

November 21, 2003

L-PI-03-108
10CFR50.4

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKETS 50-282 AND 50-306
LICENSE NOS. DPR-42 AND DPR-60
PRAIRIE ISLAND EMERGENCY PLAN IMPLEMENTING PROCEDURES

Furnished with this letter are the recent changes to the Prairie Island Nuclear Generating Plant Emergency Plan Implementing Procedures F3. This submittal includes the following documents:

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Emergency Plan Implementing Procedures Table of Contents

REVISIONS

F3-2	Classifications of Emergencies	Rev. 33
F3-15	Responsibilities of the Radiation Survey Teams During a Radioactive Airborne Release	Rev. 23

ADDITIONS:

None

DELETIONS:

None

TEMPORARY CHANGE DELETIONS:

None

INSTRUCTIONS:

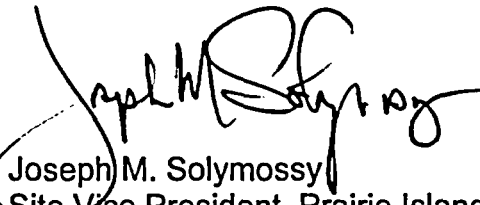
Instructions for updating the manual are included.

This letter contains no new commitments and no revisions to existing commitments.

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NUCLEAR MANAGEMENT COMPANY, LLC

As per 10 CFR 50.4, two copies have also been provided to the NRC Region III Office and one to the NRC Resident Inspector. If you have any questions, please contact Mel Agen at 651-388-1121 Extension 7210.



Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant

CC Steve Orth, USNRC, Region III (2 copies)
NRC Resident Inspector- Prairie Island Nuclear Generating Plant
(w/o attachment)

Attachment

Mfst Num: 2003 - 0830
FROM : Bruce Loesch/Mary Gadiant
TO : UNDERWOOD, BETTY J

Date : 11/12/03
Loc : Prairie Island

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	33	CLASSIFICATIONS OF EMERGENCIES
F3-15	23	RESPONSIBILITIES OF THE RADIATION SURVEY DURING A RADIOACTIVE AIRBORNE RELEASE

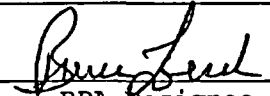
UPDATING INSTRUCTIONS

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 : 11/12/03 NOTE: This set may contain a partial distribution of this Document Type. Please refer to the CHAMPS Module for specific Copy Holder Contents.
Approved By:  BPA Designee	

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REFERENCE USE
<ul style="list-style-type: none">• <i>Procedure segments may be performed from memory.</i>• <i>Use the procedure to verify segments are complete.</i>• <i>Mark off steps within segment before continuing.</i>• <i>Procedure should be available at the work location.</i>

O.C. REVIEW DATE: <i>11/10/03</i>	OWNER: M. Werner	EFFECTIVE DATE <i>11-12-03</i>
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LIST OF ATTACHMENTS

Attachment 1 – Summary of Emergency Action Levels

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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 (1) of the four (4) 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 Managers (EM).

3.0 PRECAUTIONS

- 3.1 This procedure **SHALL** be entered whenever there is indication of an Emergency Action Level being exceeded.
- 3.2 Attempt to verify the indications by checking secondary or coincident indicators.
- 3.3 An emergency classification should be made based on current plant conditions described in Attachment 1 of this procedure.
- 3.4 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.
- 3.5 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.

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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.

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.

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- 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.

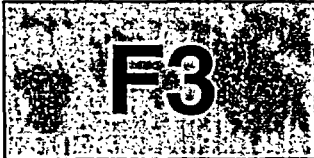
Any releases are not expected to exceed the EPA Protective Action Guideline exposure levels except near the site boundary.

- 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.

- 5.1.6 Safety System(s) – refers to systems that are required to be functional during and following a design basis accident or transient to ensure the capability to shut down the reactor and maintain it in a safe condition; or the capability to prevent or mitigate the consequences of accidents, which could result in off-site exposures comparable to the guidelines of 10CFR100; or the integrity of the Reactor Coolant System pressure boundary. The structures and components of a Safety System are "Safety Related SSC."

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5.2 Emergency Action Levels (EALs)

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 for which the ongoing events are categorized.

Classification is expected to be made promptly following indication that the conditions have reached an emergency threshold in accordance with the EAL scheme. Promptly is a period not to exceed 15 minutes.

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.

5.3.3 Implementation: The act of making the notification and/or augmentation of the emergency organizations.

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5.3.4 Classification Timeliness:

Guidance for classification timeliness is provided in NRC Branch Position on Timeliness of Classification of Emergency Conditions, EPPOS No. 2 and the NRC endorsed Regulatory Assessment Performance Indicator Guideline, NEI 99-02. The guidance is summarized as follows:

Classification is expected to be made promptly following indications that conditions have reached an emergency threshold in accordance with the EAL scheme. Promptly is a period not to exceed 15 minutes. This 15-minute criterion is a reasonable period of time for assessing and classifying emergencies.

5.3.5 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.

5.3.6 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.

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5.4 Technical Specification Required Shutdown NUES

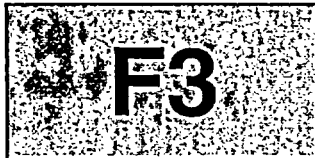
5.4.1 In some cases, exceeding Technical Specification limits (e.g., RCS leakage, reactor coolant activity, etc.) is considered to be precursors to more serious events and warrant declaration of an NUE.

5.4.2 In other cases, exceeding Technical Specification limits for the period designated in the T.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 T.S. ACTIONS Table COMPLETION Time, then a declaration of an Unusual Event should be declared.

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).
- 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.

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33**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.

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. In those cases where no classification is declared, then 5AWI 3.6.4, Notifications Regarding Plant Media Sensitive Events or Conditions, should be utilized to make proper calls to the state and local government organizations regarding the rapidly escalating and de-escalating event.

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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:	It is an expectation that the emergency declaration will be made promptly (within 15 minutes) upon reaching the EAL threshold.
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NOTE:	<p>Expectations for use of "SS, SM or ED Opinion" EAL statements:</p> <p>"SS, SM or ED Opinion" means that the decision maker is to ensure the declaration is made when conditions meet the EAL Initiating condition statement. The "opinion" is NOT a reason to dismiss any valid conditions that meet an EAL threshold value. Judgment is to be used for any condition not explicitly detailed as a set of EAL threshold values, which is a potential degradation in the level of safety of the plant. Classification of an emergency is not to be delayed pending an extended evaluation of possibilities and probabilities.</p>
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- 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 unit 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.

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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.

7.4.3 In those cases where no classification is declared, then 5AWI 3.6.4, Notifications Regarding Plant Media Sensitive Events or Conditions, should be utilized to make proper calls to state and local government organizations regarding the event.

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, THEN 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, THEN 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.

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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
 - 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. Review of 5AWI 1.13.0, Plant Event Investigation and Recovery, should be completed to determine if this procedure needs to be implemented and the Plant Manager informed of the review.

7.8.3 Termination of an Alert classification may be performed by the Emergency Director when 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.

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- 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. In this case 5AWI 1.13.0 should be reviewed and implemented as determined appropriate.



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

	<p>NOTE: 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, <u>THEN</u> the Site Area Emergency may be terminated without a transition to Recovery. However review and Implementation of 5AWI 1.13.0 should be completed as appropriate.</p>
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- 7.9.1 Transition to Recovery should be directed by the Emergency Manager with coordinated recovery planning by the site Emergency Response Organization.
- 7.9.2 See F3-30, "Recovery", for instruction on transition to Recovery.
- 7.9.3 Review and implementation of 5AWI 1.13.0 should be completed as appropriate.

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SUMMARY
OF
EMERGENCY ACTION LEVELS

NOTE:	Definition of logic symbols:
	AND symbol =  OR symbol = 

F3**CLASSIFICATION OF EMERGENCIES
ATTACHMENT 1**

NUMBER:

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REV:

33**INITIATING CONDITION INDEX**

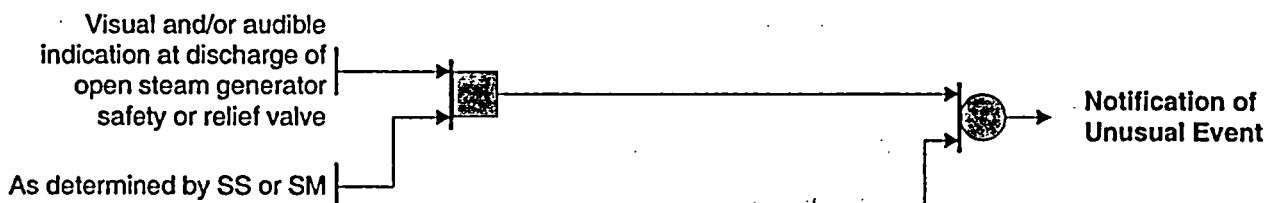
<u>No.</u>	<u>Condition Description</u>	<u>Page</u>
1	Safety System Functions	3
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3	Deleted	8
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Condition 1 : Safety System Functions

