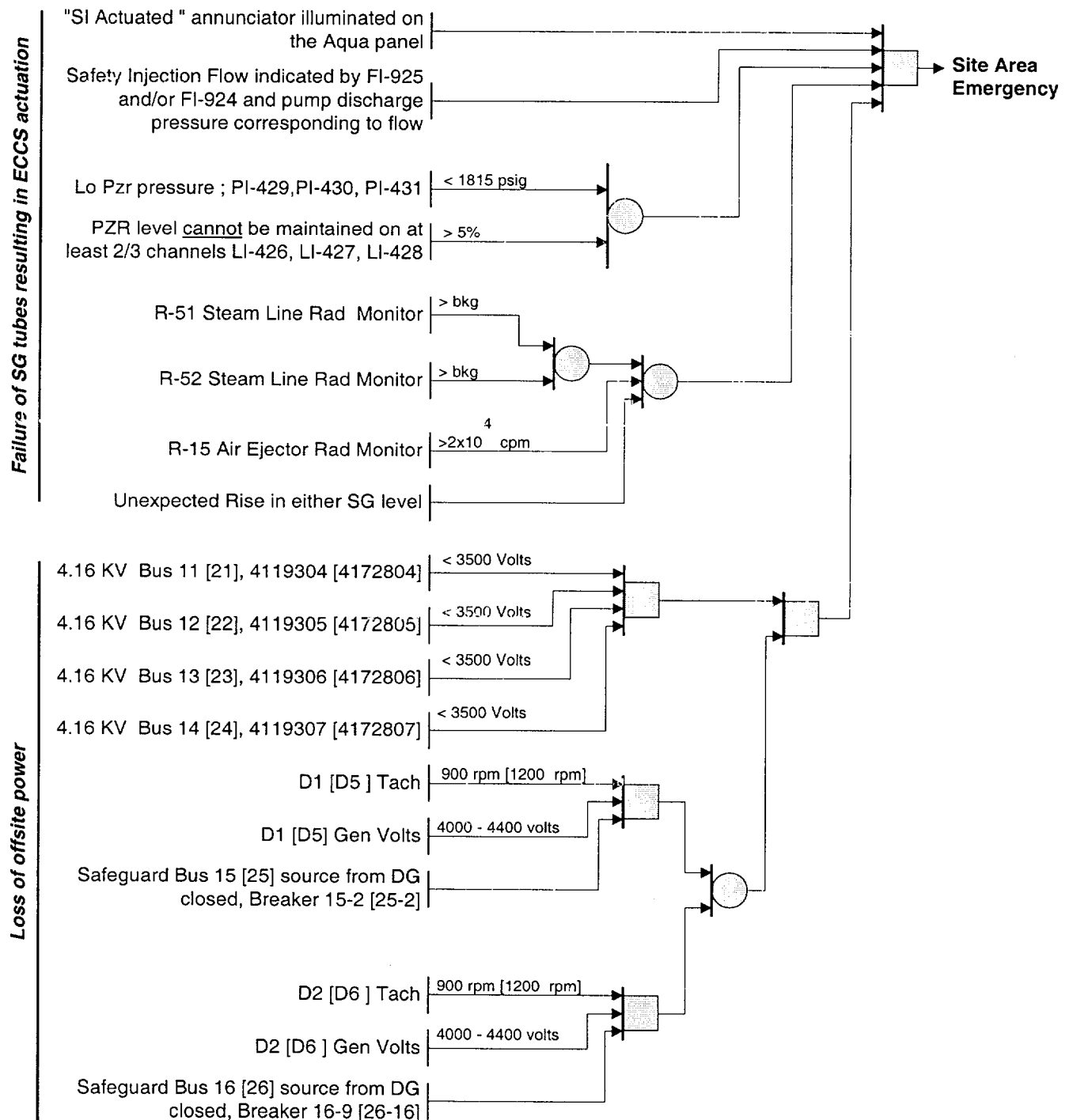
(EAL Ref Manual 4D)



### Condition 4 : Abnormal Primary /Secondary Leak

Failure of steam generator tube(s) resulting in ECCS  
actuation and loss of offsite power.

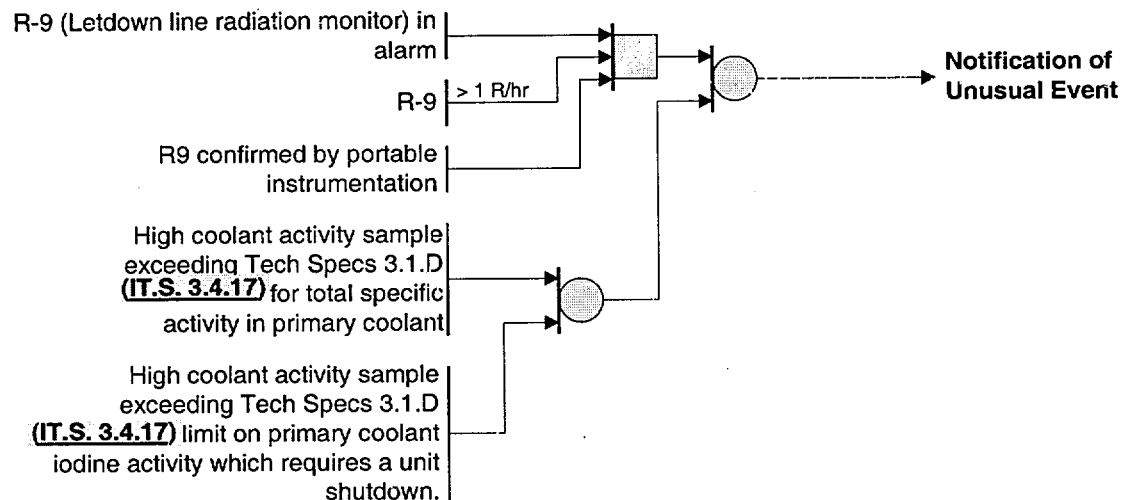
(EAL Ref Manual 4E)



### Condition 5 : Core Fuel Damage

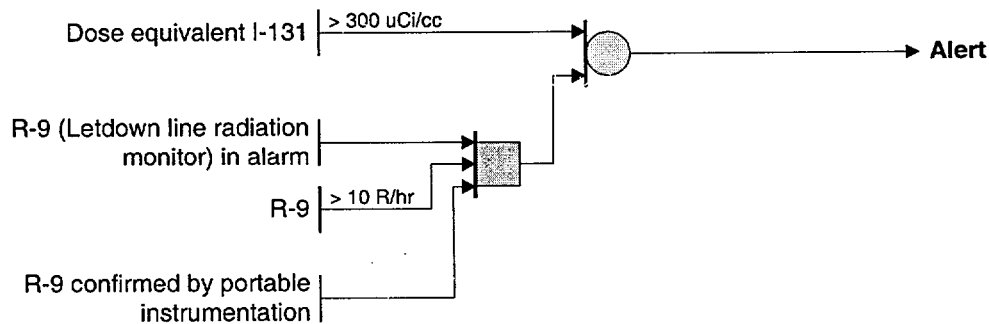
#### Fuel Damage Indication

(EAL Ref Manual 5A)



#### Severe Loss of fuel cladding

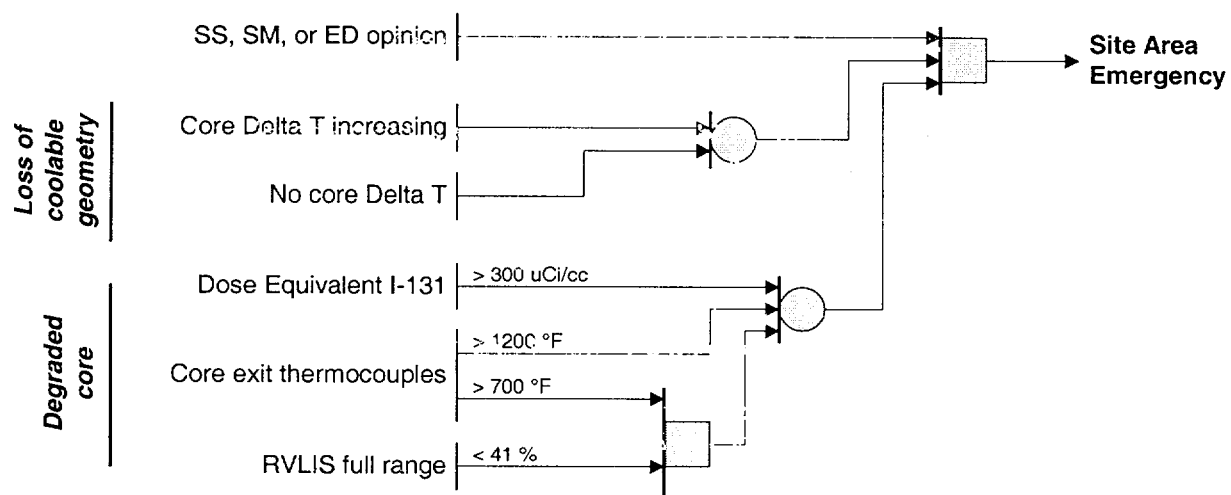
(EAL Ref Manual 5B)



### Condition 5 : Core Fuel Damage

Degraded core with possible  
loss of coolable geometry

(EAL Ref Manual 5C)





**Condition 6 : Loss of 2 of 3 Fission Product Barriers**

Loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier. (EAL Ref Manual 6)

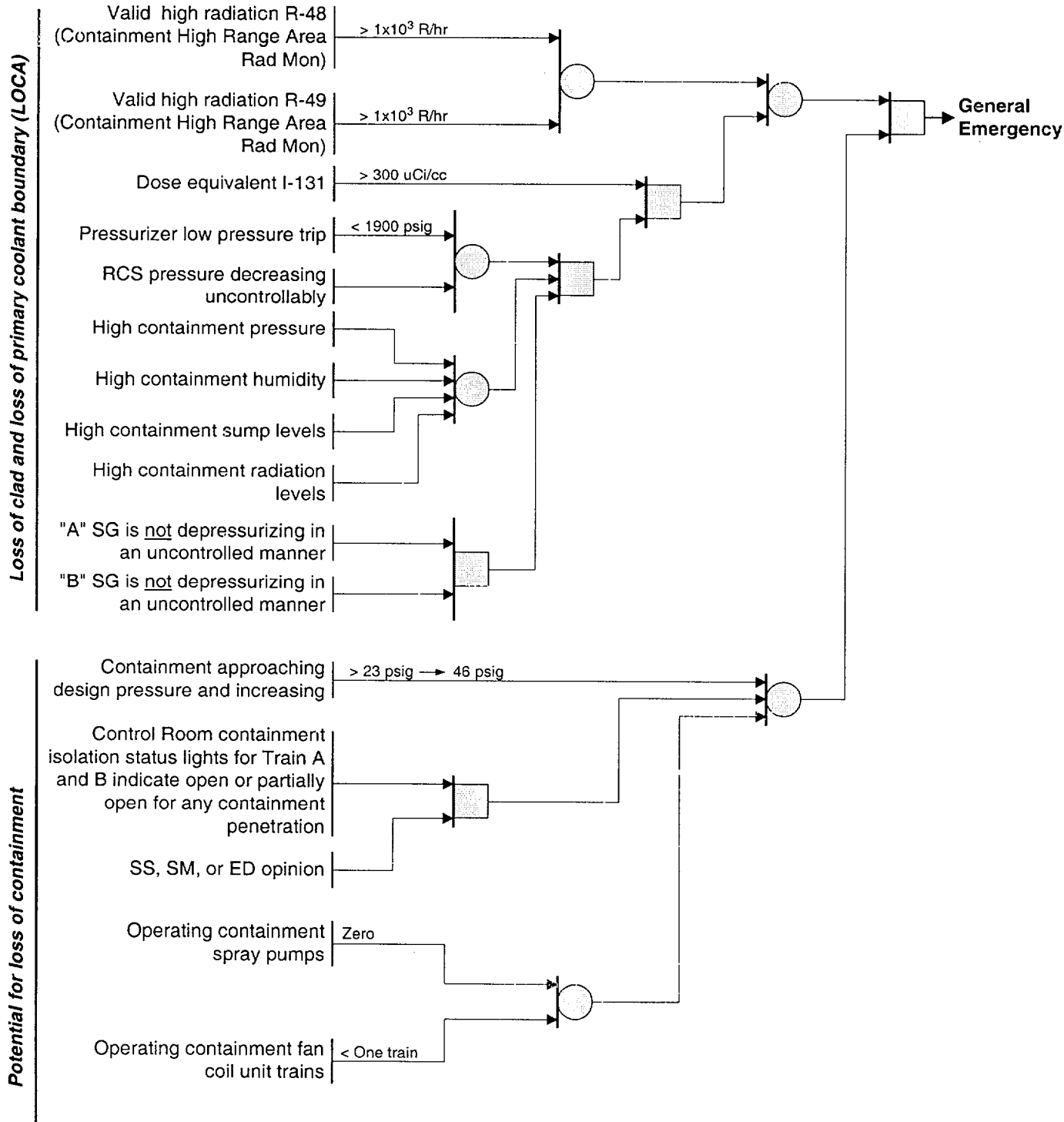
**GENERAL EMERGENCY**

<b>NOTES:</b>	<ol style="list-style-type: none"><li>1. Three permutations exist for loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier;<ol style="list-style-type: none"><li>A. Failure of cladding and primary coolant boundary with potential loss of containment.</li><li>B. Failure of cladding and containment with potential loss of primary coolant boundary.</li><li>C. Failure of containment and primary coolant boundary with potential loss of cladding.</li></ol><p>These 3 permutations are represented in the following 5 cases, each with its own set of EAL's:</p></li><li>2. All cases are applicable to operations above Cold Shutdown (Modes 1, 2, 3, &amp; 4).</li></ol>
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Condition 6: Loss of 2 of 3 Fission Product Barriers

**Case 1: Loss of clad, loss of primary coolant boundary (LOCA), and high potential for loss of containment.**

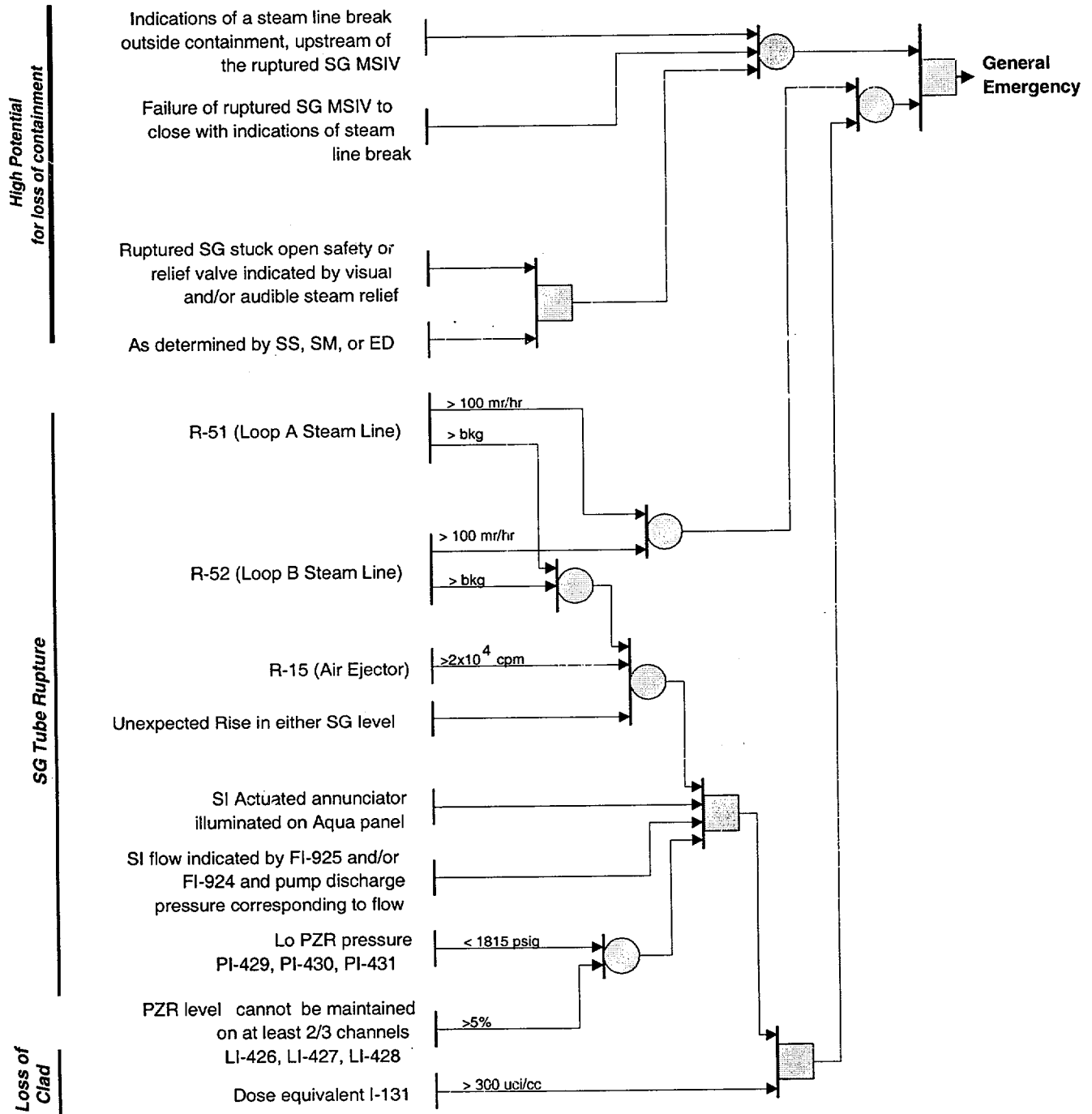
(EAL Ref Manual 6)