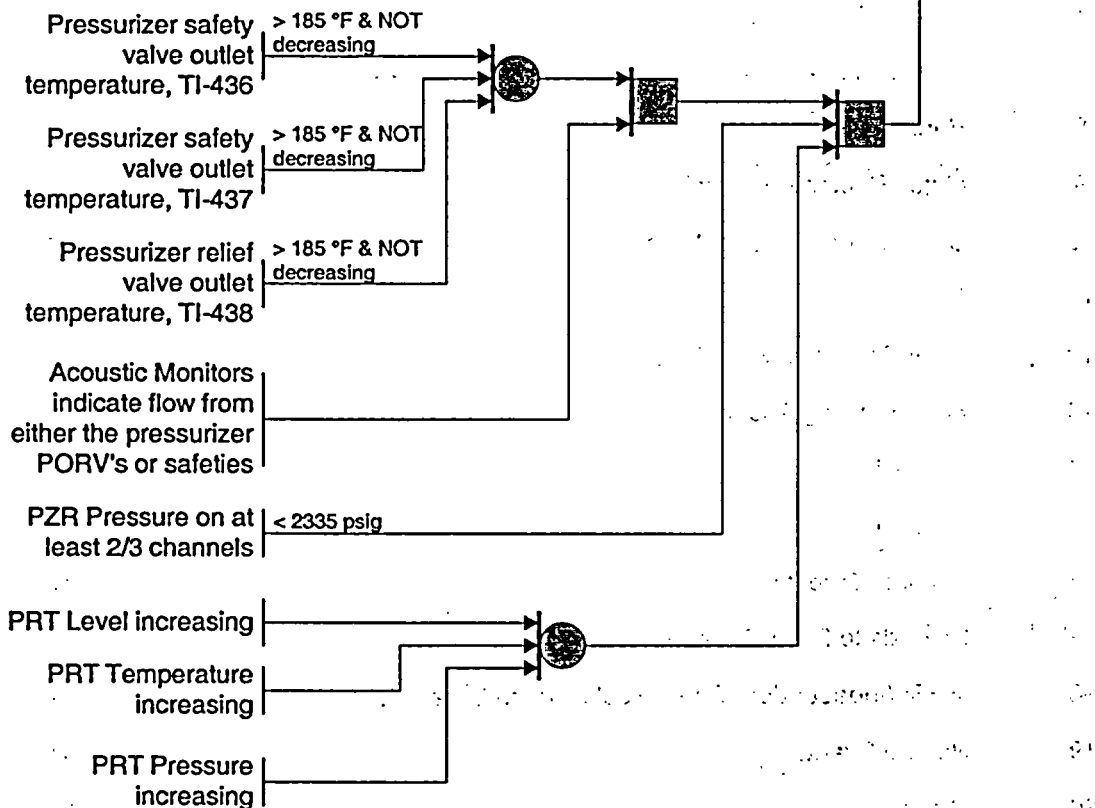
Failure of a safety or relief valve in a safety related system to close following reduction of applicable pressure.

(EAL Ref Manual 1B)

SG safety or relief valve opens and fails to reseal



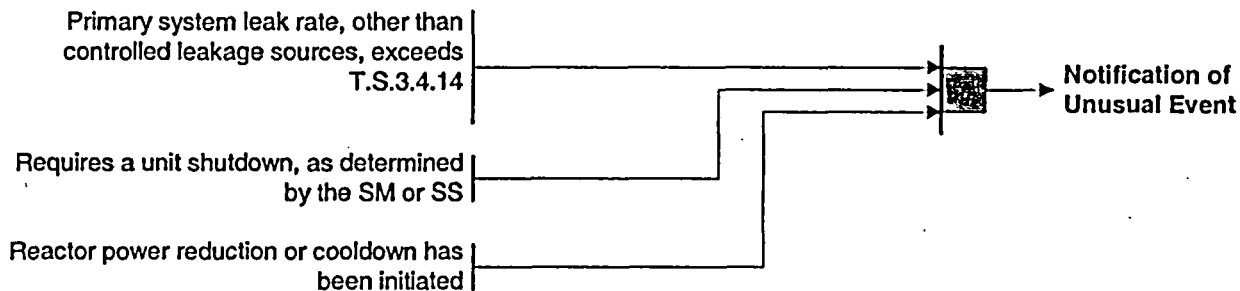
PZR safety or relief valve opens and then fails to reseal



Condition 2: Abnormal Primary Leak

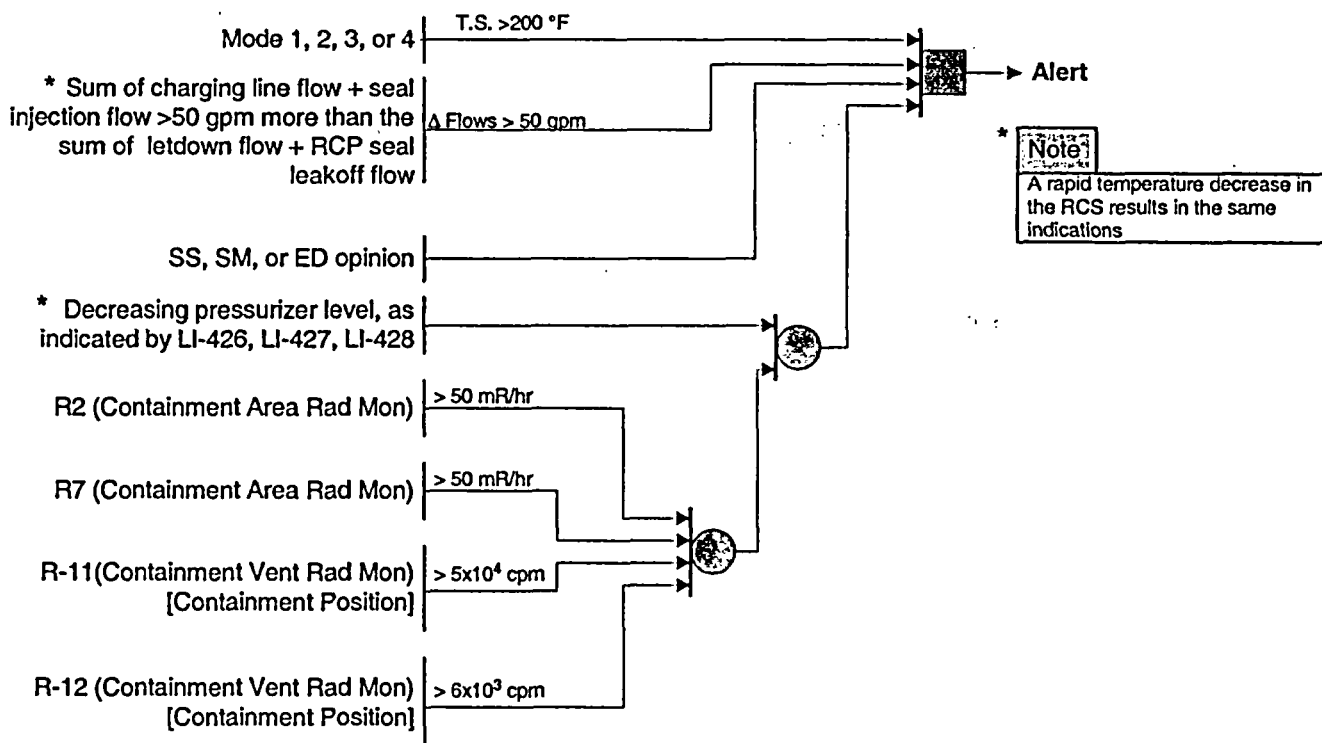
Primary system leak rate from unidentified or uncontrolled sources exceeding Technical Specifications:

(EAL Ref Manual 2A)



Primary coolant leak rate greater than 50 gpm

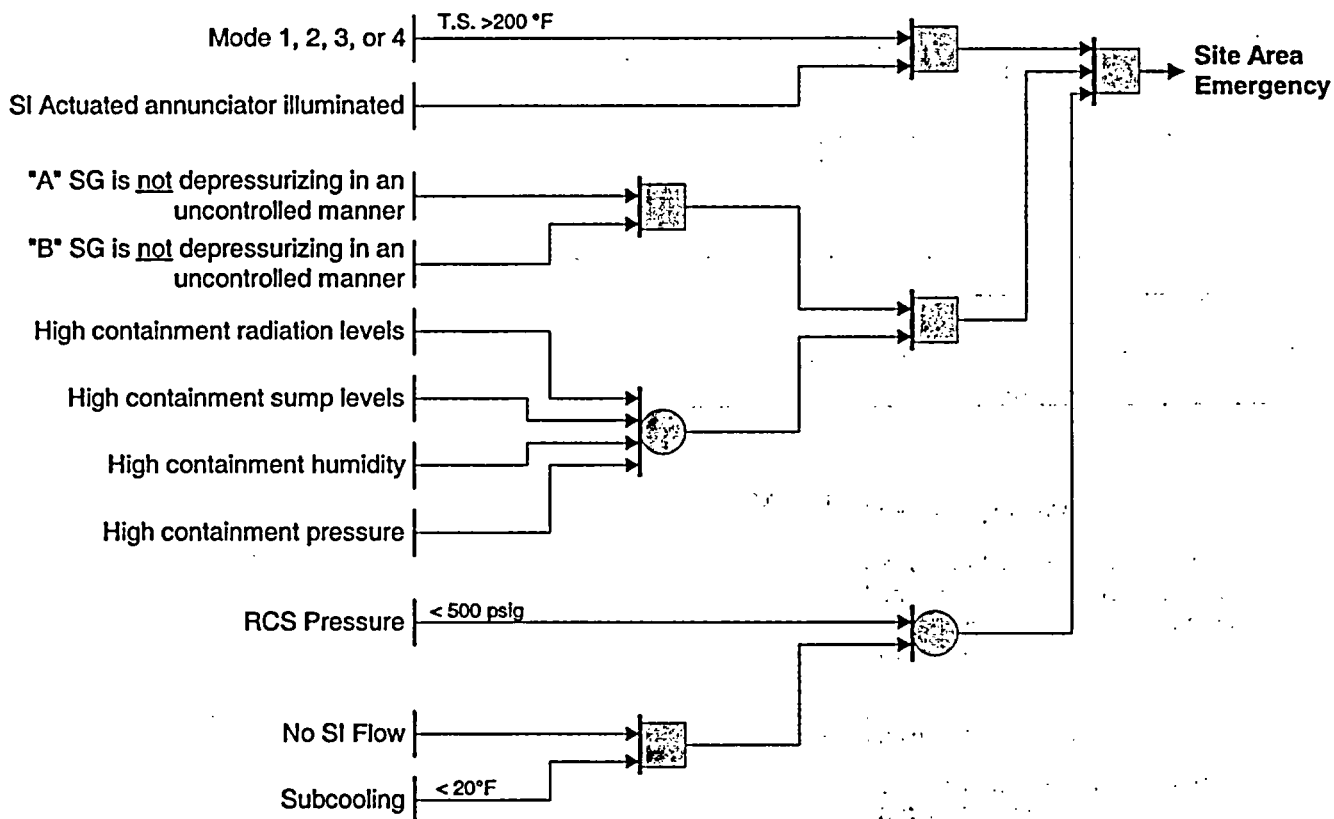
(EAL Ref Manual 2B)



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.)

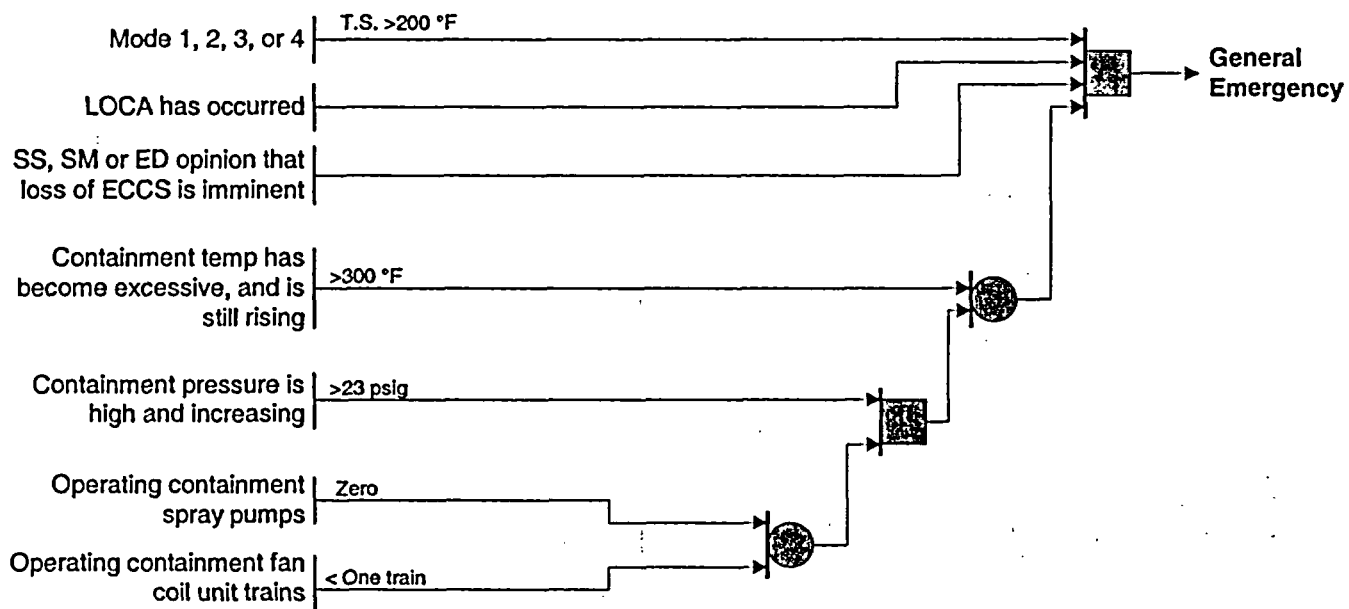
(EAL Ref Manual 2C)



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.

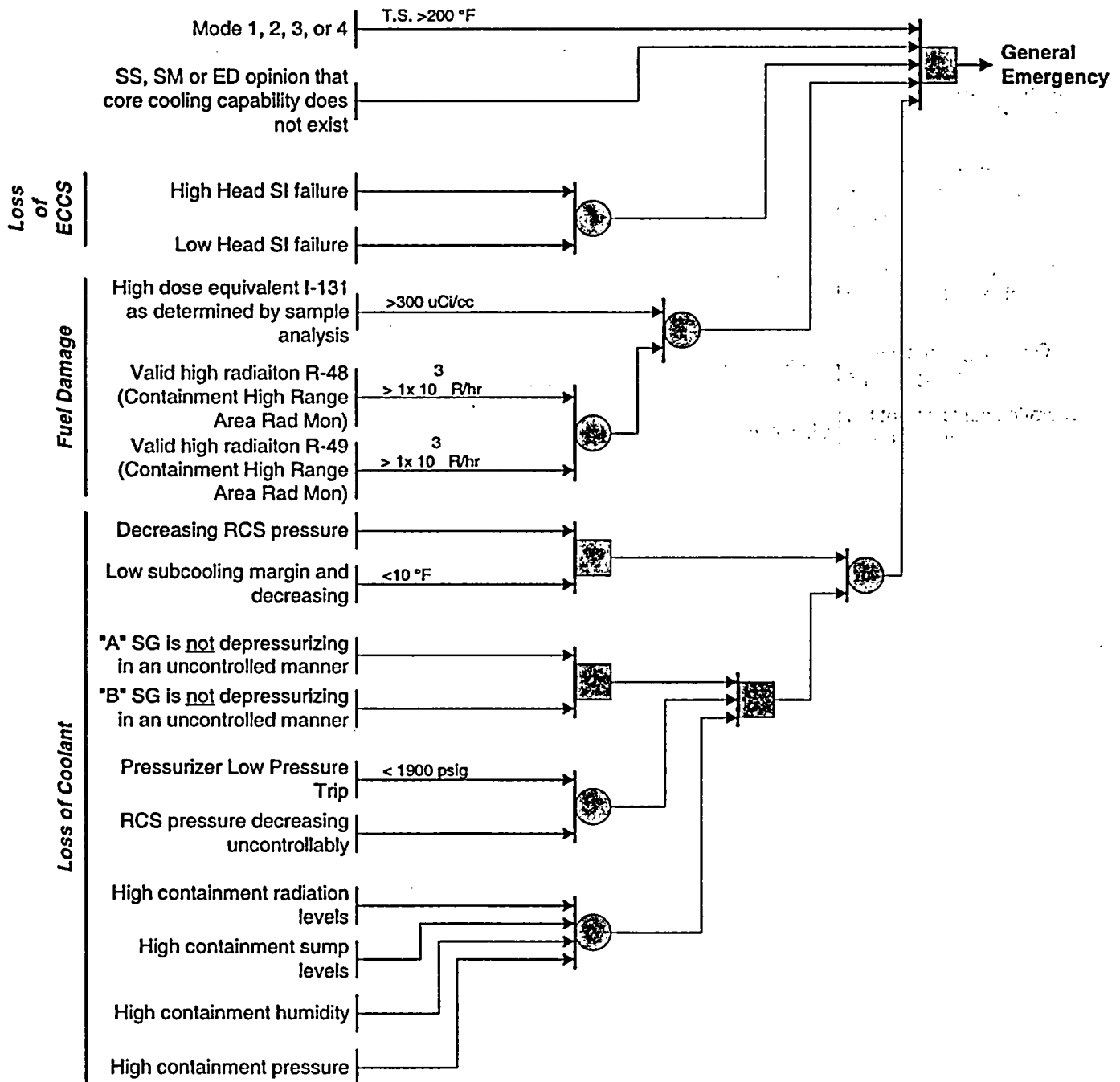
(EAL Ref Manual 2D)



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

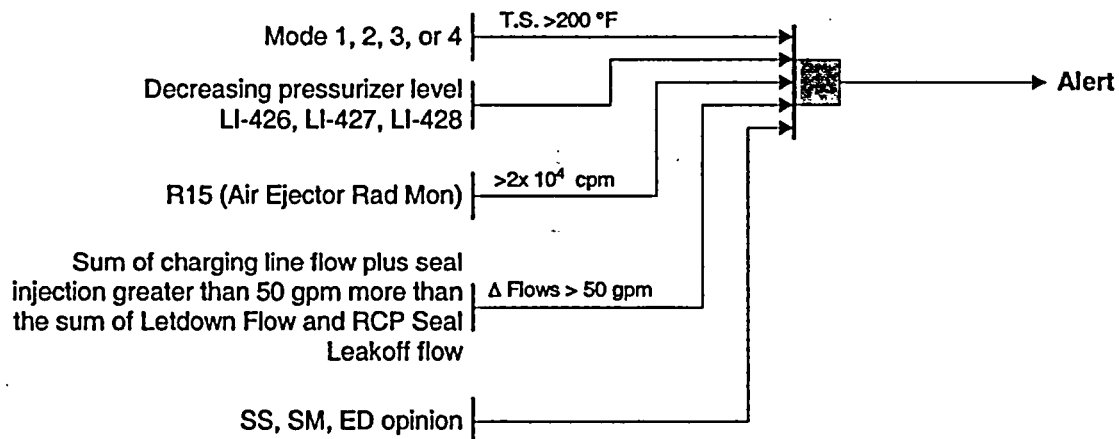
Primary/Secondary leak rate exceeding Technical Specifications

(EAL Ref Manual 4A)

SG primary to secondary leakage exceeds T.S.3.4.14 limits > 150 GPD through any 1 SG \rightarrow Notification of Unusual Event

Primary/Secondary leak rate greater than 50 gpm

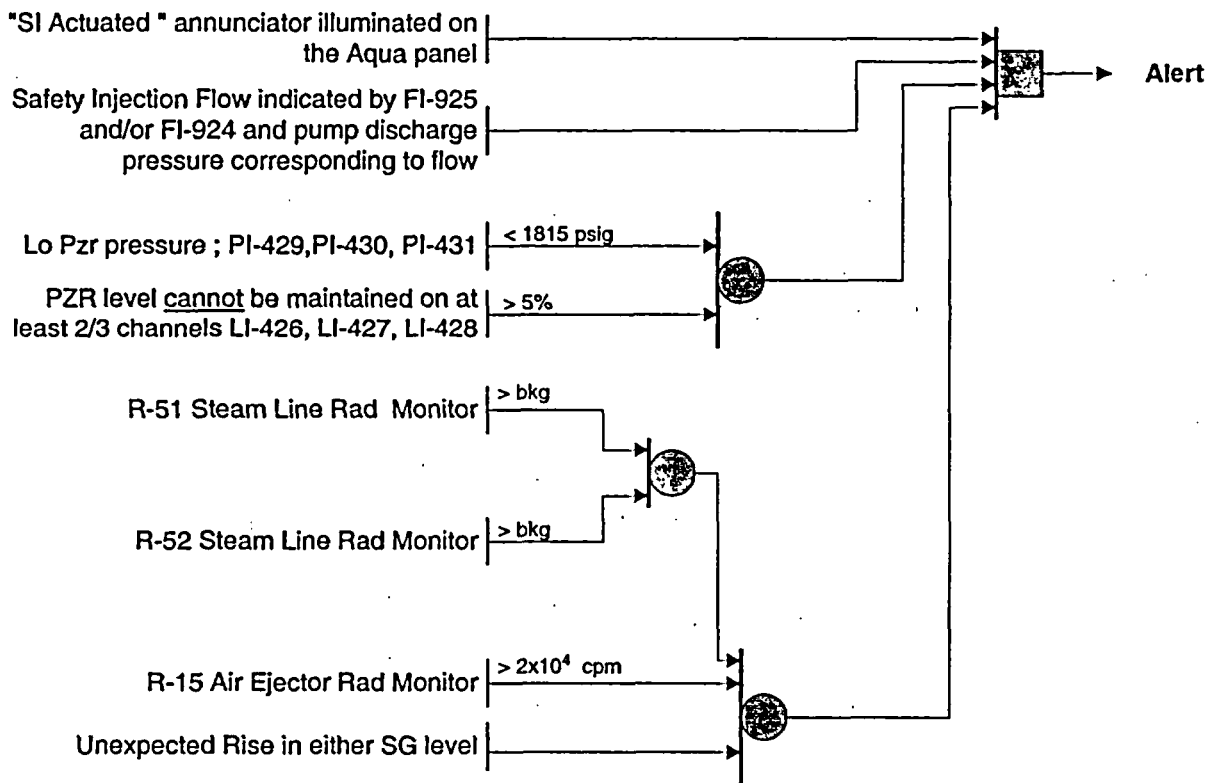
(EAL Ref Manual 4B)