Condition 6: Loss of 2 of 3 Fission Product Barriers

Case 2: Loss of clad, SG tube rupture and high potential for loss of containment

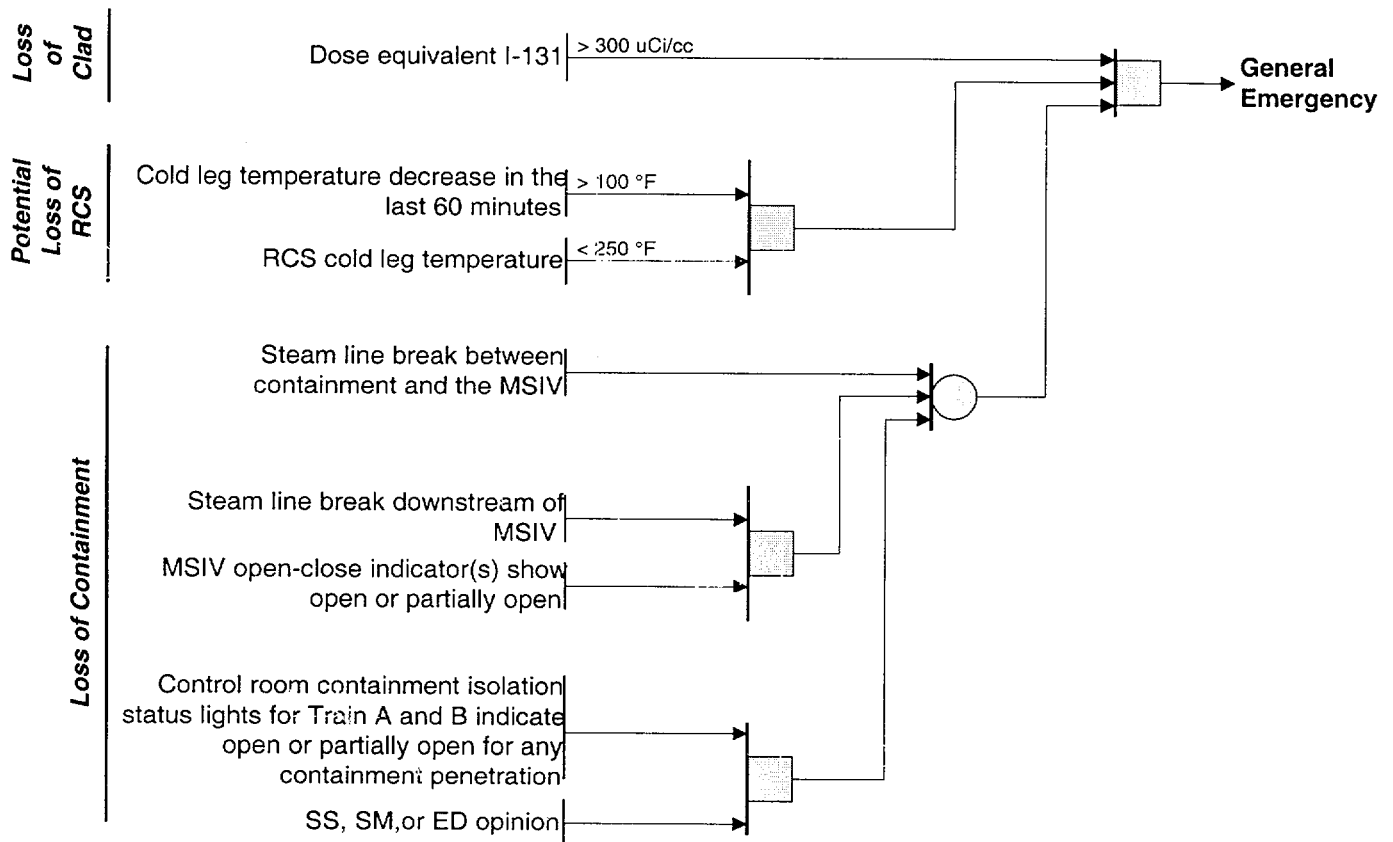
(EAL Ref Manual 6)



Condition 6: Loss of 2 of 3 Fission Product Barriers

**Case 3 : Loss of clad, containment failure, and a high potential for loss of the RCS boundary.**

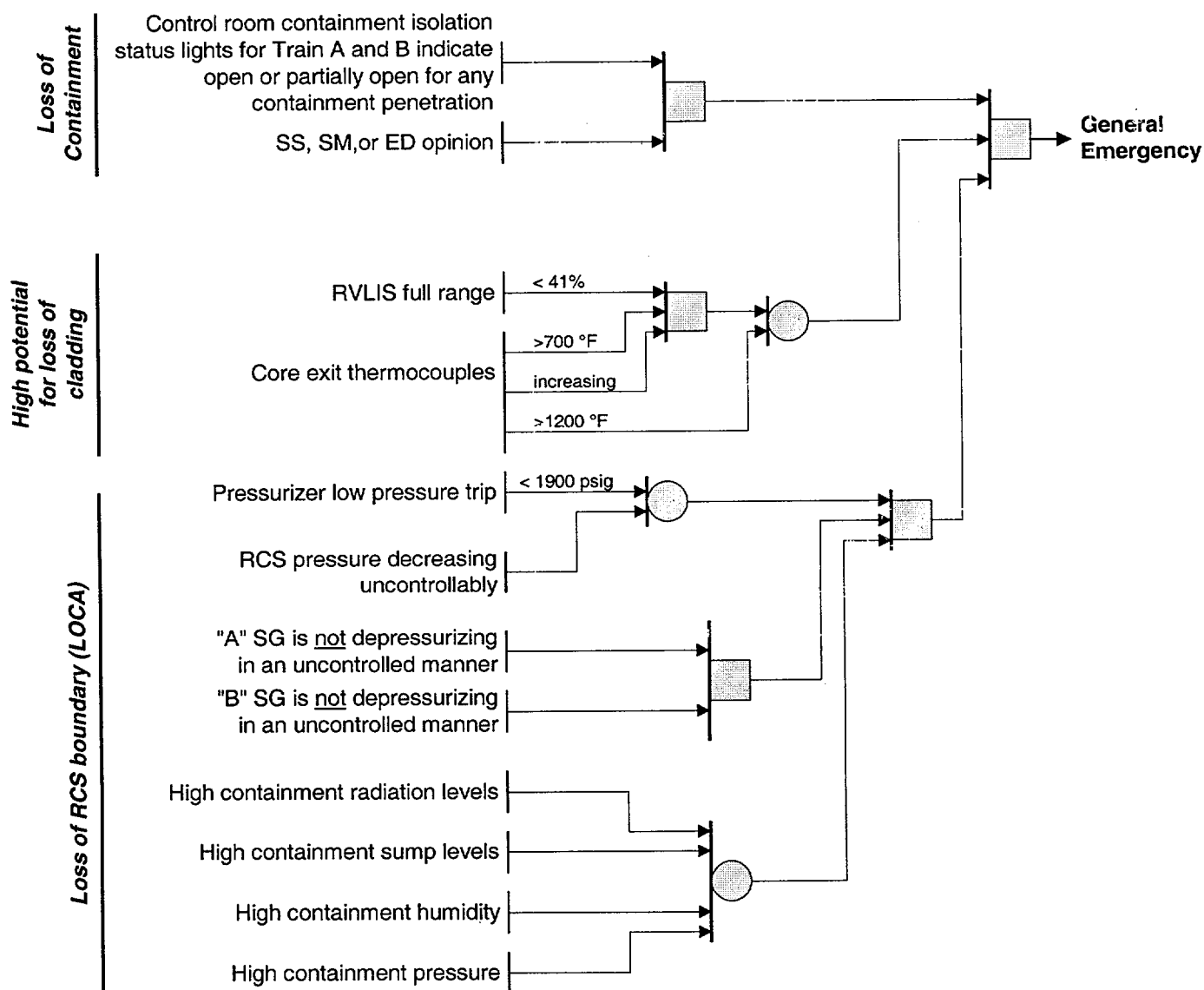
(EAL Ref Manual 6)



### Condition 6: Loss of 2 of 3 Fission Product Barriers

**Case 4 : Loss of RCS boundary (LOCA), loss of containment, and high potential for loss of cladding**

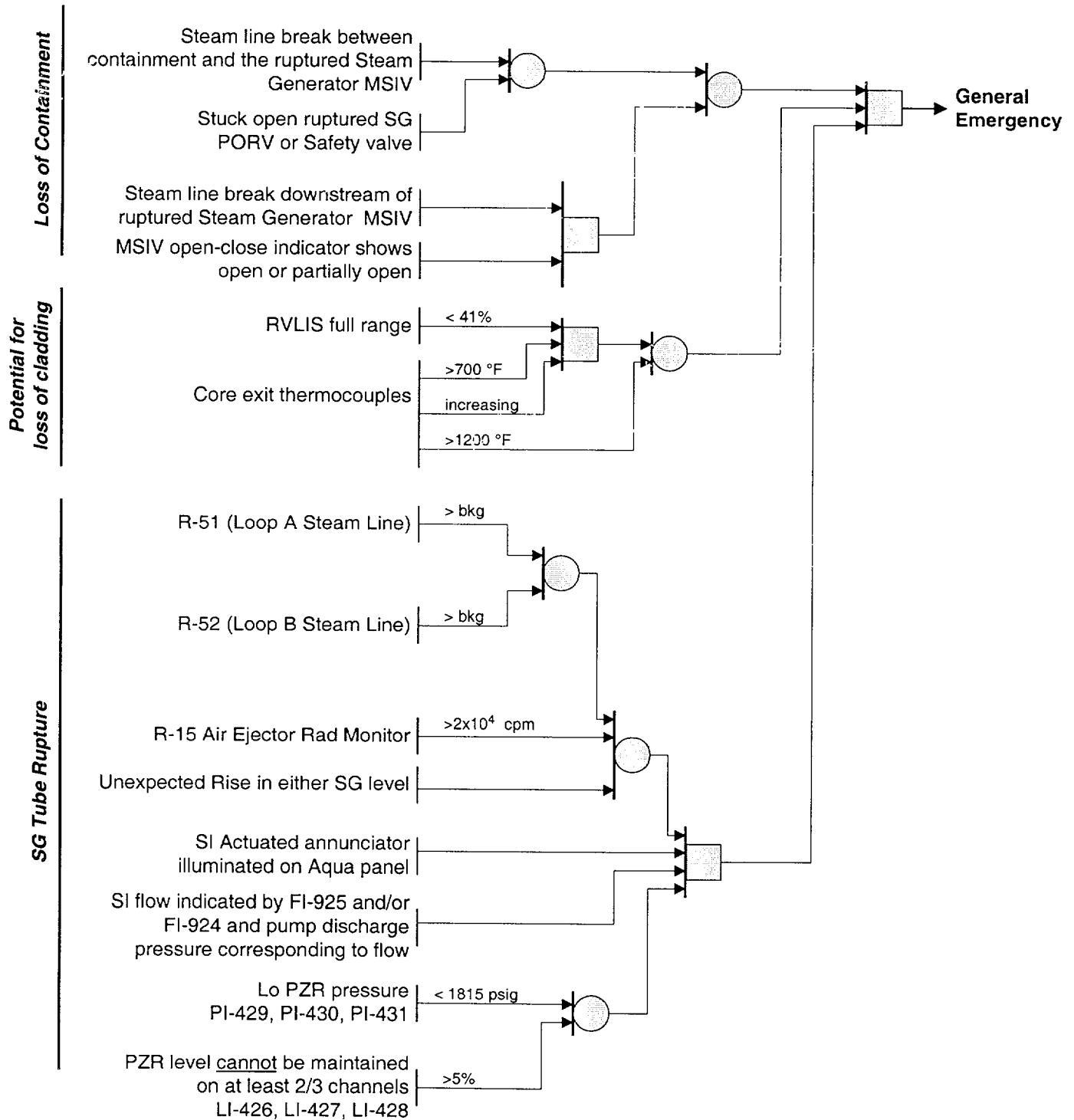
(EAL Ref Manual 6)



### Condition 6: Loss of 2 of 3 Fission Product Barriers

**Case 5 : Loss of RCS Boundary (SG Tube Rupture),  
loss of containment, and high potential for loss of  
cladding.**

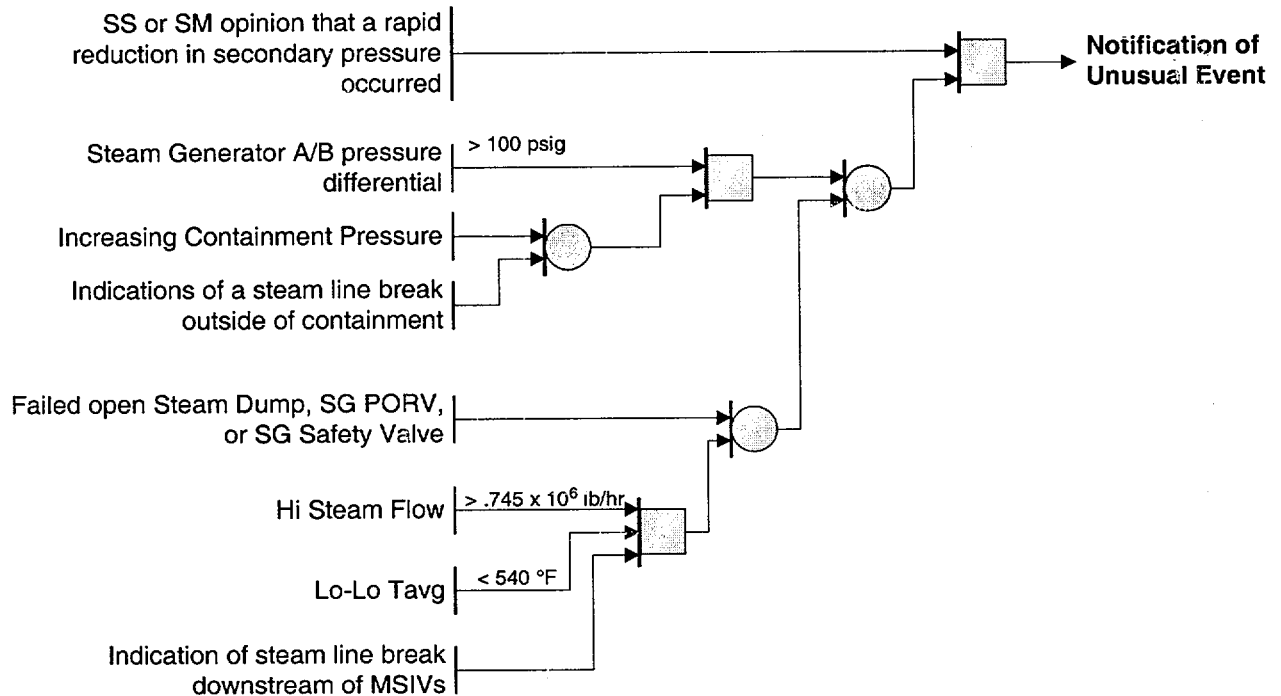
(EAL Ref Manual 6)



### Condition 7 : Secondary Coolant Anomaly

Rapid depressurization of secondary side.

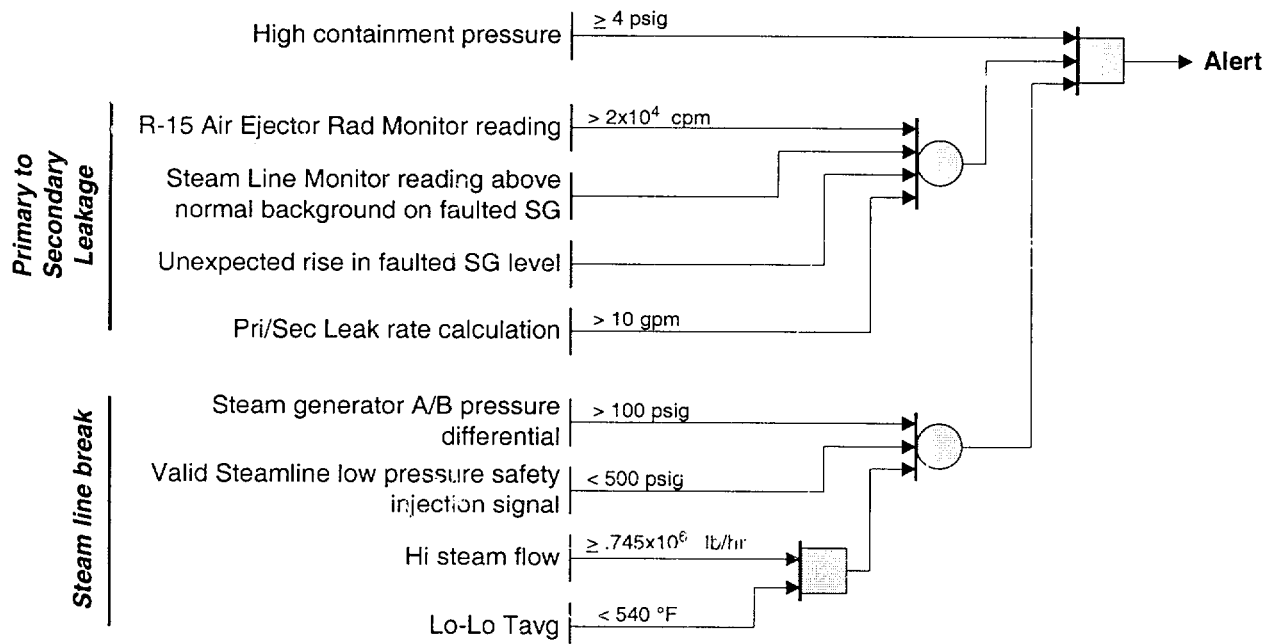
(EAL Ref Manual 7A)



### Condition 7 : Secondary Coolant Anomaly

Steam line break inside containment  
with significant (greater than 10 gpm)  
primary to secondary leak rate.

(EAL Ref Manual 7B)

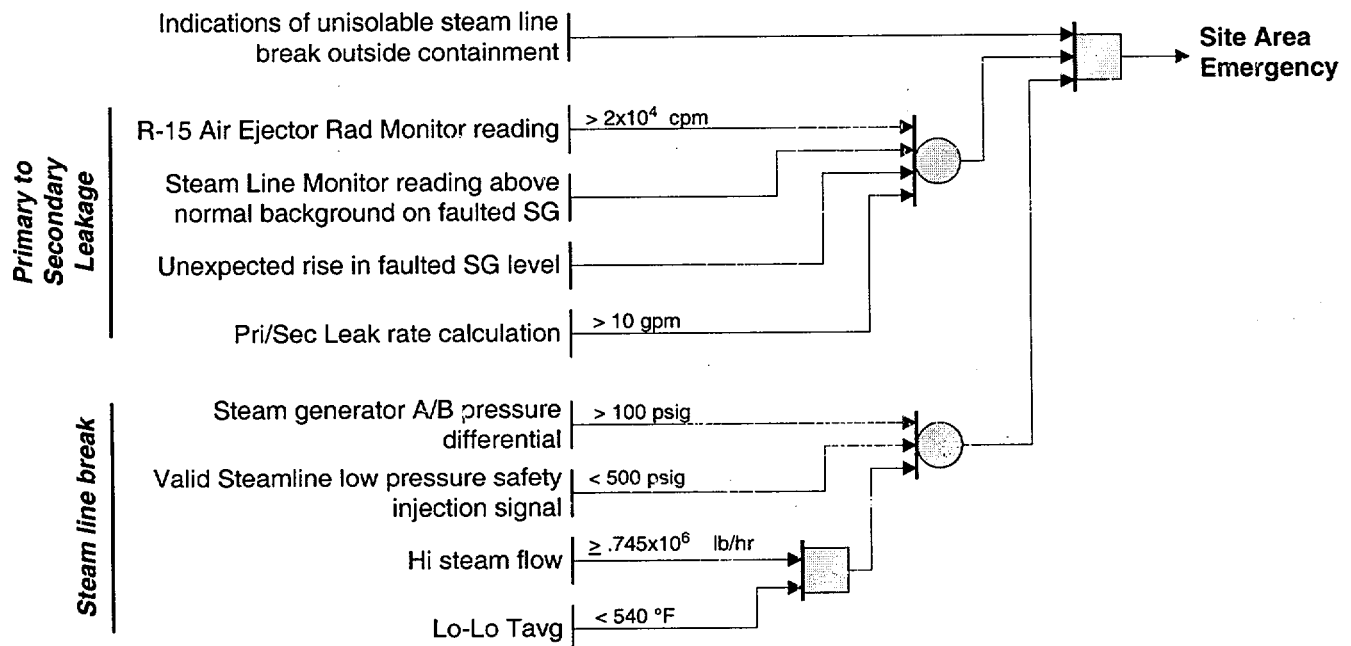




### Condition 7 : Secondary Coolant Anomaly

Unisolable steam line break outside containment with significant (greater than 10 gpm) primary to secondary leak rate.

(EAL Ref Manual 7C)

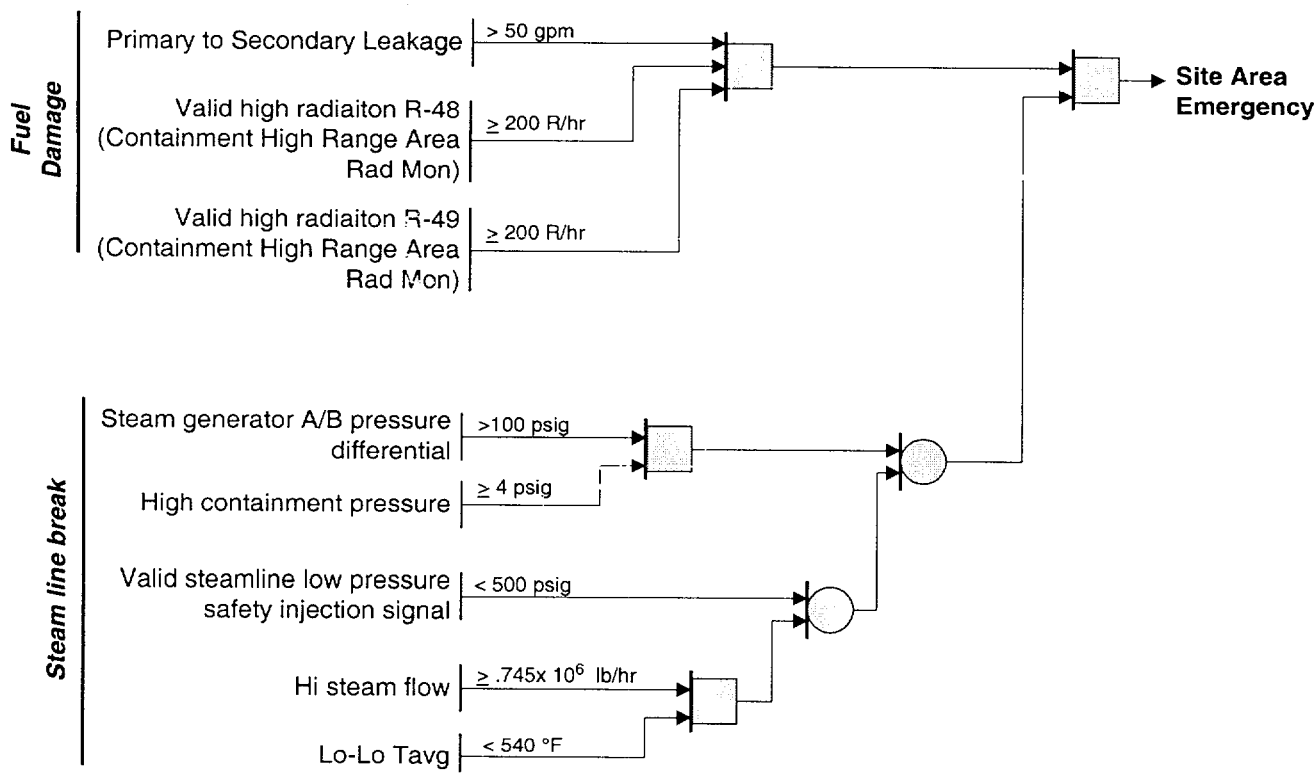


### Condition 7 : Secondary Coolant Anomaly

**Steam Line break in containment with greater than 50 gpm primary to secondary leakage and indication of fuel damage.**

(EAL Ref Manual 7D)

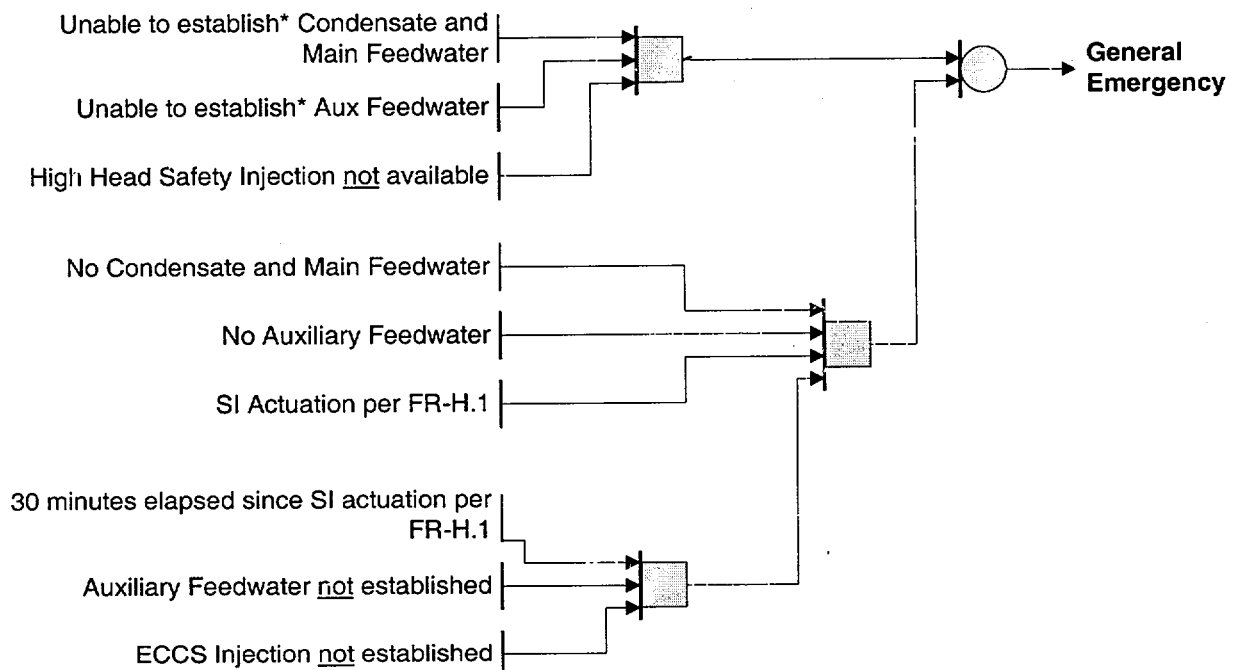
**Note:** If steam line break is outside containment with SG tube rupture and fuel failure, this may be a General Emergency . See condition # 6, case 2



### Condition 7 : Secondary Coolant Anomaly

Transient initiated by loss of feedwater and condensate systems (principal heat removal system) followed by failure of emergency feedwater system for extended period. Core melting possible in several hours. Ultimate failure of containment likely if core melts.

(EAL Ref Manual 7E)



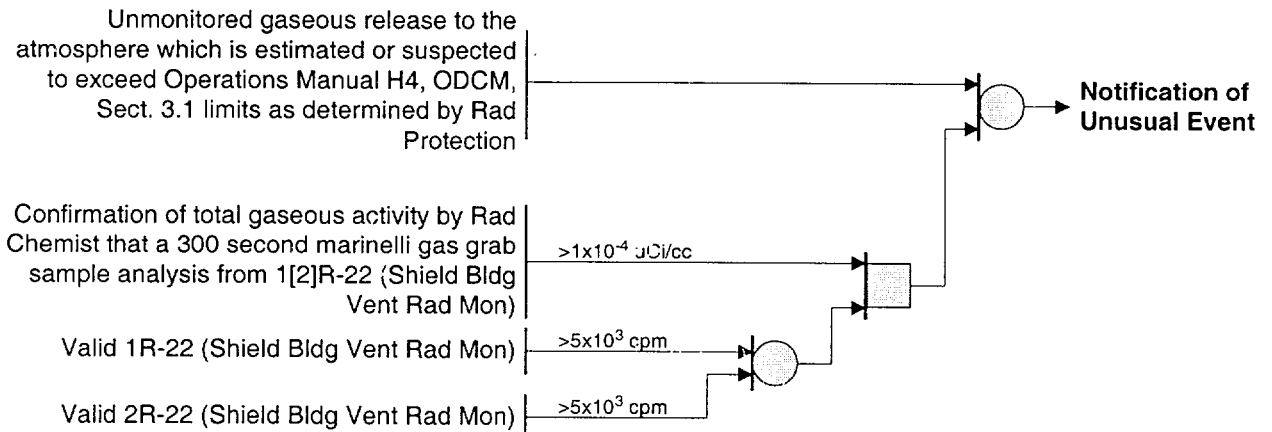
**Note:**

\* "Unable to establish" criteria met if procedural attempt to establish condition has been made, but was unsuccessful or if an attempt cannot be made.

### Condition 8 : Radiological Effluents

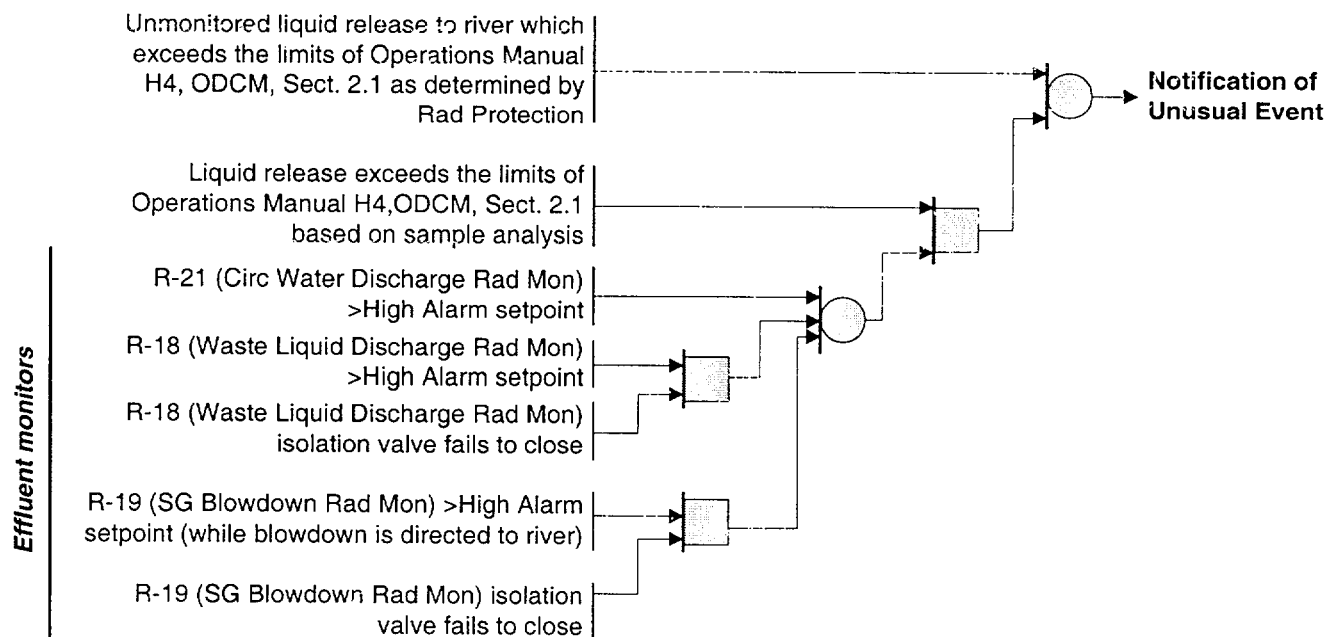
**Airborne Radiological effluent  
Technical Specifications exceeded**

(EAL Ref Manual 8A)



**Liquid Radiological effluent Technical  
Specification limits exceeded.**

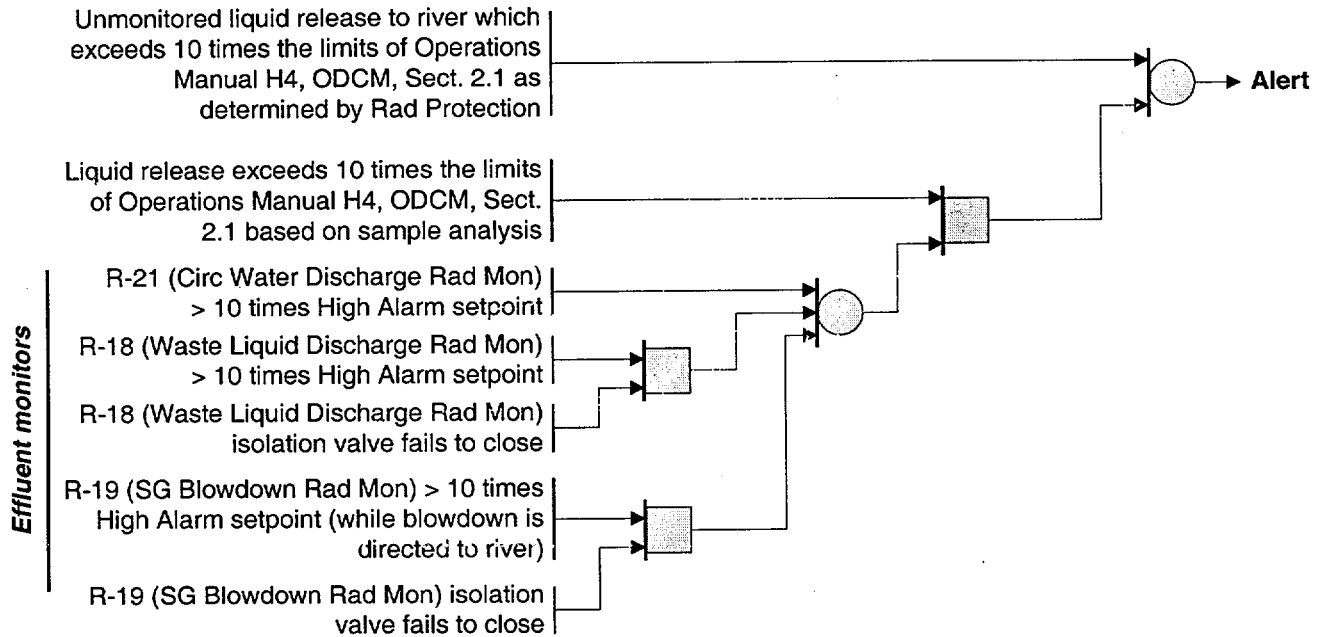
(EAL Ref Manual 8B)



### Condition 8 : Radiological Effluents

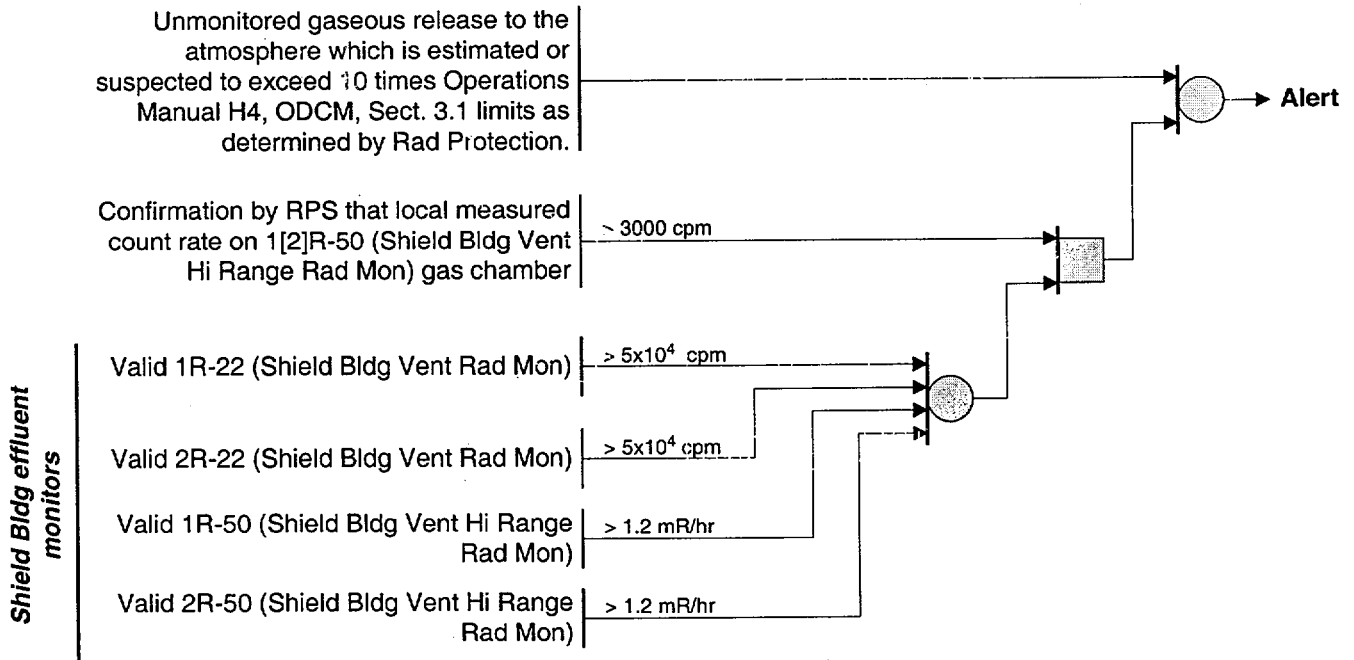
**Liquid Radiological effluent greater than ten times Technical Specification limits.**