Condition 4 : Abnormal Primary /Secondary Leak

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

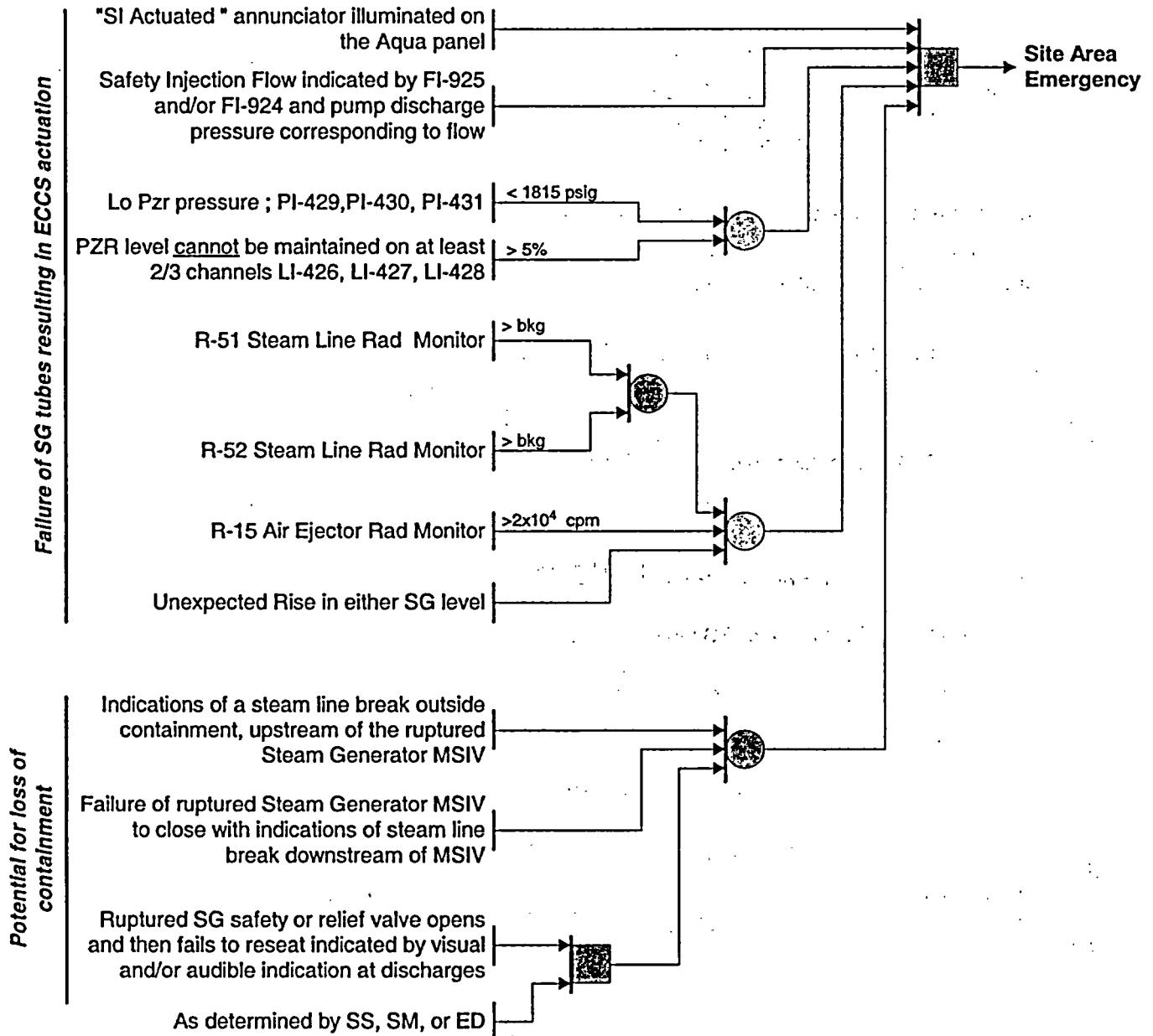
(EAL Ref Manual 4C)



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)



Note:

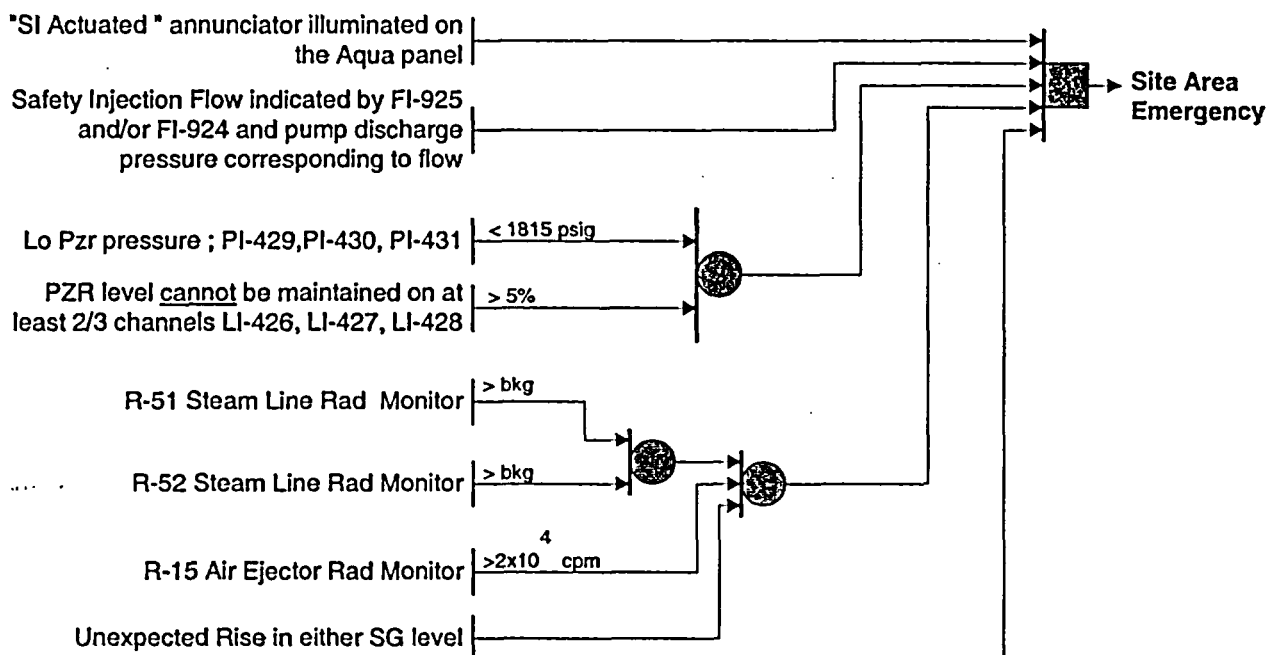
If steam break is outside containment with SG tube rupture and fuel failure, this may be a General Emergency. See Condition # 6, Case 2.

Condition 4 : Abnormal Primary /Secondary Leak

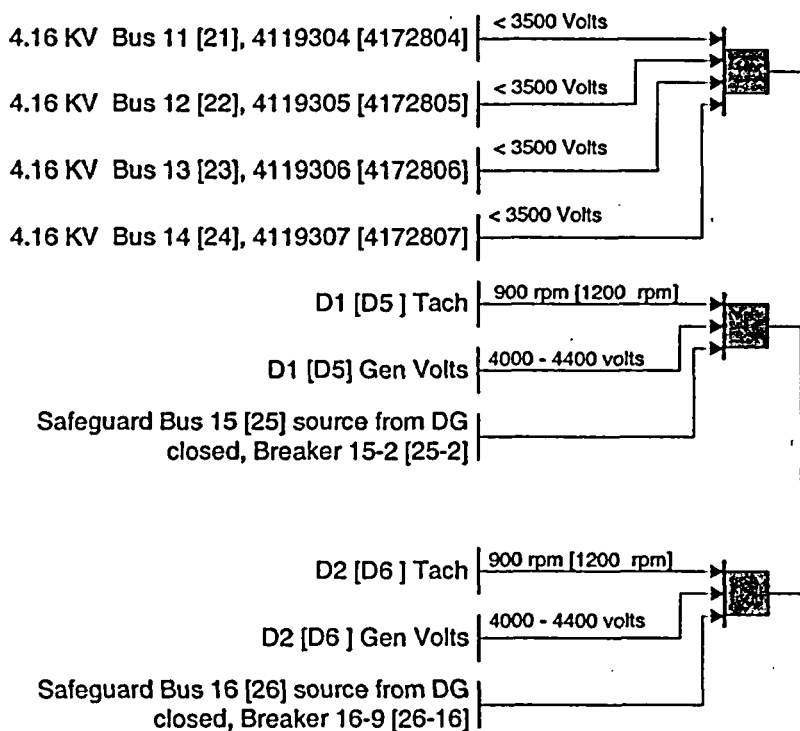
Failure of steam generator tube(s) resulting in ECCS
actuation and loss of offsite power

(EAL Ref Manual 4E)