(EAL Ref Manual 8C)



**Airborne Radiological effluents greater than ten times Technical Specification instantaneous limits (an instantaneous rate which, if continued for over two hours, would result in about 1 mrem TEDE at the site boundary under average met conditions. TEDE = Total Dose Equivalent).**

(EAL Ref Manual 8D)



Condition 8 : Radiological Effluents

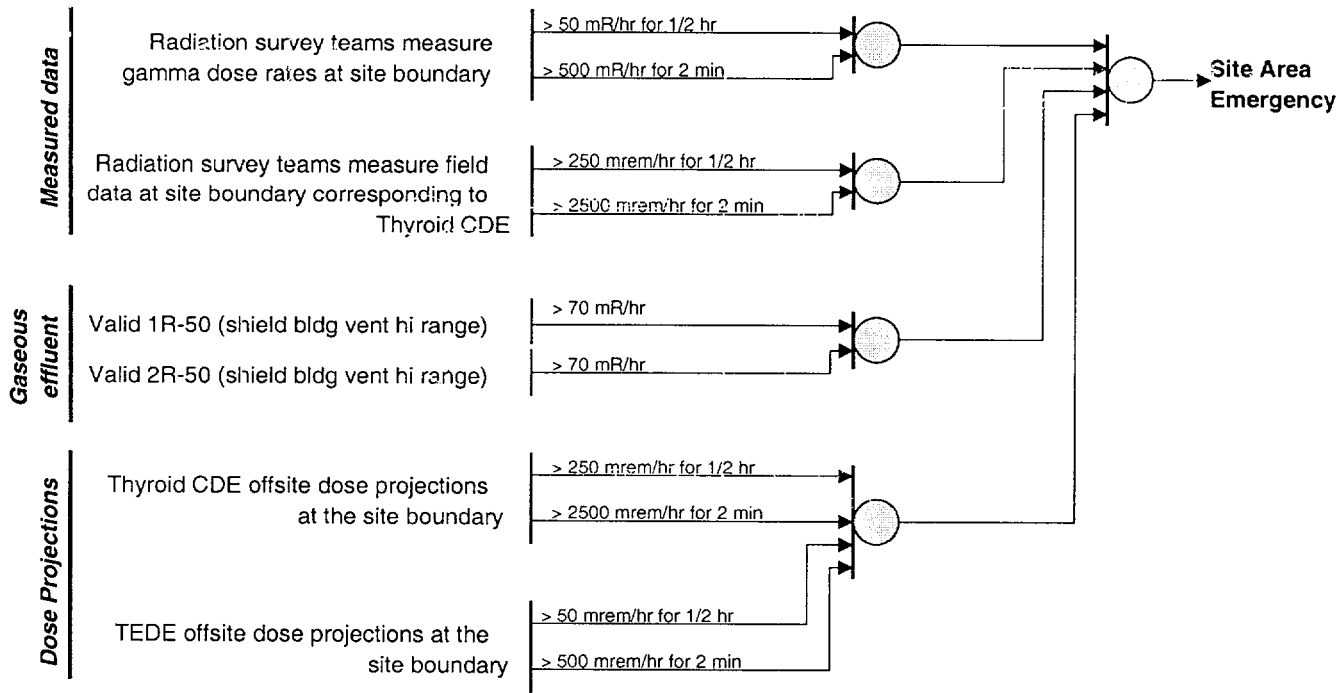
Airborne Effluent monitors detect levels corresponding to greater than:

1. 50 mrem/hr TEDE for one-half hour, or
2. 250 mrem/hr Thyroid CDE for one-half hour, or
3. 500 mrem/hr TEDE for two minutes, or
4. 2500 mrem/hr Thyroid CDE for two minutes

at the site boundary for adverse meteorology.

TEDE = Total Effective Dose Equivalent.  
CDE = Committed Dose Equivalent.

(EAL Ref Manual 8E)



Condition 8 : Radiological Effluents

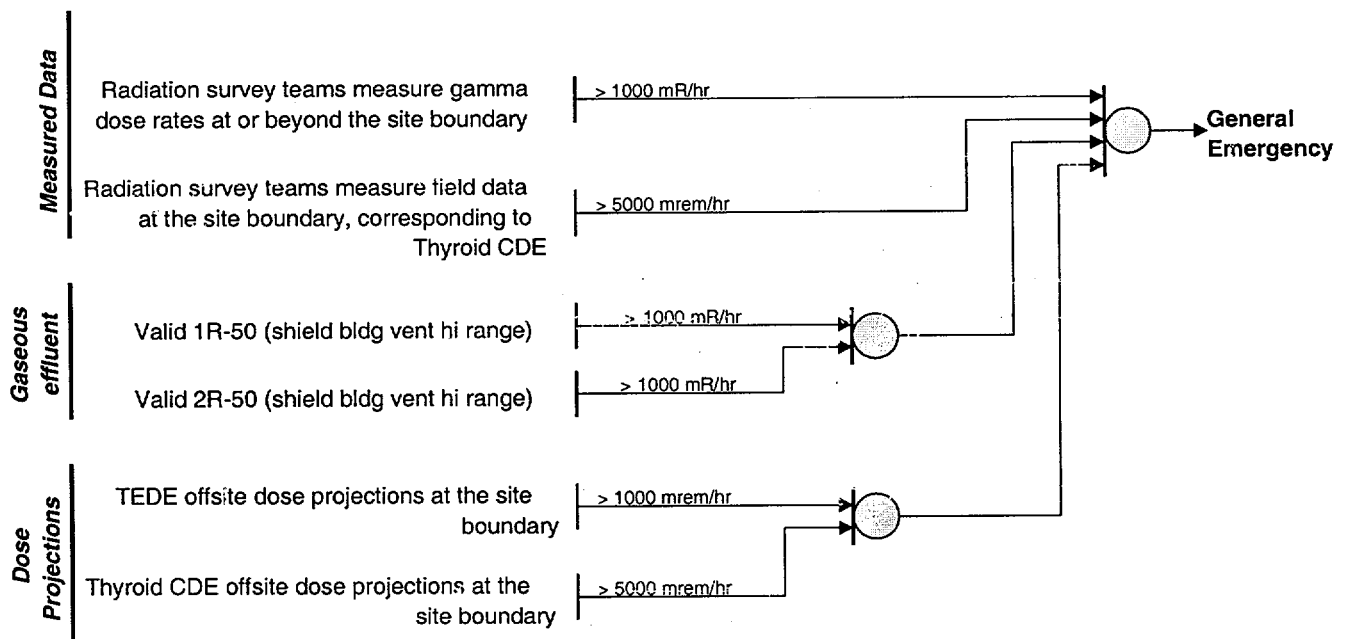
Effluent monitors detect levels corresponding to:

1. 1 rem/hr TEDE, or
2. 5 rem/hr Thyroid CDE

at the site boundary under actual meteorological conditions.

TEDE = Total Effective Dose Equivalent.  
CDE = Committed Dose Equivalent.

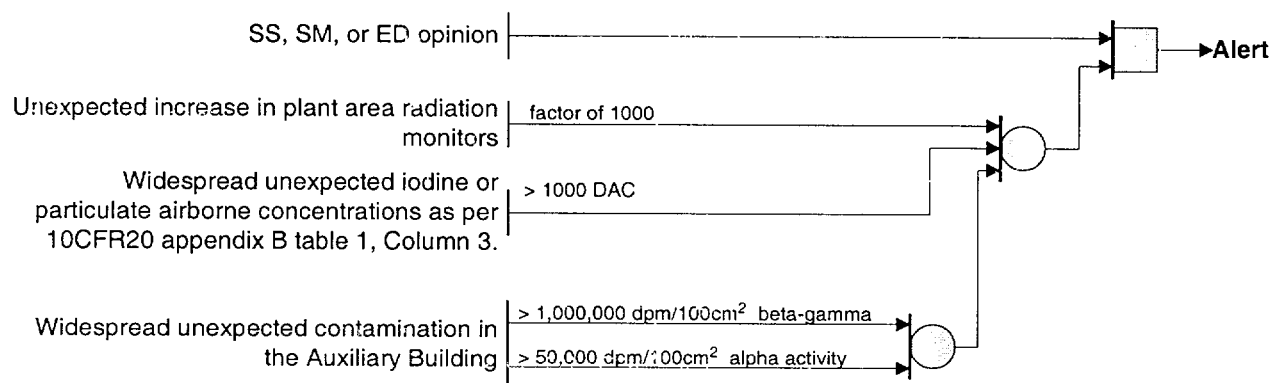
(EAL Ref Manual 8F)



### Condition 8 : Radiological Effluents

Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of factor of 1000 in direct radiation readings within facility).

(EAL Ref Manual 8G)

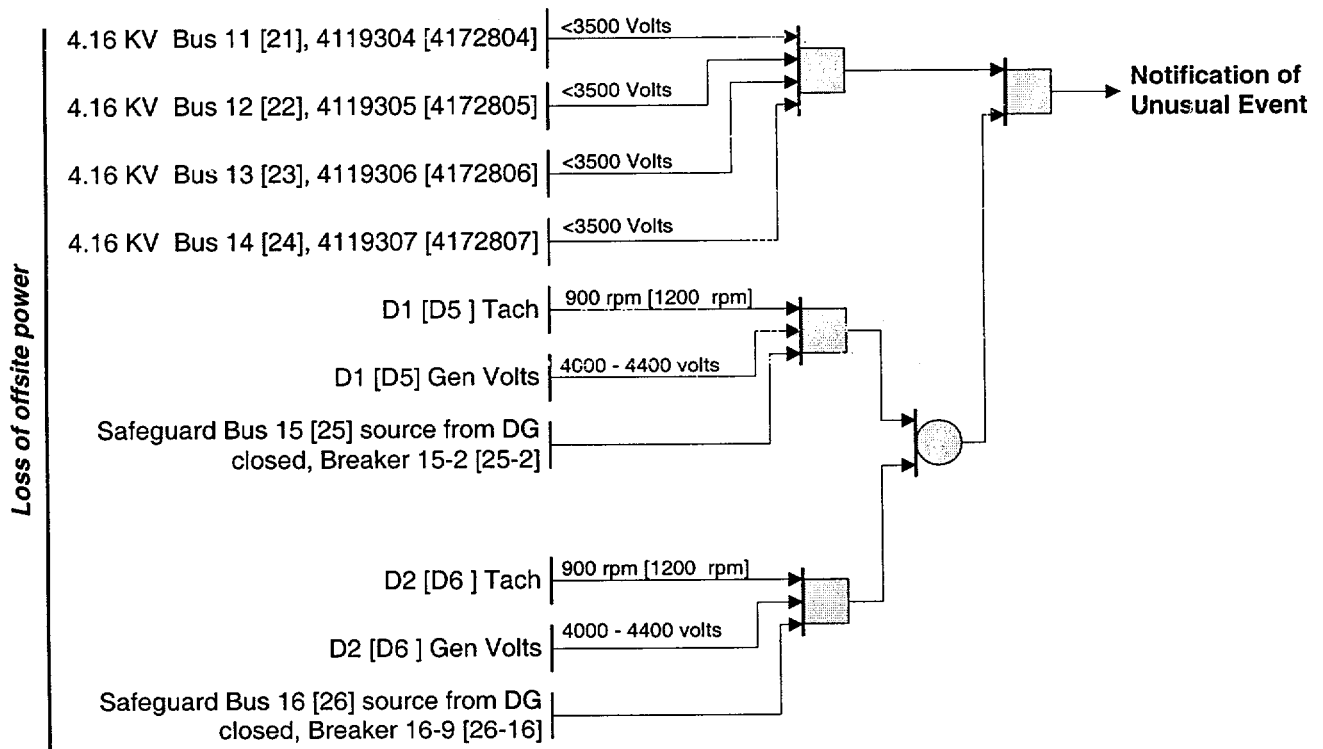




### Condition 9 : Major Electrical Failures

#### Loss of Offsite Power

(EAL Ref Manual 9A)



#### Loss of onsite AC power capability

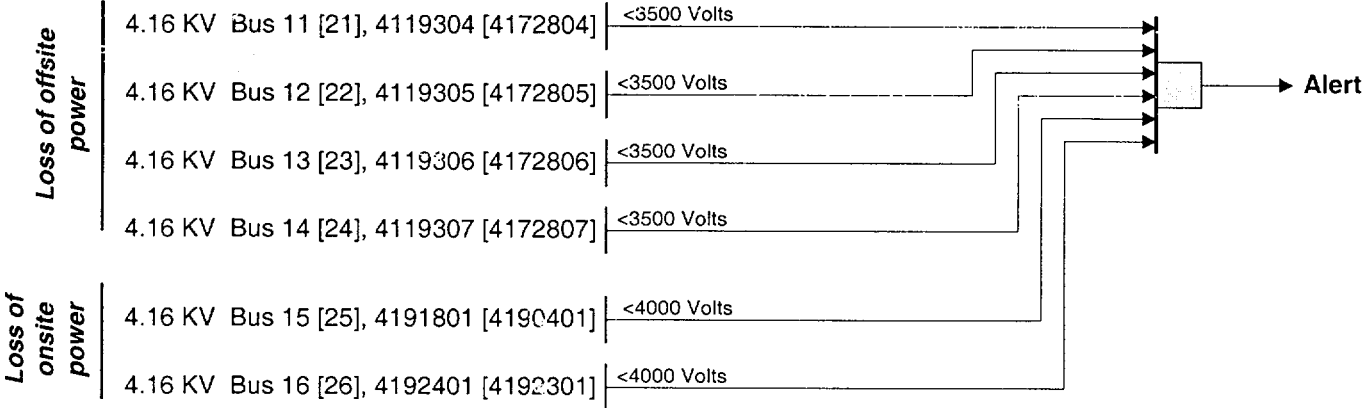
(EAL Ref Manual 9B)



Condition 9 : Major Electrical Failures

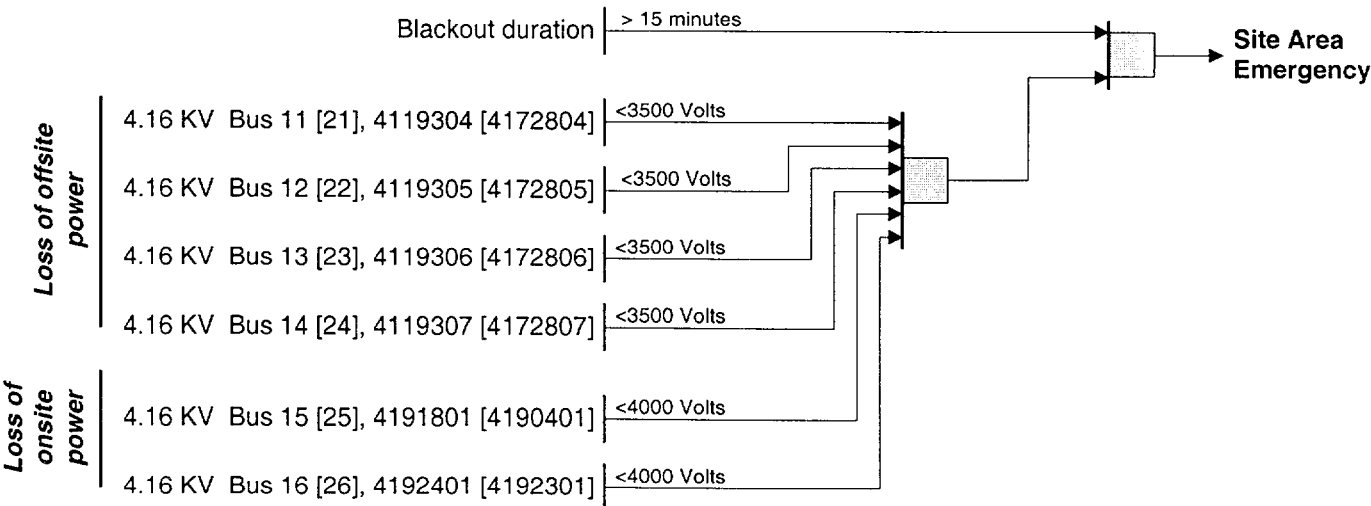
Loss of offsite power and loss of all onsite AC power (See Site Area Emergency for extended loss).

(EAL Ref Manual 9C)



Loss of offsite power and loss of onsite AC power for more than 15 minutes.

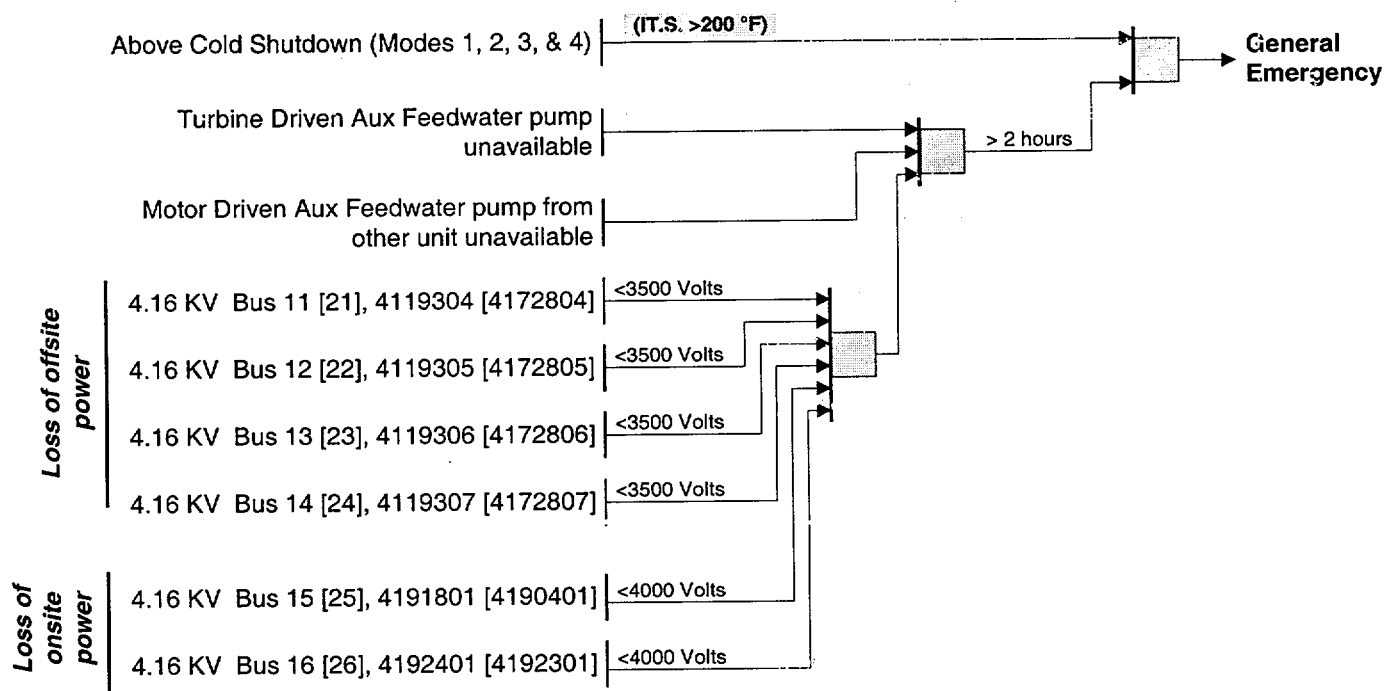
(EAL Ref Manual 9D)



### Condition 9 : Major Electrical Failures

**Failure of offsite and onsite power along with total loss of emergency feedwater makeup capability for greater than 2 hours. This would lead to eventual core melt and likely failure of containment.**

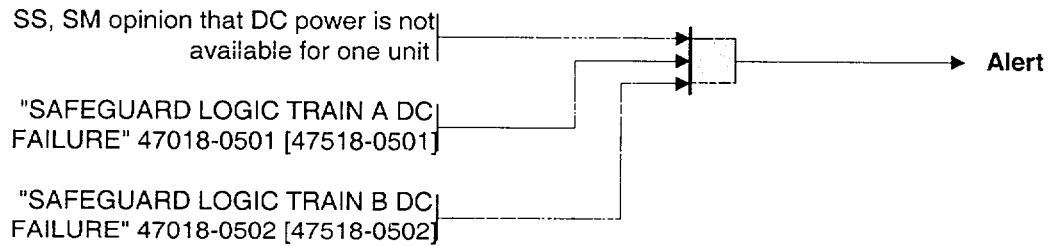
(EAL Ref Manual 9E)



Condition 9 : Major Electrical Failures

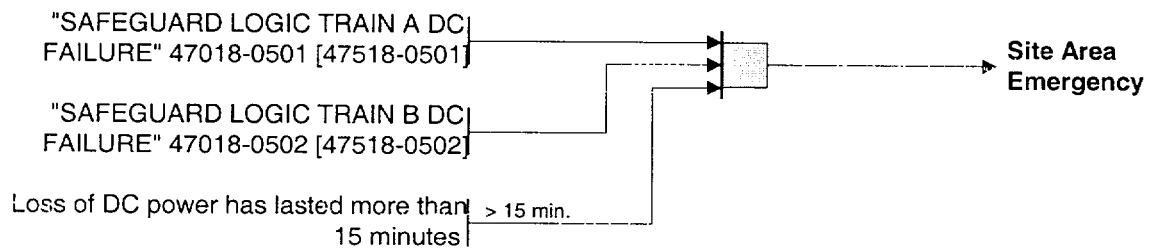
Loss of all onsite DC power (see Site  
Area Emergency for extended loss).

(EAL Ref Manual 9F)



Loss of all vital onsite DC power for  
more than 15 minutes

(EAL Ref Manual 9G)



### Condition 10 : Control Room Evacuations

Evacuation of the Control Room anticipated or required with control of shutdown systems established from Hot Shutdown Panels and local stations.

(EAL Ref Manual 10A)

SS, SM, or ED determines evacuation of Control Room is anticipated or required with control of shutdown systems established from Hot shutdown Panels and local stations

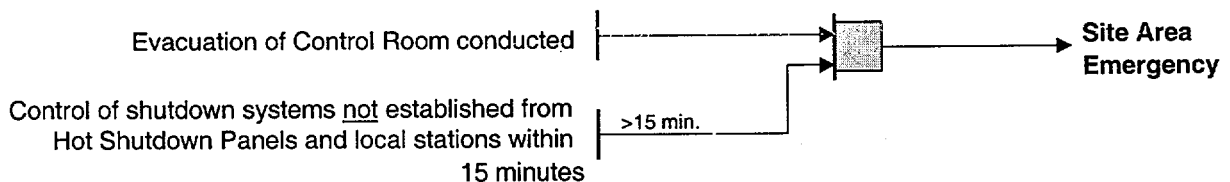
Alert

**Note:**

If reason for evacuation is fire in Control Room or Relay Room, see initiating condition 11C, "Fire compromising the functions of safety systems" for possible reclassification.

Evacuation of the Control Room and control of shutdown systems not established from hot shutdown panel and local stations within 15 minutes.

(EAL Ref Manual 10B)



### Condition 11 : Fires

**Fire within the plant or ISFSI lasting more than 10 minutes.**

(EAL Ref Manual 11A)

**Note:**

FIRE: is combustion characterized by heat and light (flame). Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

Physical observation of a fire within the  
Reactor Bldg., Auxiliary Bldg., Turbine Bldg.,  
Service Bldg., Rad Waste Bldg., Plant  
Screen House, D1/D2 Room, D5/D6 Bldg.,  
Cooling Tower Equip. House, Transformers,  
or on the surface of a loaded spent fuel cask  
in the ISFSI Area

Operation of an automatic fire suppression  
system on the fire

Application of manual fire extinguishing  
equipment by the Fire Brigade

Fire continuing after at least 10 minutes of  
fire suppression > 10 min.

**Notification of  
Unusual Event**

**Fire potentially affecting safety systems.**

(EAL Ref Manual 11B)

**Note:**

FIRE: is combustion characterized by heat and light (flame). Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

Physical observation of a fire that is  
affecting one train of a safety system

SS, SM, or ED opinion

**Alert**

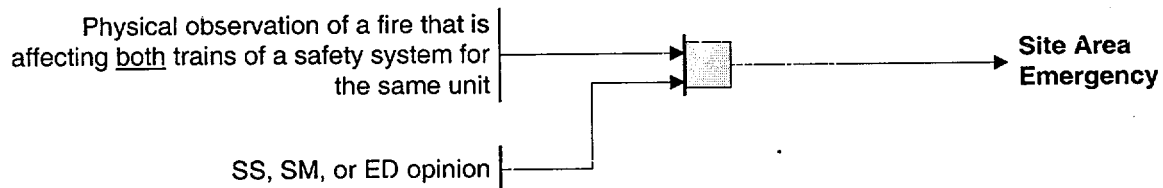
### Condition 11 : Fires

Fire compromising the functions of safety systems.

(EAL Ref Manual 11C)

**Note:**

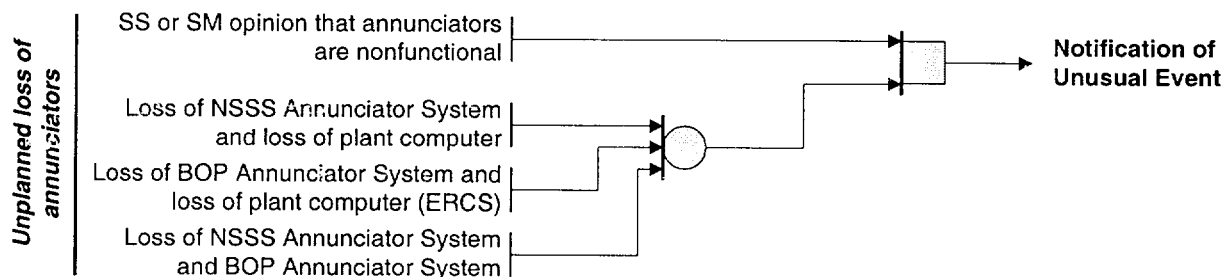
FIRE: is combustion characterized by heat and light (flame). Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.



### Condition 12 : Plant Shutdown Functions

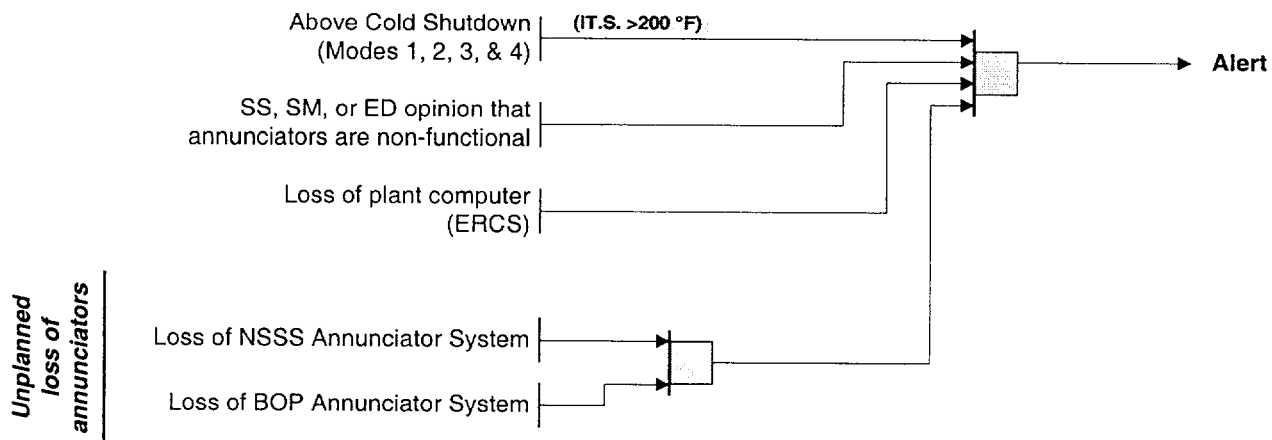
**Nonfunctional alarms in the Control Room.**

(EAL Ref Manual 12B)



**Most or all alarms (annunciators) lost.**

(EAL Ref Manual 12C)

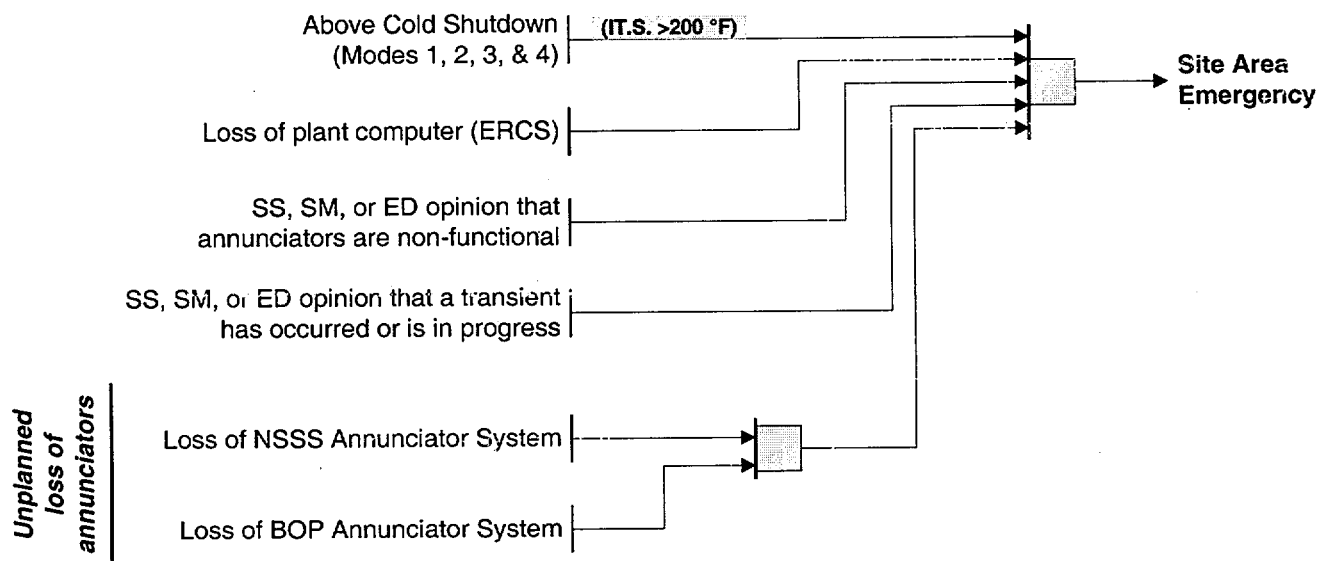




Condition 12 : Plant Shutdown Functions

Most or all alarms (annunciators) lost  
and plant transient initiated or in  
progress.

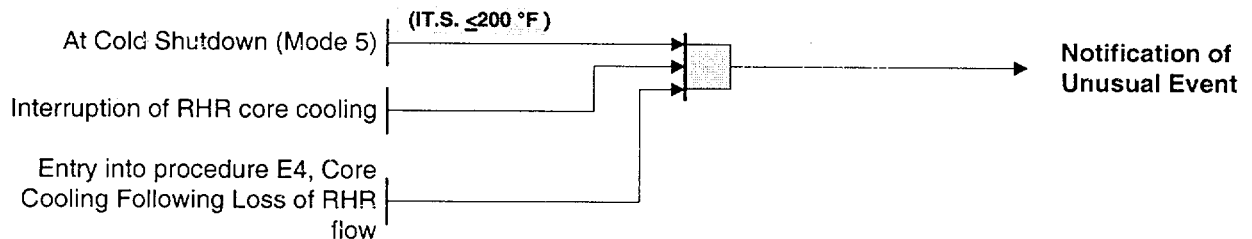
(EAL Ref Manual 12D)



### Condition 12 : Plant Shutdown Functions

**Momentary loss of core cooling needed for plant Cold Shutdown.**

(EAL Ref Manual 12E)



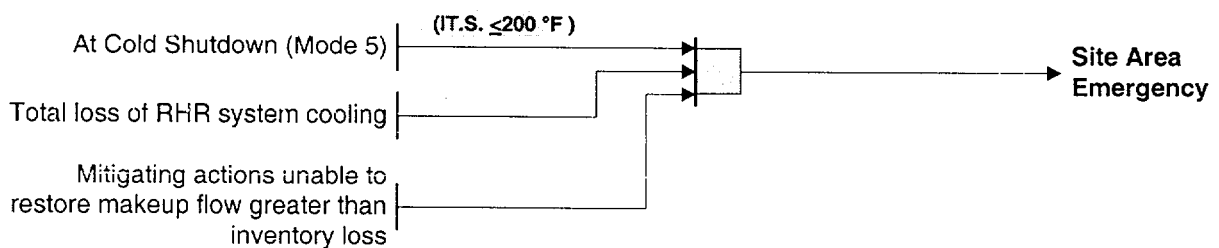
**Inability to maintain plant in Cold Shutdown.**

(EAL Ref Manual 12F)



**Loss of water level that has uncovered or will uncover the fuel in the reactor vessel while at Cold Shutdown.**

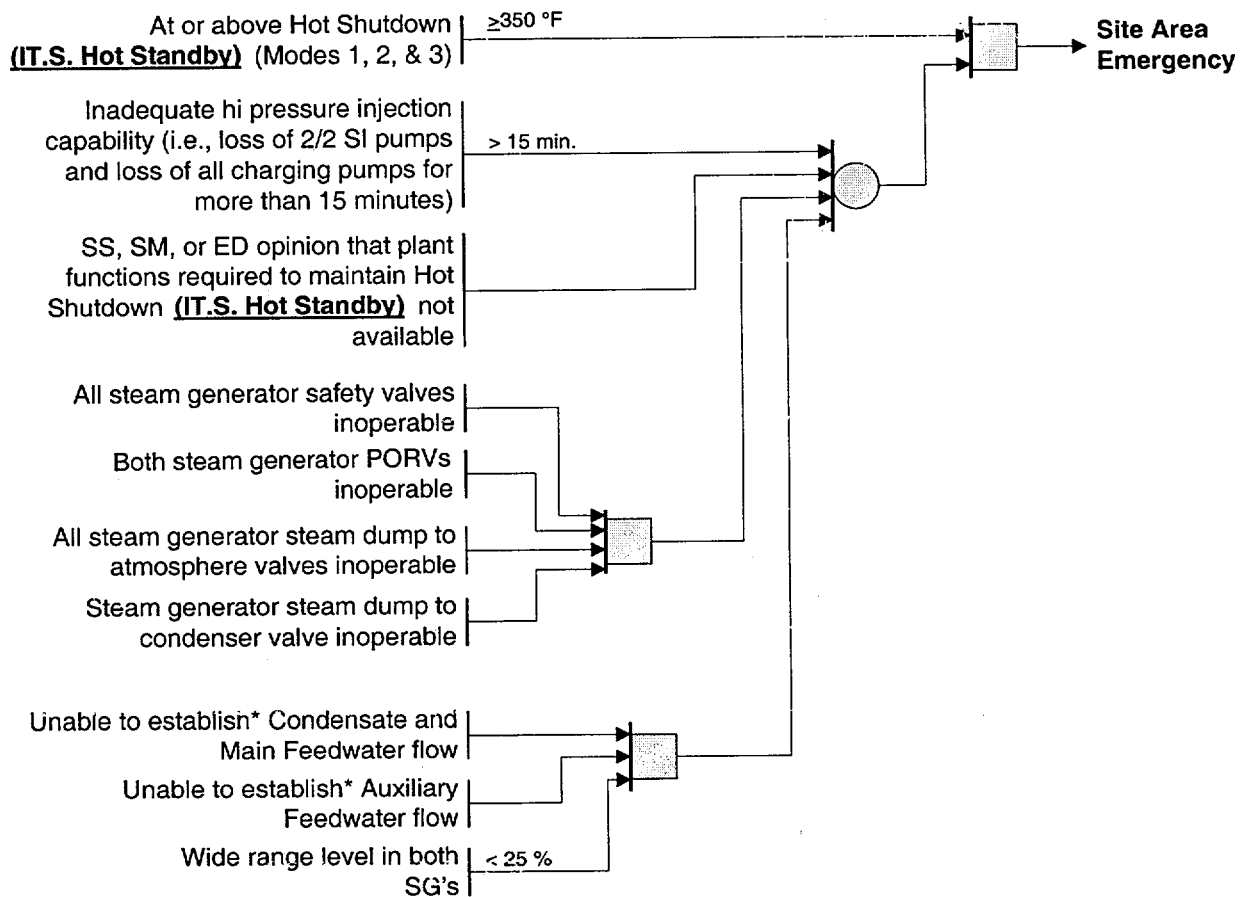
(EAL Ref Manual 12G)



## Condition 12 : Plant Shutdown Functions

Complete loss of any function needed for plant Hot Shutdown. (Also see Condition #7 for possible General if feed and bleed is initiated).