Failure of SG tubes resulting in ECCS actuation



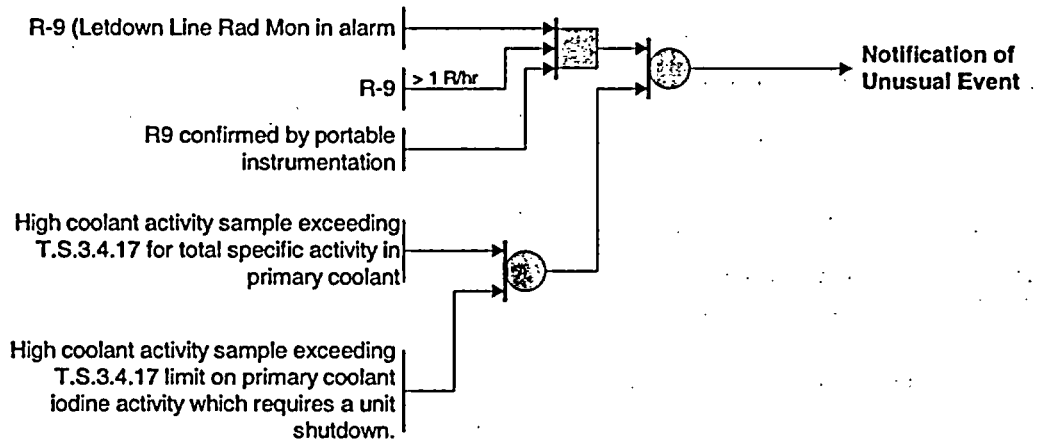
Loss of offsite power



Condition 5 : Core Fuel Damage

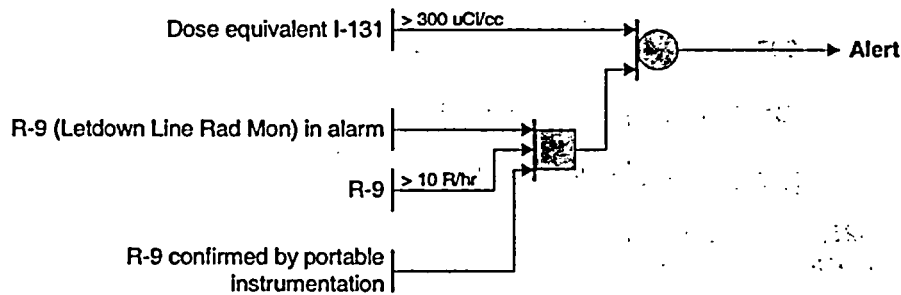
Fuel Damage Indication

(EAL Ref Manual 5A)



Severe Loss of fuel cladding

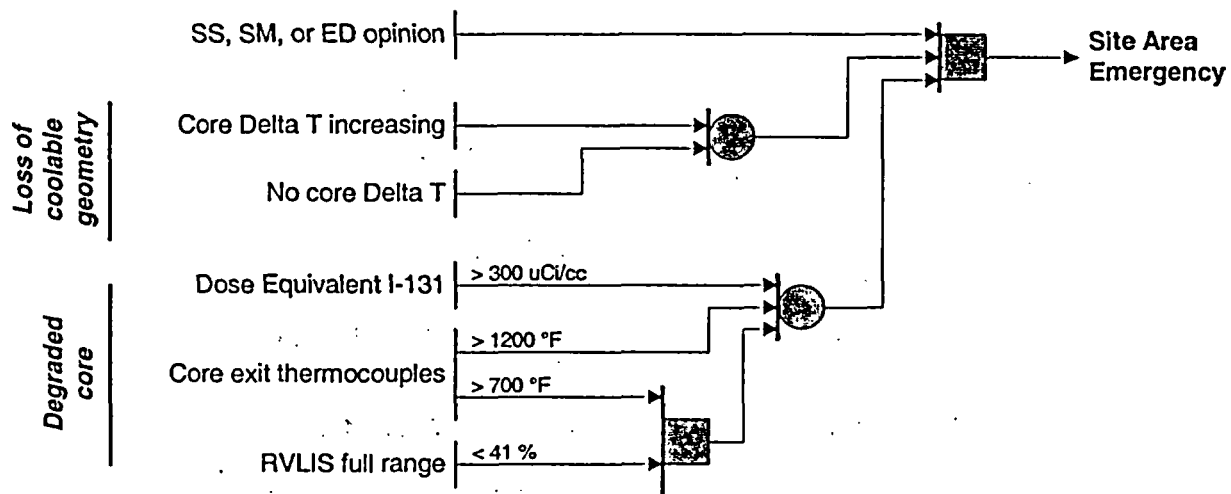
(EAL Ref Manual 5B)



Condition 5 : Core Fuel Damage

Degraded core with possible
loss of coolable geometry

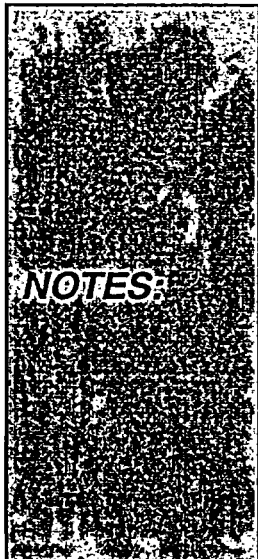
(EAL Ref Manual 5C)



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)

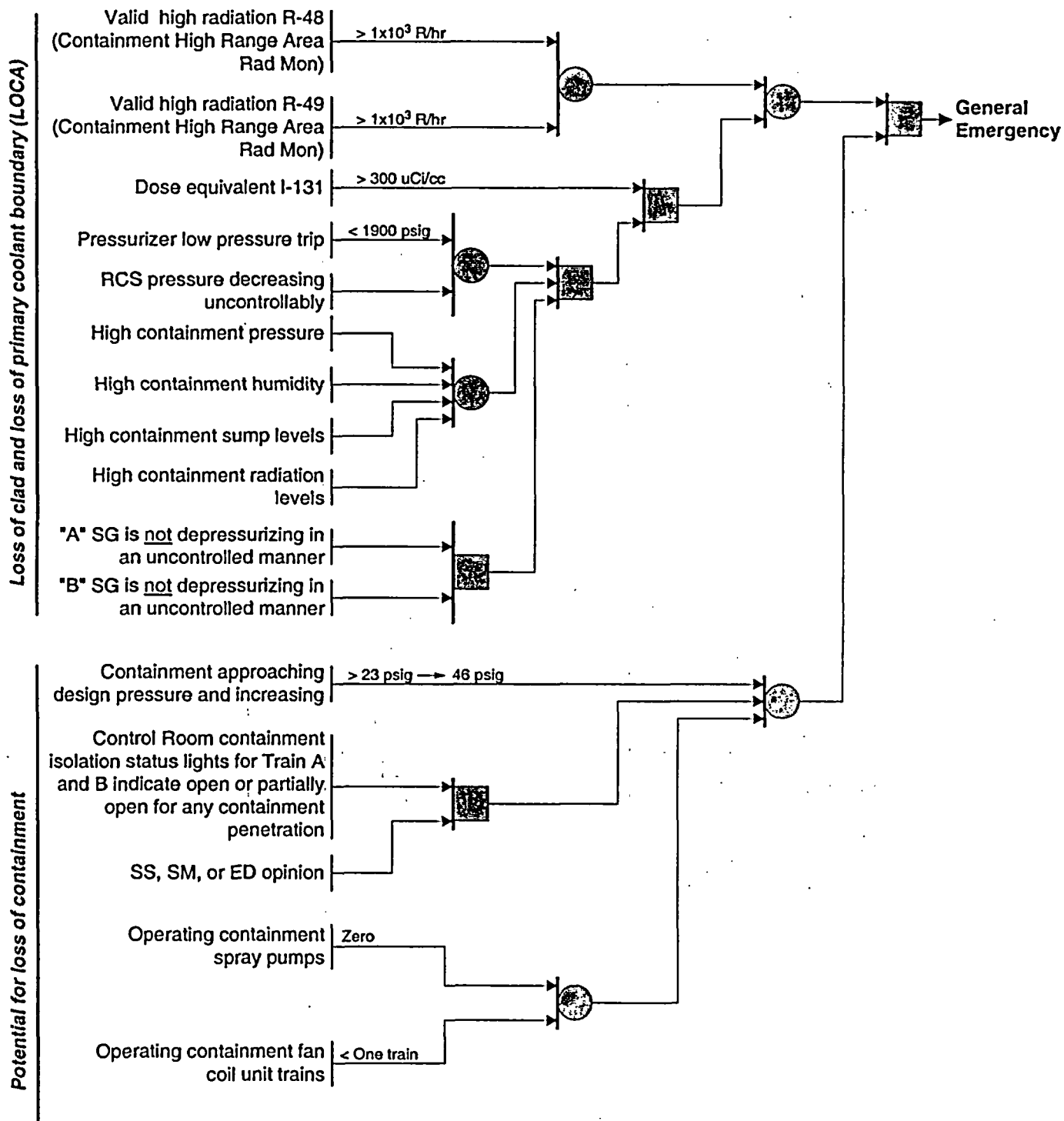
GENERAL EMERGENCY

 <p>NOTES:</p>	<ol style="list-style-type: none">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">A. Failure of cladding and primary coolant boundary with potential loss of containment.B. Failure of cladding and containment with potential loss of primary coolant boundary.C. Failure of containment and primary coolant boundary with potential loss of cladding.These 3 permutations are represented in the following 5 cases, each with its own set of EAL's:2. All cases are applicable to operations in Modes 1, 2, 3, & 4.
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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.