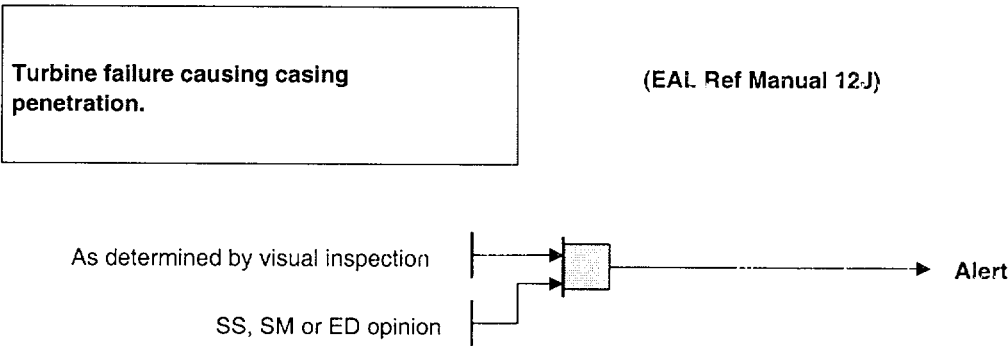
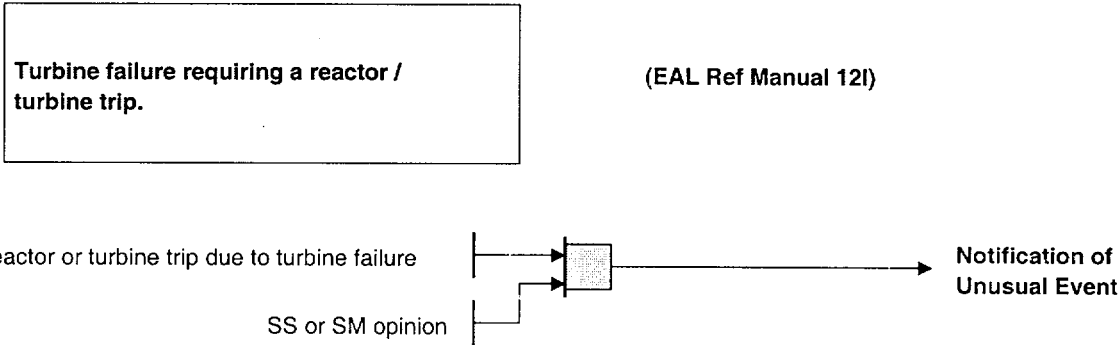
(EAL Ref Manual 12H)



**Note:**

\* "Unable to establish" criteria met if procedural attempt to establish condition has been made, but was unsuccessful or if an attempt cannot be made.

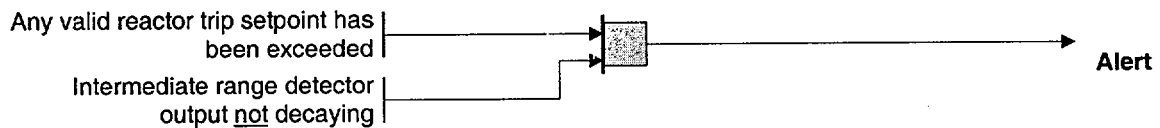
Condition 12 : Plant Shutdown Functions



### Condition 12 : Plant Shutdown Functions

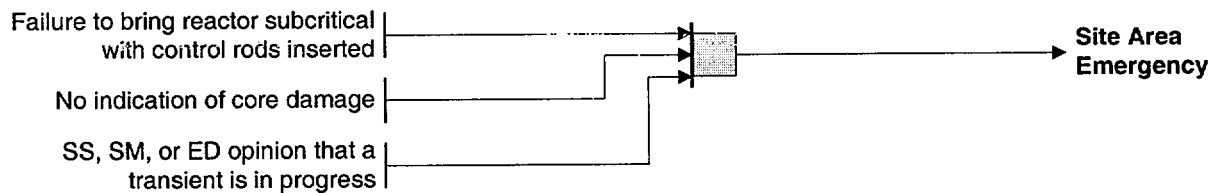
**Failure of the reactor protection system to initiate and complete a trip which brings the reactor subcritical.**

(EAL Ref Manual 12K)



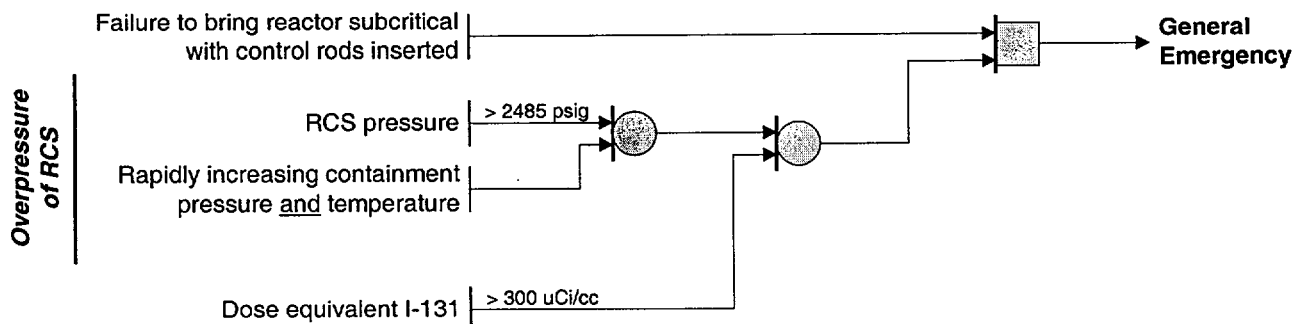
**Transient requiring operation of shutdown systems with failure to trip (continued power generation but no core damage immediately evident).**

(EAL Ref Manual 12L)



**Transient requiring operation of shutdown systems with failure to trip which results in core damage or additional failure of core cooling and makeup systems (which could lead to core melt).**

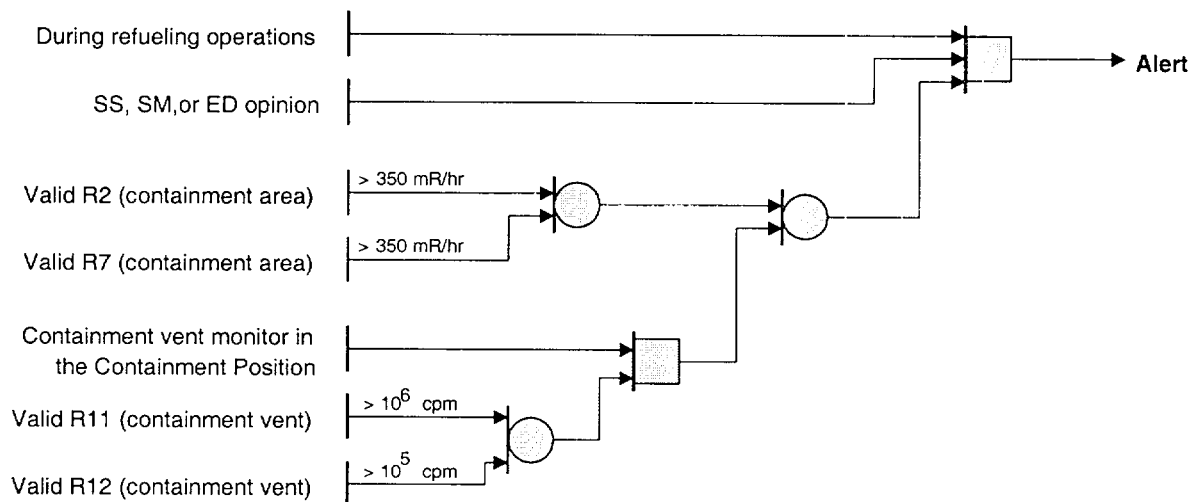
(EAL Ref Manual 12M)



Condition 13 : Fuel Handling Accidents

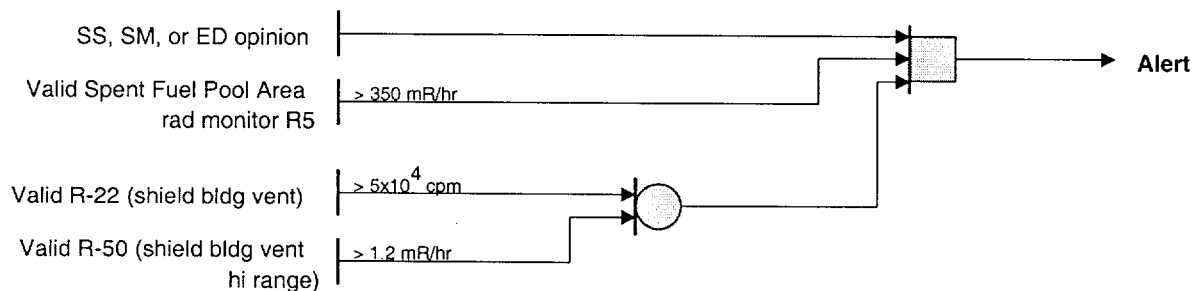
Fuel damage accident with release of radioactivity to containment.

(EAL Ref Manual 13A)



Fuel damage accident with release of radioactivity to the fuel handling building.

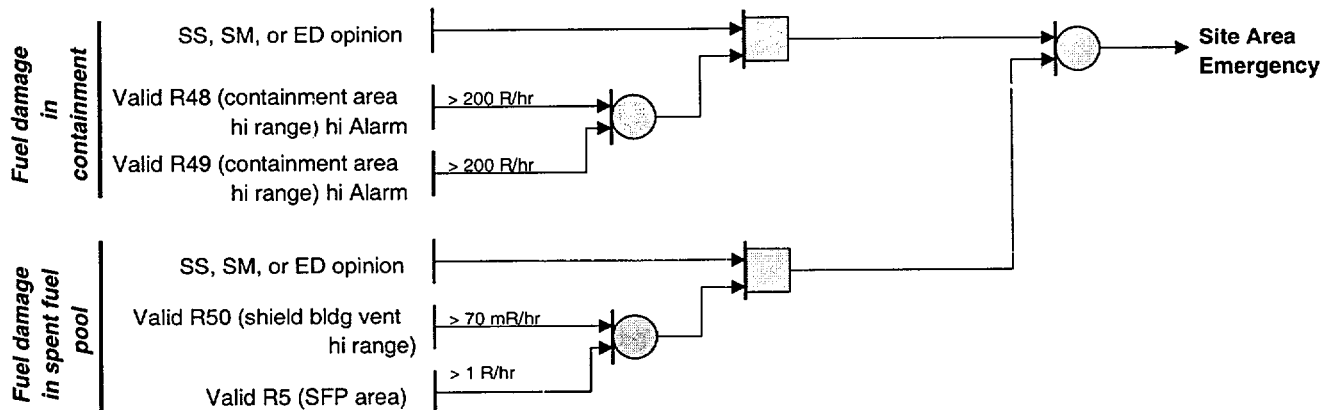
(EAL Ref Manual 13B)



Condition 13 : Fuel Handling Accidents

Major damage to spent fuel in  
containment or fuel handling building  
(e.g., large object damages fuel or water  
loss below fuel level.

(EAL Ref Manual 13C)



**Condition 14 : Coolant Pump**

DELETED

Deleted based on NRC Branch Position On Acceptable Deviation From Appendix 1 to NUREG-0654/FEMA-REP-1, July 11, 1994.

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**Condition 15 : Contaminated Injured Person**

DELETED

Deleted based on NRC Branch Position On Acceptable Deviation From Appendix 1 to NUREG-0654/FEMA-REP-1, July 11, 1994.



### Condition 16 : Security Threats

#### Security threat or attempted entry or attempted sabotage

(EAL Ref Manual 16A)

Security determines the threat to be credible and the threat would have an adverse impact on the safe operation or shutdown capability of the plant

Security discovers an unauthorized attempted entry by force or stealth (secret) into the plant's protected area

The FBI confirms that an act of attempted sabotage did occur to vital plant equipment or security equipment



Notification of Unusual Event

#### Ongoing security compromise

(EAL Ref Manual 16B)

Security Safeguards Contingency event that results in unauthorized personnel commandeering an area within the plant protected area, but not controlling shutdown capability or any vital areas

Bomb device discovered within plant protected area and outside of any vital area



Alert

#### Imminent loss of physical control of the plant

(EAL Ref Manual 16C)

Physical attack on the plant involving imminent occupancy of the Control Room, auxiliary shutdown panels or other vital areas

Bomb device discovered within a vital area



Site Area Emergency

#### Loss of physical control of the plant

(EAL Ref Manual 16D)

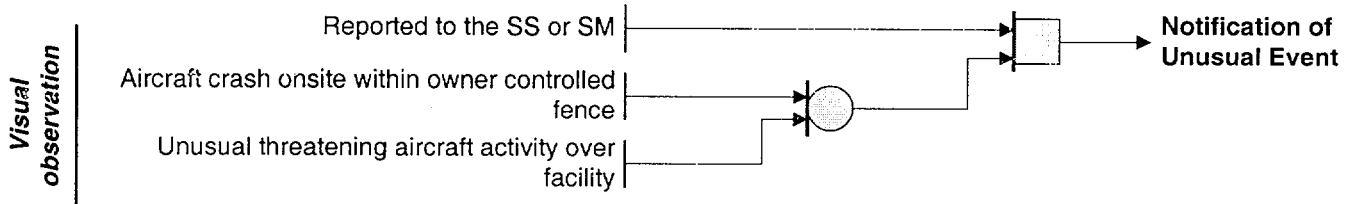
Physical attack on the plant has resulted in unauthorized personnel occupying the Control Room or any other vital areas

General Emergency

### Condition 17 : Hazards to Plant Operations

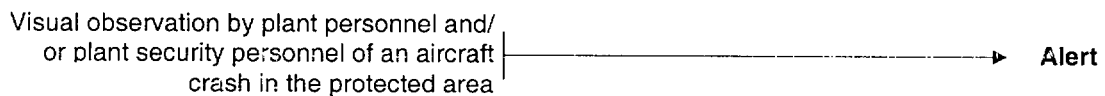
**Aircraft crash onsite or unusual aircraft activity over facility.**

(EAL Ref Manual 17A)



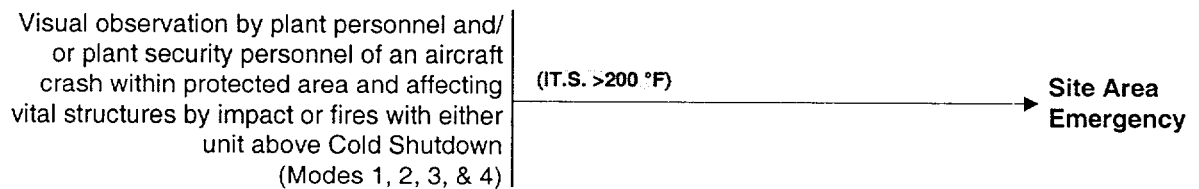
**Aircraft crash in the protected area.**

(EAL Ref Manual 17B)



**Aircraft crash within protected area and affecting vital structures by impact or fires with plant not in Cold Shutdown.**

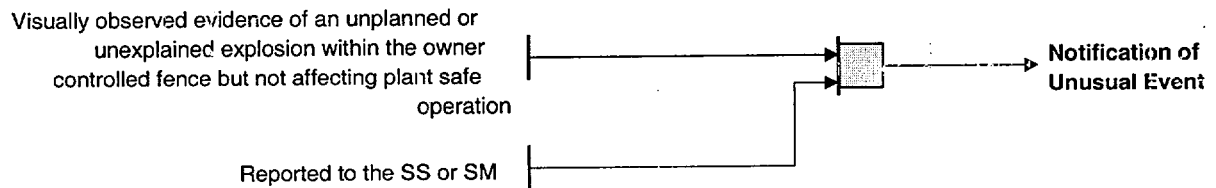
(EAL Ref Manual 17C)



**Condition 17 : Hazards to Plant Operations**

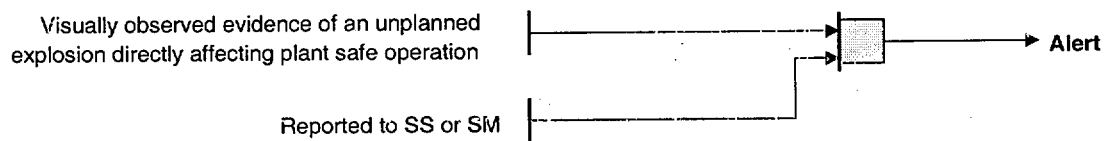
**Near or onsite explosion**

(EAL Ref Manual 17D)



**Known explosion damage to facility affecting plant operation**

(EAL Ref Manual 17E)



### Condition 17 : Hazards to Plant Operations

**Missile impacts from whatever source  
on facility**

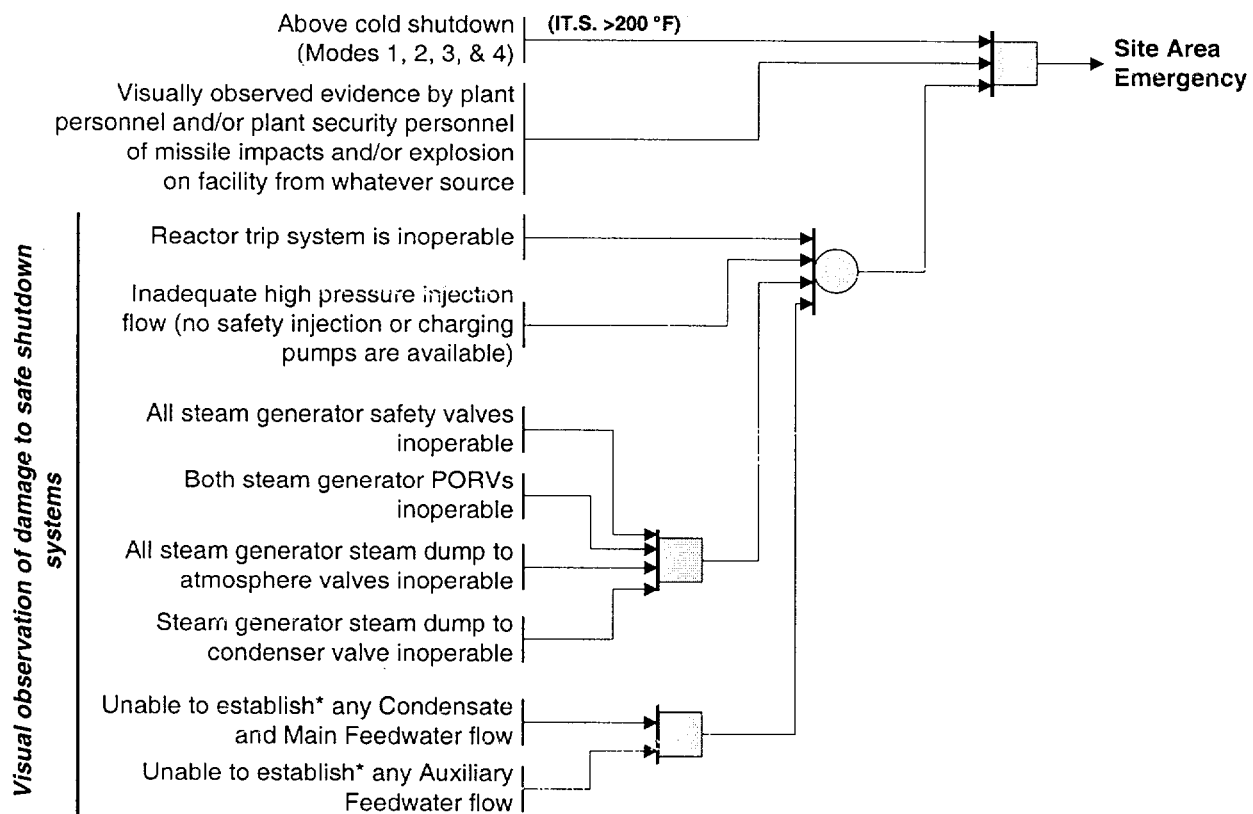
(EAL Ref Manual 17F)

Visually observed evidence by plant personnel  
and/or plant security personnel of missile  
impacts on facility from whatever source

→ Alert

**Severe damage to safe shutdown  
equipment from missiles or explosion  
with plant not in Cold Shutdown**

(EAL Ref Manual 17G)



**Note:**

\* "Unable to establish" criteria met if procedural attempt to establish condition has been made, but was unsuccessful or if an attempt cannot be made.

### Condition 17 : Hazards to Plant Operations

**Near or onsite toxic or flammable gas release**

(EAL Ref Manual 17H)

Widespread toxic or flammable gaseous hazard being experienced or projected onsite (out side of plant) leading to evacuation or sheltering of personnel outside the plant

Receipt of recommendation by Local, County or State Officials to evacuate personnel from site based on an offsite hazardous or flammable gaseous release event

Notification of Unusual Event

**Entry into the plant environs of toxic or flammable gases**

(EAL Ref Manual 17I)

Explosive gas concentrations being measured within the plant at a distance of greater than 10 feet from the source

Toxic gaseous concentrations being measured within a large area of the plant at the breathing zone

> explosive limits

> 50 ppm hydrazine

> 300 ppm ammonia

> 50 ppm hydrochloric acid

> 1400 ppm morpholine

> 30 ppm ethanolamine (ETA)

> IDLH for any toxic gas (see D14.4 AOP 1)

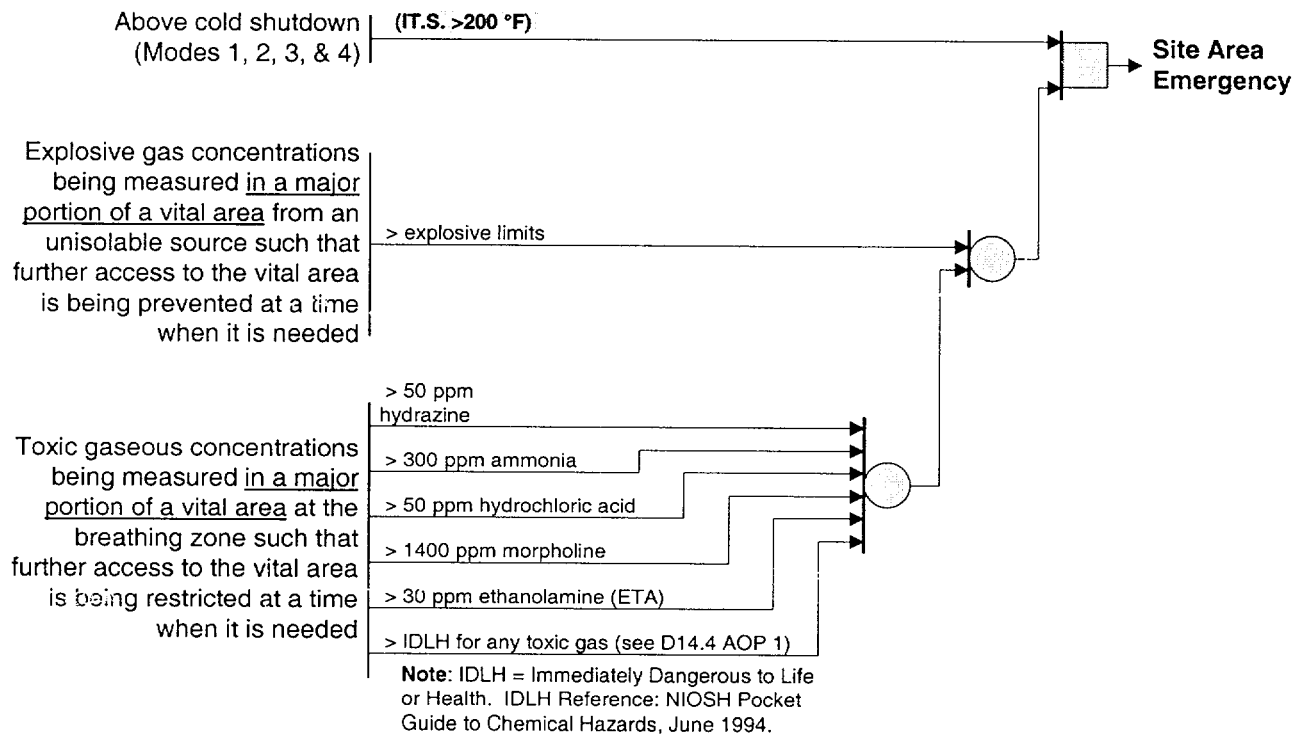
Note: IDLH =Immediately Dangerous to Life or Health.  
IDLH Reference: NIOSH Pocket Guide to Chemical Hazards, June 1994.

Alert

### Condition 17 : Hazards to Plant Operations

Entry of toxic or flammable gases into vital areas with plant not in Cold Shutdown.

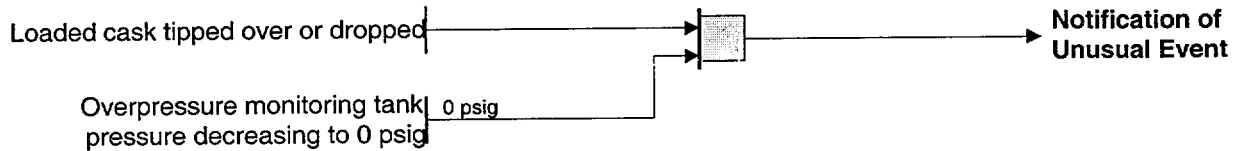
(EAL Ref Manual 17J)



### Condition 18 :ISFSI Events

ISFSI cask tip over or drop resulting in  
cask seal leakage

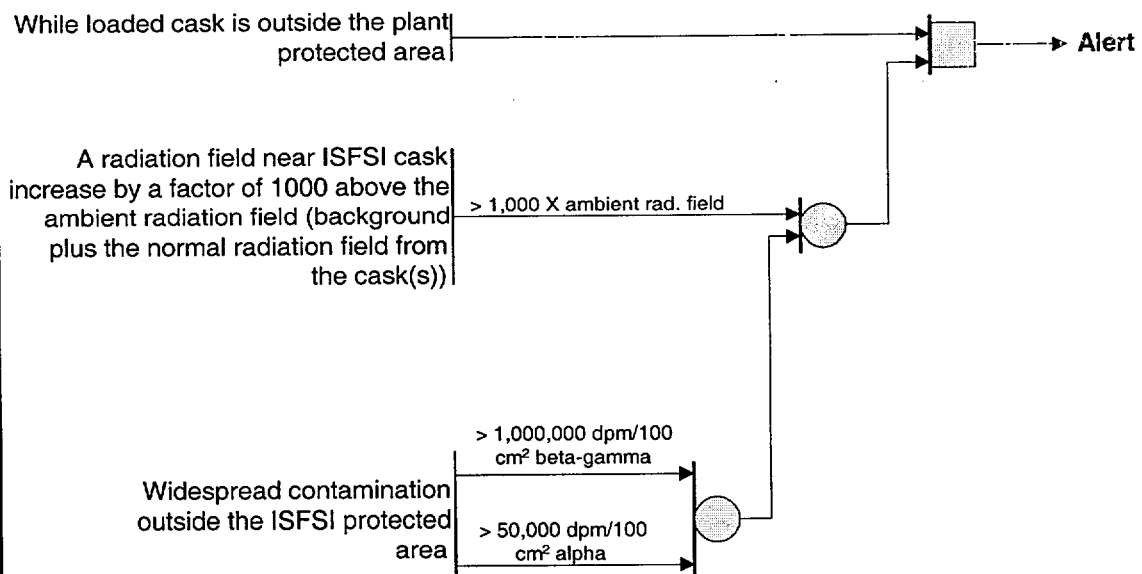
(EAL Ref Manual 13A)



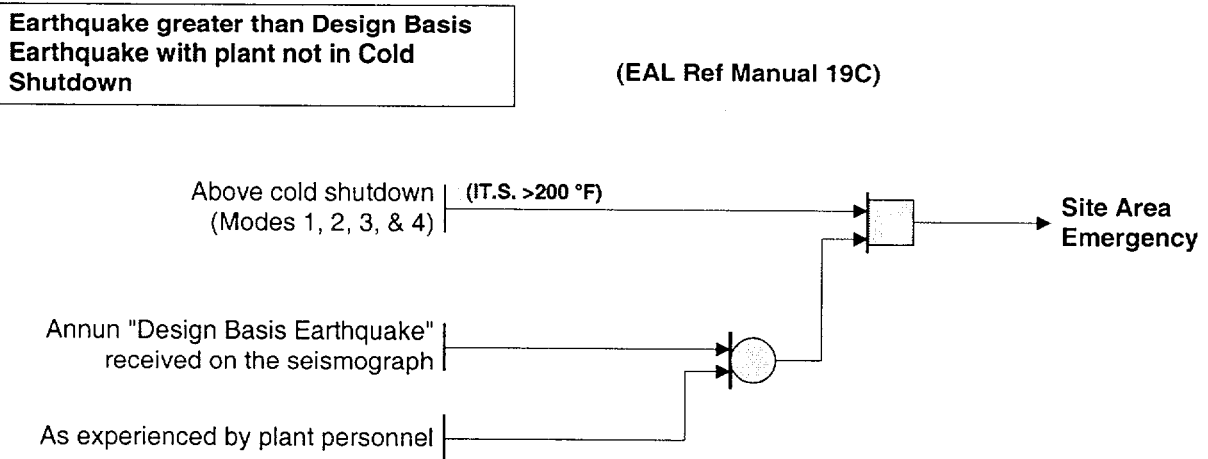
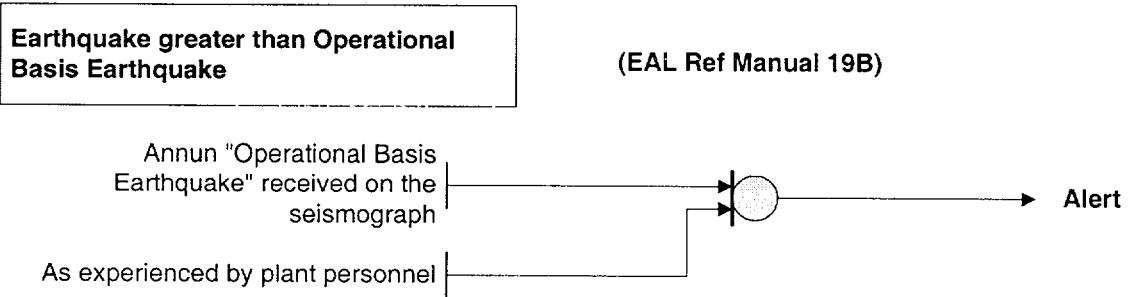
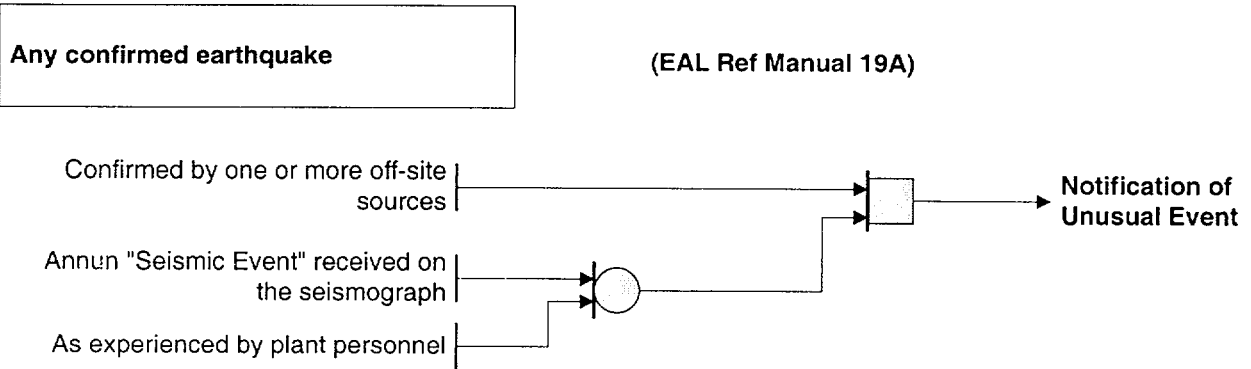
Loss of ISFSI cask/fuel containment  
barrier

(EAL Ref Manual 13B)

Physical breach of cask indicated by  
Radiation Survey Team measure results of:



**Condition 19 : Natural Events**

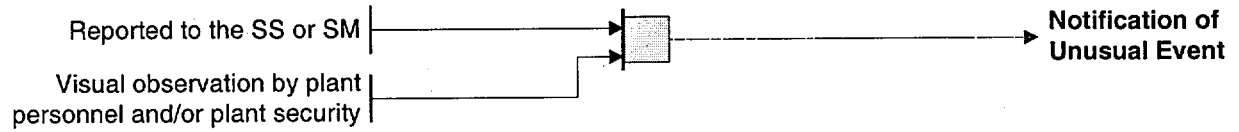




**Condition 19 : Natural Events**

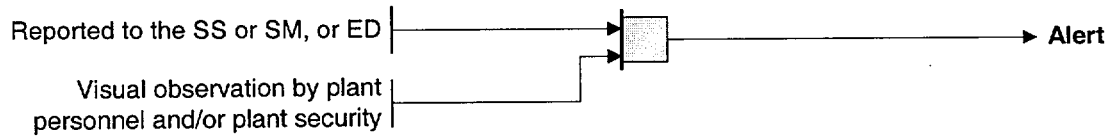
**Any tornado on site**

(EAL Ref Manual 19D)