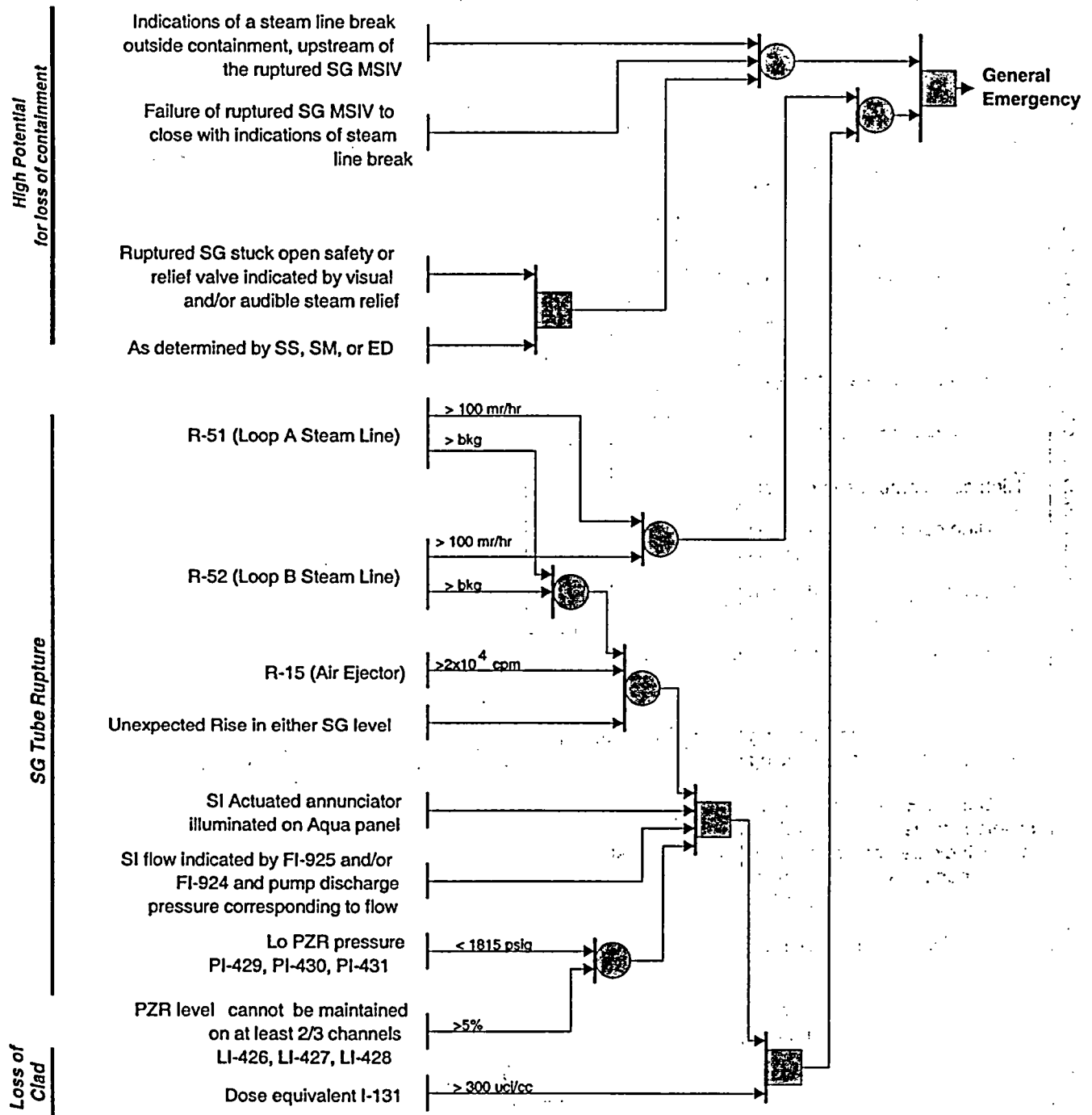
(EAL Ref Manual 6)



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

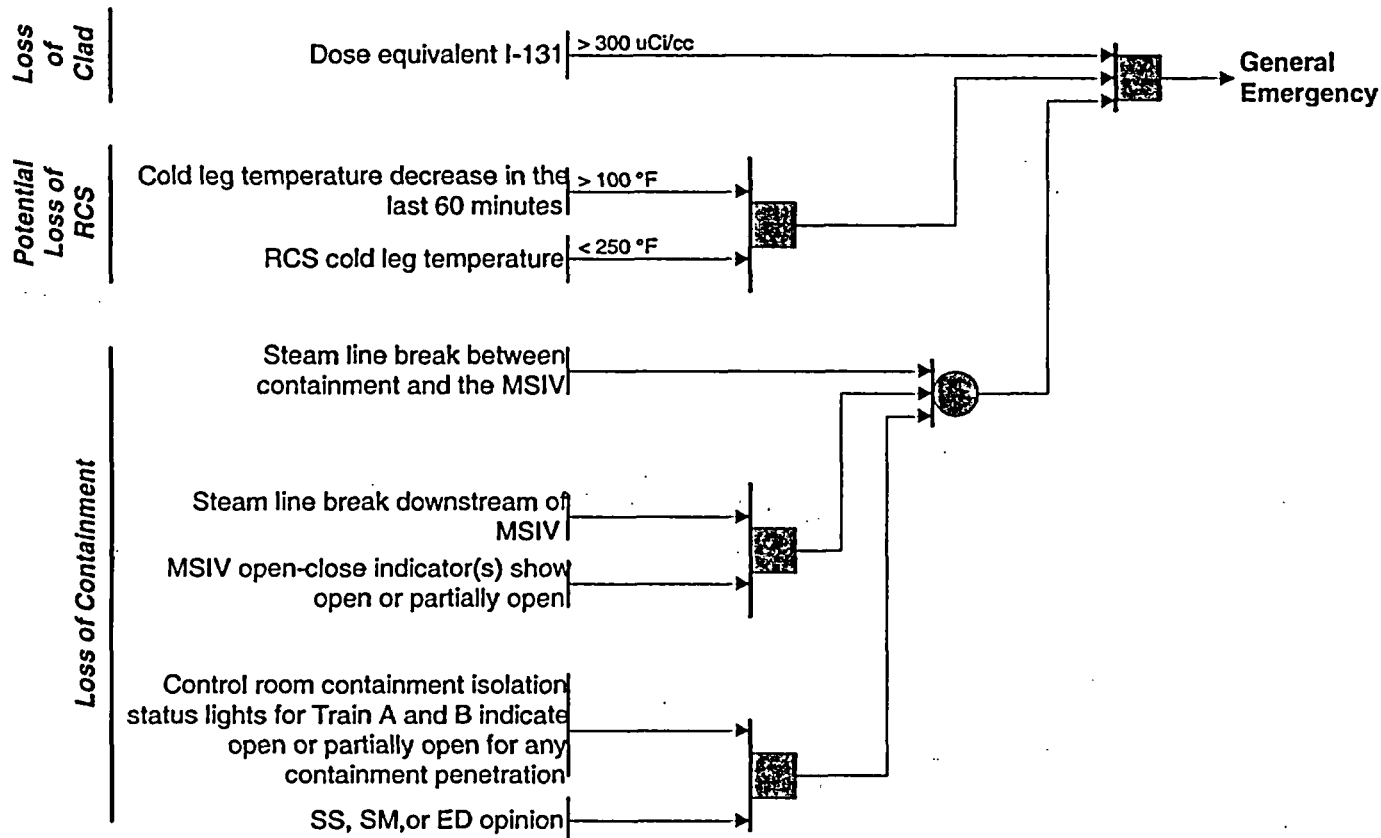
(EAL Ref Manual 6)



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.

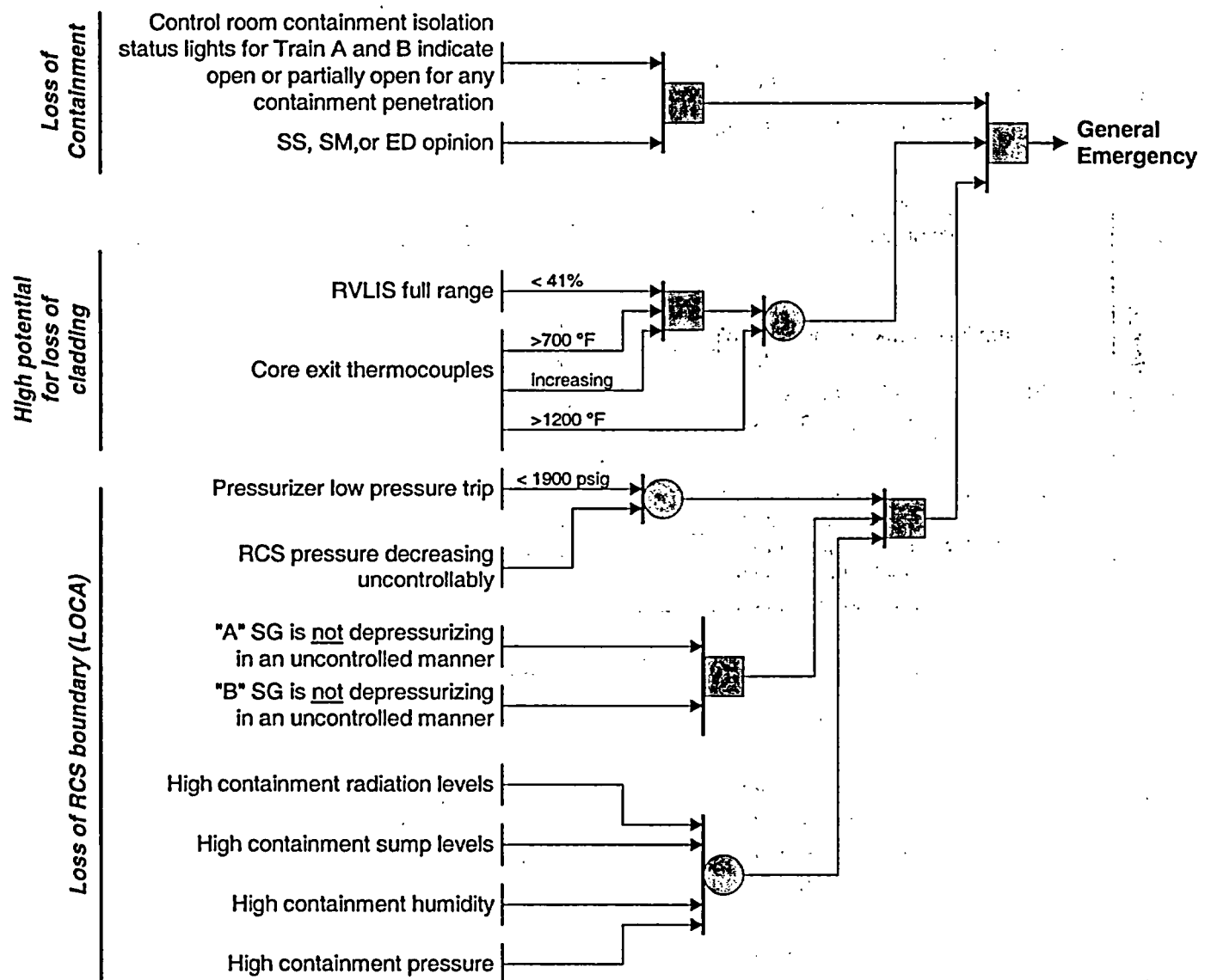
(EAL Ref Manual 6)



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

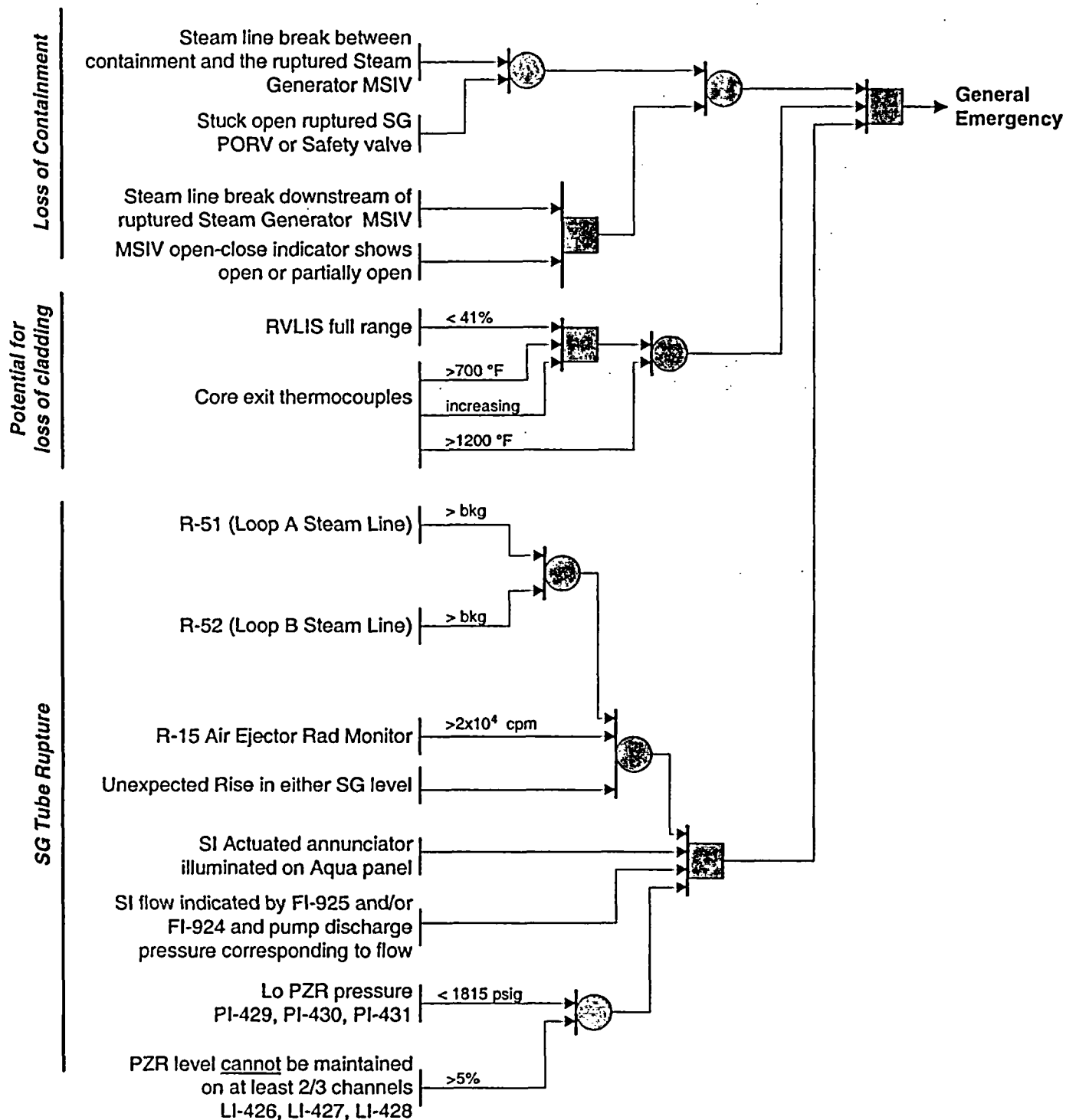
(EAL Ref Manual 6)



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.**

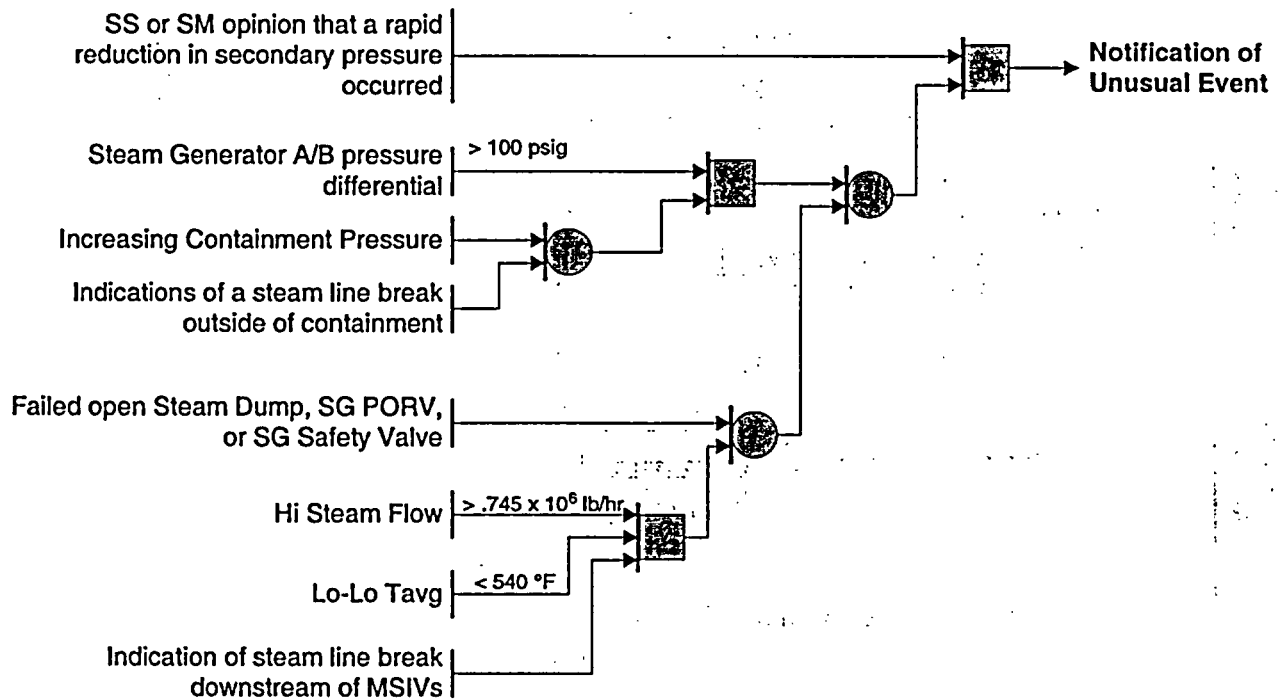
(EAL Ref Manual 6)



Condition 7 : Secondary Coolant Anomaly

Rapid depressurization of secondary side.

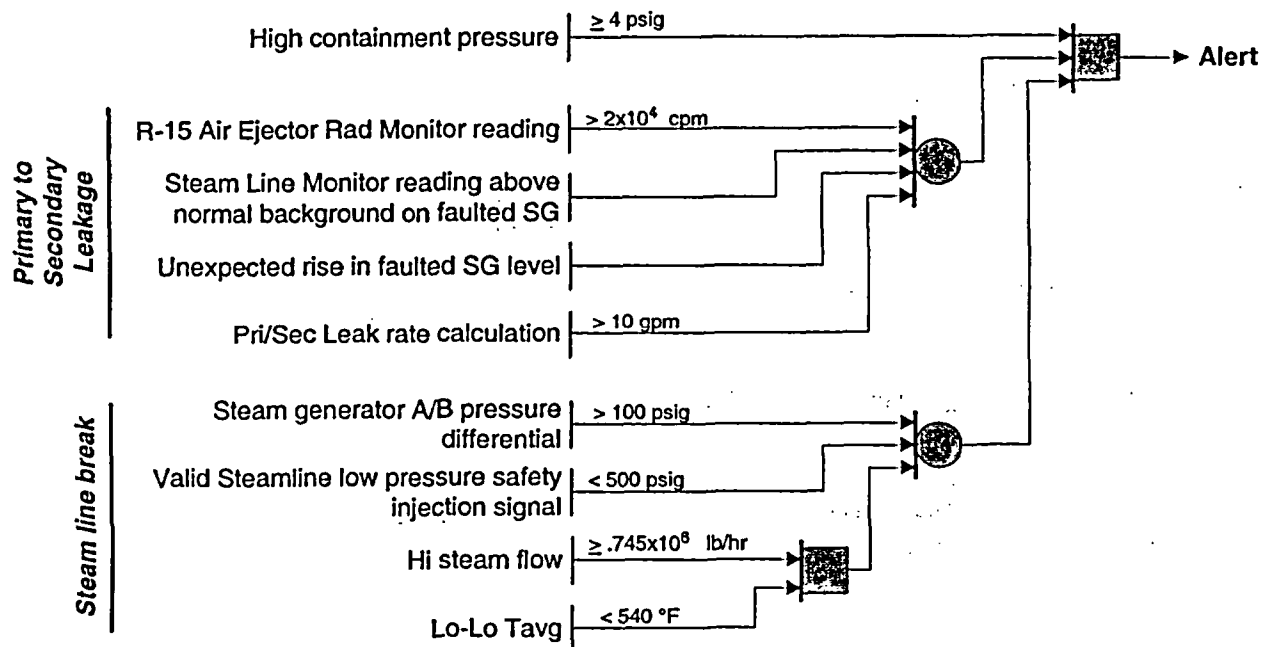
(EAL Ref Manual 7A)