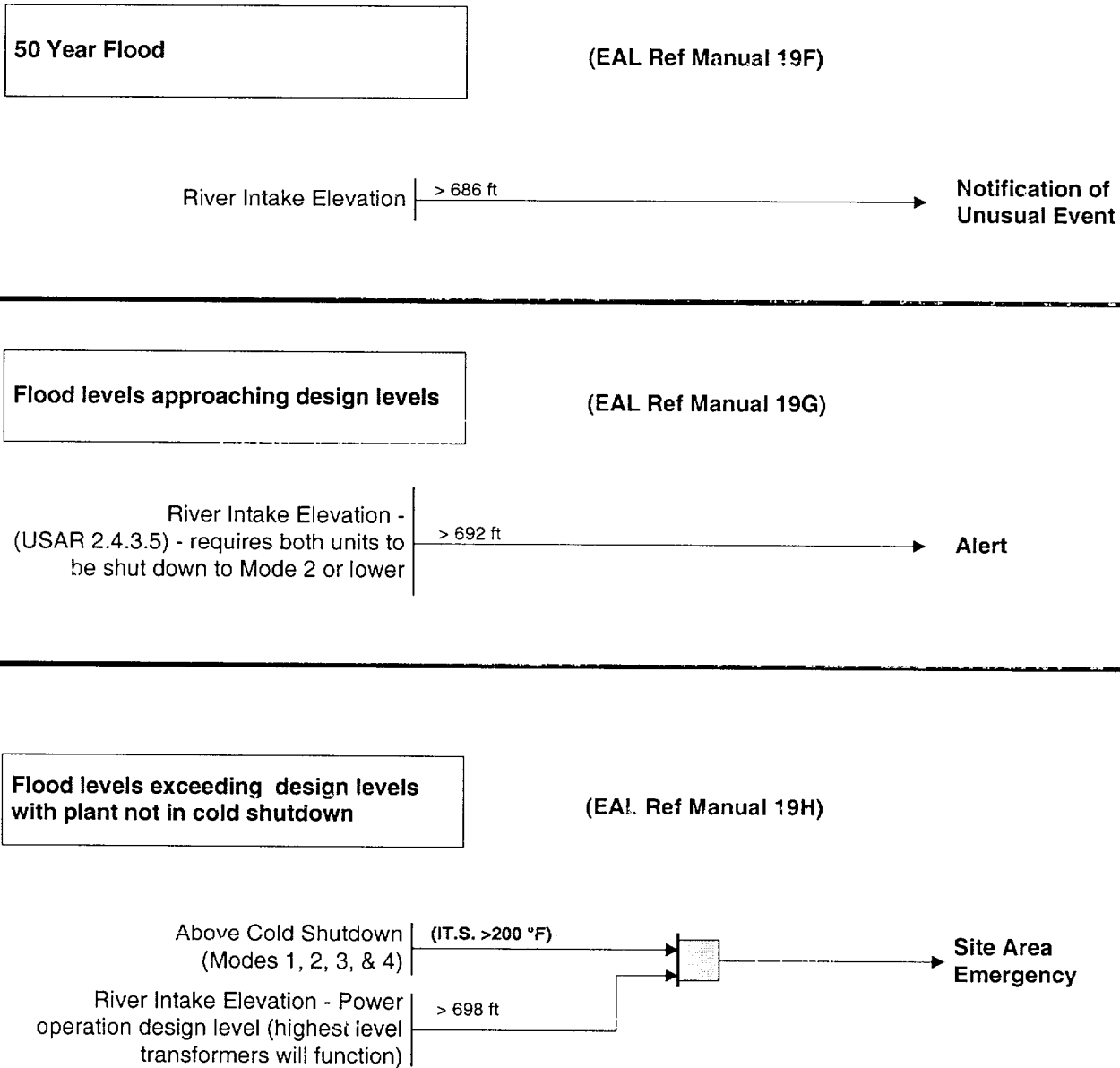


**Any tornado striking the facility**

(EAL Ref Manual 19E)



Condition 19 : Natural Events



### Condition 19 : Natural Events

Low water levels being experienced or projected beyond usual levels.

(EAL Ref Manual 19I)

River intake elevation (11/21 Cooling Water Pump - Low Water Level Trip) | < 672.5 ft → Notification of Unusual Event

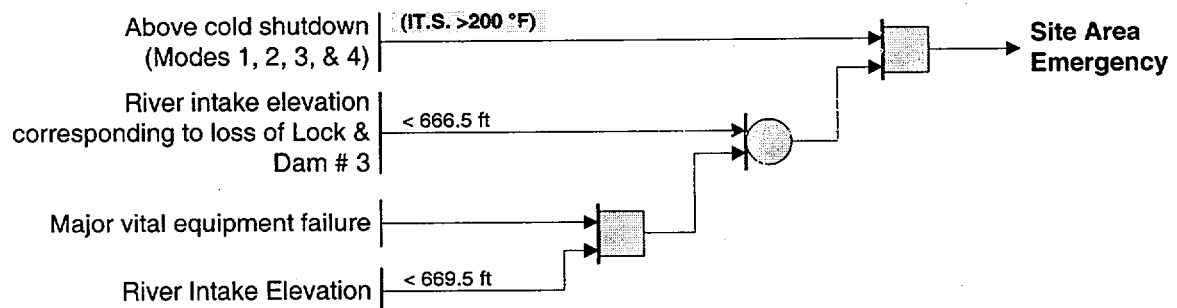
Low water levels being experienced or projected to be near design levels.

(EAL Ref Manual 19J)

River intake elevation | < 669.5 ft → Alert

With plant not in Cold Shutdown, low water levels being experienced or projected to be less than design levels, or failure of vital equipment with low water level.

(EAL Ref Manual 19K)



### Condition 19 : Natural Events

Sustained winds being experienced or projected near design levels.

(EAL Ref Manual 19L)

Sustained wind speed indicated by met tower | > 90 mph → Alert

Sustained winds being in excess of design levels being experienced or projected with plant not in Cold Shutdown.

(EAL Ref Manual 19M)

Above cold shutdown (Modes 1, 2, 3, & 4) | (IT.S. >200 °F)  
Sustained wind speed indicated by met tower | > 100 mph → Site Area Emergency

Any major internal or external events (e.g., fires, earthquake, substantially beyond design levels) which could or has caused massive damage to plant systems resulting or potential for resulting in large releases to the offsite environment in excess of the EPA Protective Action Guides.

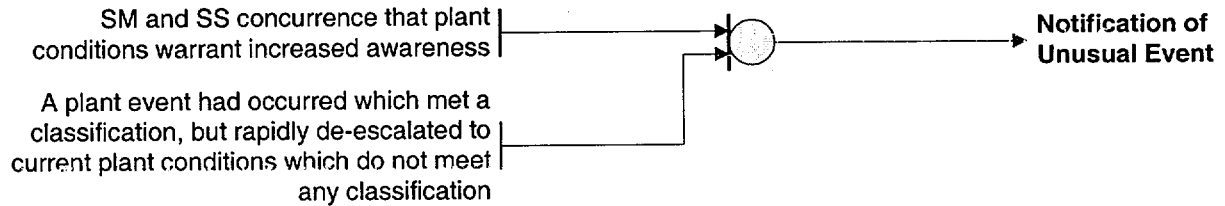
(EAL Ref Manual 19N)

As determined by the SS, SM, or ED → General Emergency

Condition 20 : Other

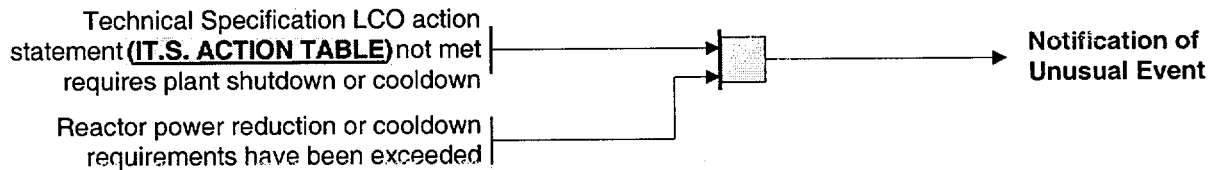
Conditions that warrant increased awareness on the part of plant operation staff or state and/or local offsite authorities.

(EAL Ref Manual 20A)



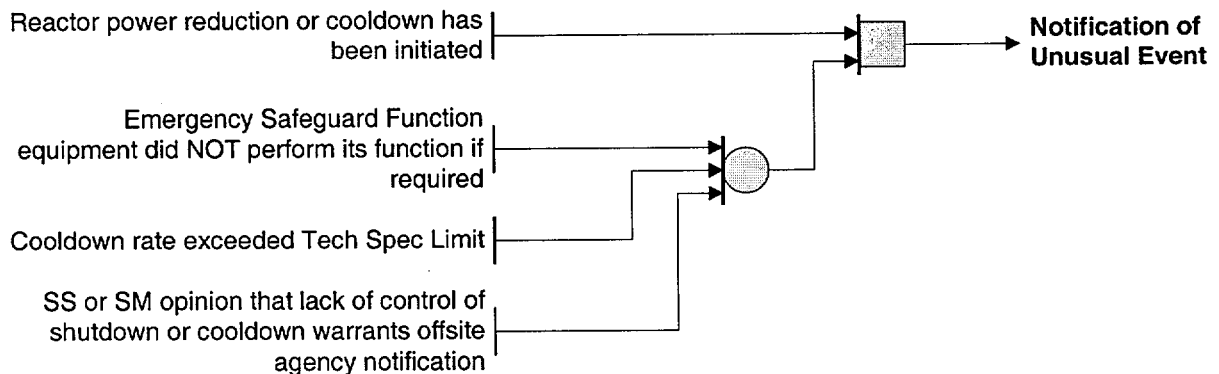
Inability to reach required shutdown within Technical Specification Limits.

(EAL Ref Manual 20B)



Conditions that involve other than normal controlled shutdown.

(EAL Ref Manual 20C)



Condition 20 : Other

Conditions that warrant activation of  
Technical support Center and nearsite  
Emergency Operation Facility

(EAL Ref Manual 20D)

SS, SM, or ED opinion

Alert

Other plant conditions that warrant  
activation of emergency operation  
centers and monitoring teams or a  
precautionary notification to the public  
near the site

(EAL Ref Manual 20E)

SS, SM, or ED opinion

Site Area  
Emergency

Other plant conditions exist, from  
whatever source, that make release of  
large amounts of radioactivity in a short  
time period possible, e.g., any core melt  
situation

(EAL Ref Manual 20F)

SS, SM, or ED opinion

General  
Emergency

<b>F</b>	<b>SEARCH AND RESCUE</b>	NUMBER:
		<b>F3-11</b>
		REV: <b>7</b>

**REFERENCE USE**

- *Procedure segments may be performed from memory.*
- *Use the procedure to verify segments are complete.*
- *Mark off steps within segment before continuing.*
- *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
<b>10-6-01 sc.</b>	<b>M. Werner</b>	<b>10-12-01</b>

<b>F</b>	<b>SEARCH AND RESCUE</b>	NUMBER:
		<b>F3-11</b>
		REV: <b>7</b>

### 1.0 PURPOSE

This procedure provides instructions for search and rescue operations in areas of the plant where radiological conditions are known or unknown.

### 2.0 APPLICABILITY

This instruction **SHALL** apply to all personnel involved in the activation and termination of search and rescue teams.

### 3.0 PRECAUTIONS

- 3.1 If there is a reason to believe that the air within the area is toxic or oxygen deficient, the team members **SHALL** use self-contained breathing apparatus which then limits the time available to the team. In this case, in addition to the original team, two or more individuals should be assigned outside of the affected area in standby (fully clothed and wearing SCBA) ready to enter the area if necessary.
- 3.2 Lifelines should be used in areas containing heavy smoke or in areas where visual contact between team members is impossible or hampered.
- 3.3 The Search and Rescue Team **SHALL** have radiation dose rate indicating equipment when radiological conditions are unknown.
- 3.4 The Radiological Emergency Coordinator (REC) **SHALL** control all radiation exposure within the guidelines of 10CFR20 and F3-12, Emergency Exposure Control.
- 3.5 The Emergency Director **SHALL** authorize all exposure in excess of 10CFR20 limits per F3-12. If necessary, the Emergency Director may verbally authorize increased exposure when time is a limiting factor and documentation **SHALL** be completed as a follow-up.
- 3.6 The personnel monitoring devices and portable survey equipment will be used to provide information for limiting working times. For activities not involving lifesaving measures, personnel **SHALL** be limited to no more than 5 REM TEDE. In a situation where life is at stake (i.e., removing a casualty from a high level radiation field or treating a highly contaminated casualty), dose should be limited to 25 REM TEDE or up to 75 REM TEDE for emergency workers volunteering for lifesaving activity. In each instance, the risks and benefits derived from a life saving action **SHALL** be evaluated for each individual performing the lifesaving action for doses exceeding 25 REM TEDE. It has been determined that the probability of radiation sickness increases rapidly at doses above 125 REM and that death may occur at dose levels above 200 REM without medical treatment.



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- 3.7 All entries into areas of high radiation ( $>10\text{R/hr}$  general area) should be made with two dose rate indicating meters.

#### 4.0 PREREQUISITES

- 4.1 One or more individuals are missing following an evacuation and subsequent accountability check.

OR

- 4.2 A report has been received indicating that personnel are trapped and/or disabled in a potentially hazardous area of the plant.

#### 5.0 PROCEDURE

<b>NOTE:</b>	The primary function of the Search and Rescue Teams SHALL be to locate the individual(s), administer First Aid, and transport the victim to a safe area for further medical treatment
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- 5.1 The Emergency Director should attempt to determine the location of the missing individual(s) by:
- 5.1.1 Checking the personnel accountability at the assembly area,
  - 5.1.2 Paging the individual,
  - 5.1.3 Conferring with the individual's supervisor and co-workers,
  - 5.1.4 Conducting brief searches (if possible), or
  - 5.1.5 Calling individual's home.

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5.2 The Emergency Director should determine:

- 5.2.1 Name(s) of individual(s), missing,
- 5.2.2 Summary of subsequent efforts taken to locate the individual(s),
- 5.2.3 Last known or most probable location,
- 5.2.4 Extent of injuries, if any,
- 5.2.5 Assistance required (onsite or offsite),
- 5.2.6 Conditions which complicate the search and rescue attempt (e.g., high radiation levels).

**NOTE:**

Dose rates for areas of the plant projected from the worst case accident assuming major safety system failure and significant core damage are shown in F3-25 "Re-entry."

5.3 The Emergency Director should utilize all pertinent data available including area and process radiation monitoring channels, survey data, visual observations, observations made by previous teams and any other source of information applicable to determine:

- 5.3.1 Affected plant areas,
- 5.3.2 Conditions in affected area (e.g., hazards, radiological, temperature, etc.)
- 5.3.3 Actions which can be taken to reduce the potential hazards to the Search and Rescue Team prior to or during the entry.

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<b>NOTES:</b>	<p>1. If excessive radiation exposures are expected or possible, the teams should be composed of volunteers. It is highly recommended that one team member should be a Radiation Protection Group member or an individual with extensive training in radiation protection practices.</p>
	<p>2. The following criteria should be considered when selecting team members:</p> <ul style="list-style-type: none"> <li>-Knowledge of first aid</li> <li>-Knowledge of radiological control practices</li> <li>-Knowledge of plant construction</li> </ul>

- 5.4 The Emergency Director **SHALL** direct the formation of a Search and Rescue Team composed of a minimum of two individuals. Maximum number will be determined by the volume of work assigned to the Search and Rescue Team.
- 5.5 The Radiological Emergency Coordinator should ensure that the Search and Rescue Team is:
- 5.5.1 Briefed on the estimated or expected radiological conditions in the plant,
  - 5.5.2 Equipped with the required protective clothing, respiratory equipment, dosimetry and communications equipment,
  - 5.5.3 Briefed on exposure control in accordance with the guidelines of F3-12, Emergency Exposure Control.
  - 5.5.4 Aware of actions to be taken if unexpected radiological conditions are encountered.
- 5.6 The team members should remain in visual/voice contact with each other at all times when in the affected areas of the plant.
- 5.7 The Search and Rescue Team should carry portable communication equipment allowing contact with the Emergency Director and/or Radiological Emergency Coordinator or designee.
- 5.8 One member of the Search and Rescue Team should be designated as the Team Leader.

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- 5.9 The Team Leader should ensure that the search and subsequent rescue is completed in the most expeditious manner possible using all available ALARA concepts.
- 5.10 The Search and Rescue Team should continuously observe the portable dose rate meter(s) while approaching the area.

**NOTE:**

If at any time, the survey instrument(s) appear to malfunction, immediately retreat to a safe area and contact the REC.

- 5.11 The Search and Rescue Team should maintain dialogue with REC concerning observed dose rates and conditions observed.
- 5.12 IF requested, THEN the Search and Rescue Team should read and report dosimeter readings.
- 5.13 IF at any time during the Search and Rescue mission, observed dose rates exceed a predetermined level, OR IF the exposure of team members approaches a pre-determined amount, THEN the Team Leader **SHALL** direct the team to a safe area.
- 5.14 Upon arriving at the area, the Search and Rescue Team Leader should enter the area and assess the situation as conditions permit.
- 5.15 On the basis of this assessment, the Search and Rescue Team Leader should contact the Emergency Director, determine a course of action, and direct members of the Search and Rescue Team in the completion of the search and/or rescue attempt.
- 5.16 The Team Leader should request additional support from the Emergency Director when needed.
- 5.17 IF the individual(s) are located, THEN they should be moved to the closest safe area and emergency First Aid applied.

**NOTE:**

If the individual(s) cannot be moved immediately, First Aid should be applied as necessary, conditions permitting.

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**5.18** IF the missing or disabled individual is located in a Very High Radiation area, THEN the Team Leader, Radiological Emergency Coordinator, and the Emergency Director **SHALL** assess the situation pertaining to the following:

**5.18.1** Dose Rates in Area

**5.18.2** Type of injuries

**5.18.3** Estimated Time to Rescue

**5.18.4** Projected Exposure to Victim

**5.18.5** Projected Exposure to team if rescue is continued

**5.19** The Emergency Director **SHALL** direct the completion or termination of the Search and Rescue mission.

**5.20** IF the individual(s) are in a safe area, THEN the Search and Rescue Team or other qualified EMTs **SHALL** evaluate the condition of individual(s):

**5.20.1** IF the individual is injured and requires further medical treatment, THEN refer to the operations Manual, Section F4, Medical and Casualty Care.

**5.20.2** IF the individual has or may have received an overexposure, THEN refer to F3-12.

**5.21** The members of the Search and Rescue Team **SHALL** report to the Radiation Protection Group for a determination of exposure they may have received, per F3-12.