Condition 7 : Secondary Coolant Anomaly

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

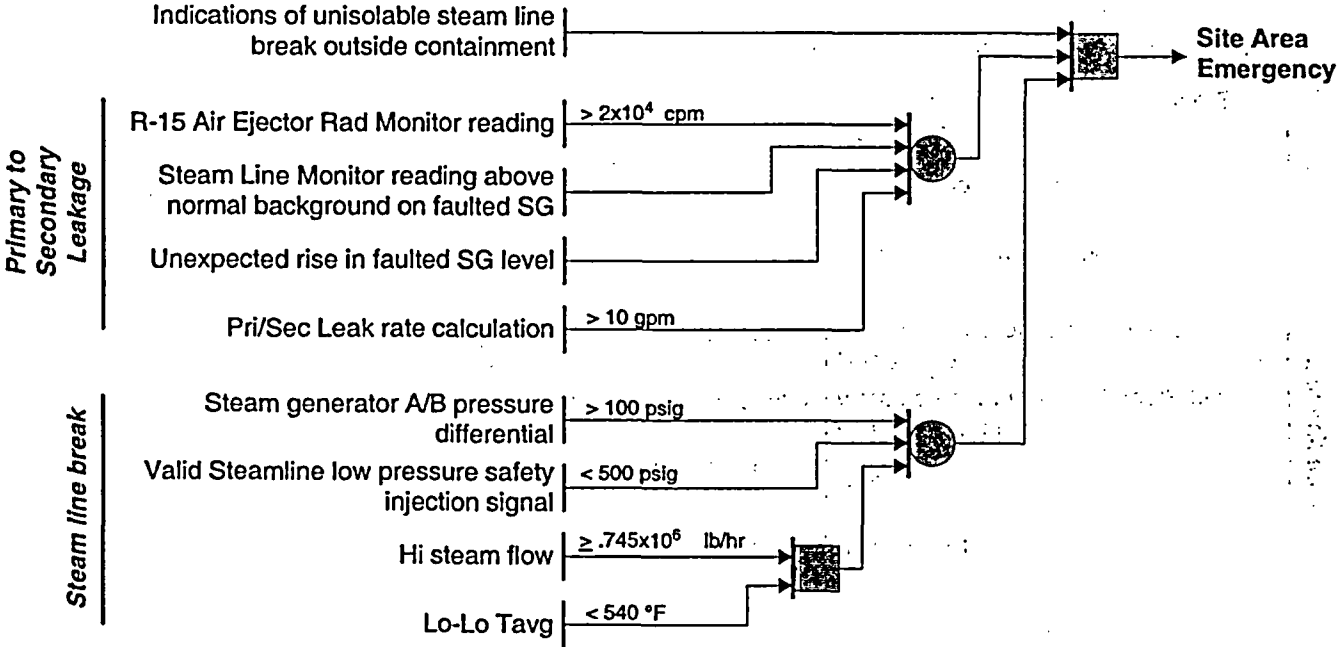
(EAL Ref Manual 7B)



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)

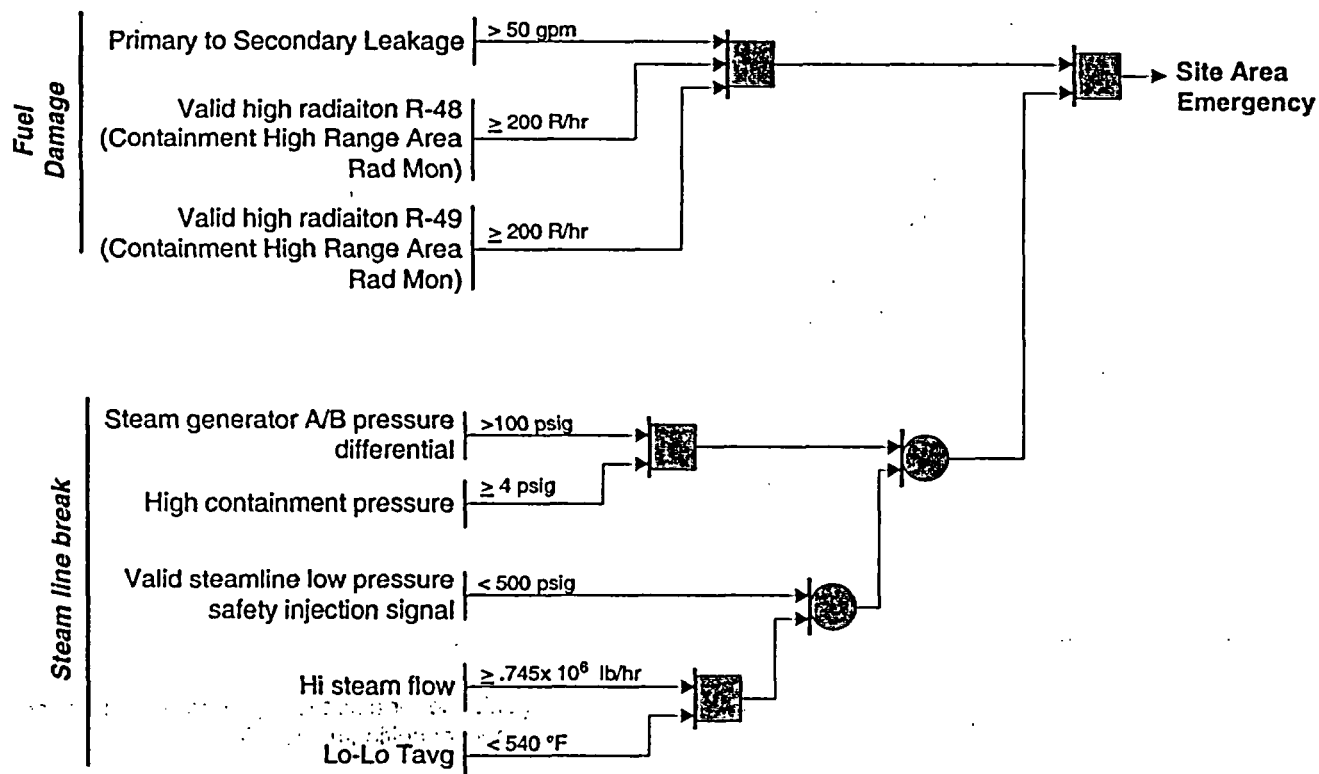


Condition 7 : Secondary Coolant Anomaly

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

(EAL Ref Manual 7D)

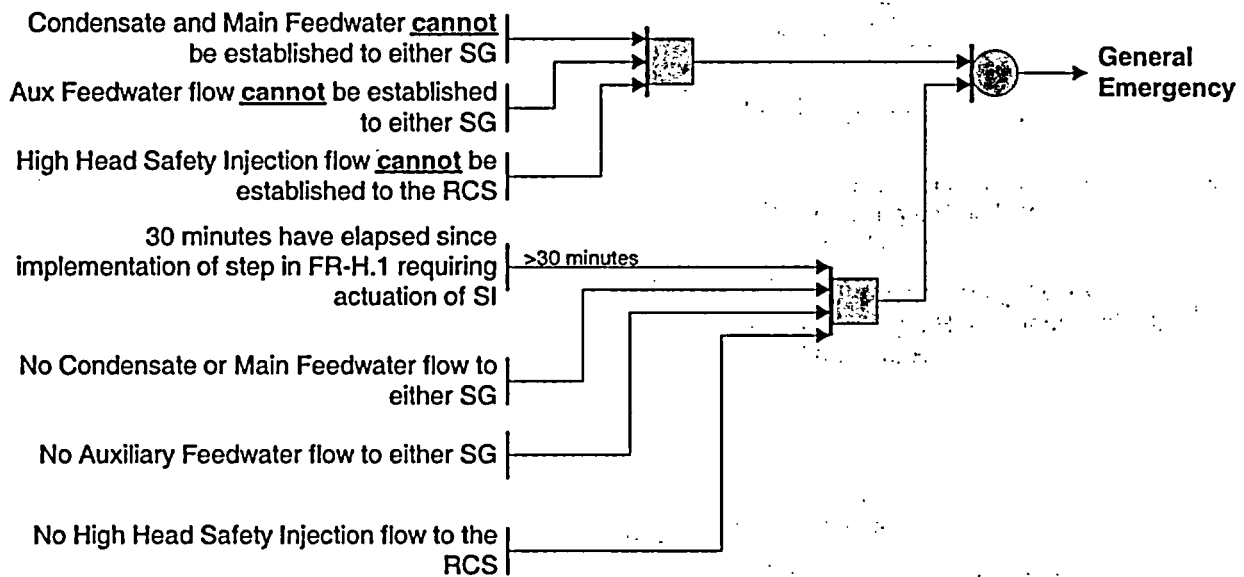
Note: If steam line break is outside containment with SG tube rupture and fuel failure, this may be a General Emergency. See condition # 6, case 2



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)

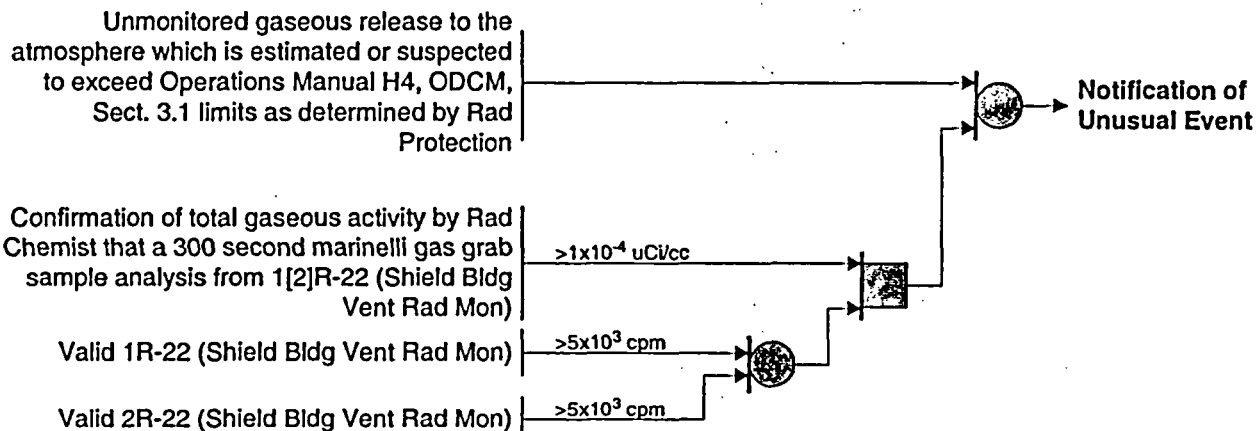


Note: "Cannot be established" means that procedural guidance for establishing condition will not be successful based on knowledge of system/component condition/availability.

Condition 8 : Radiological Effluents

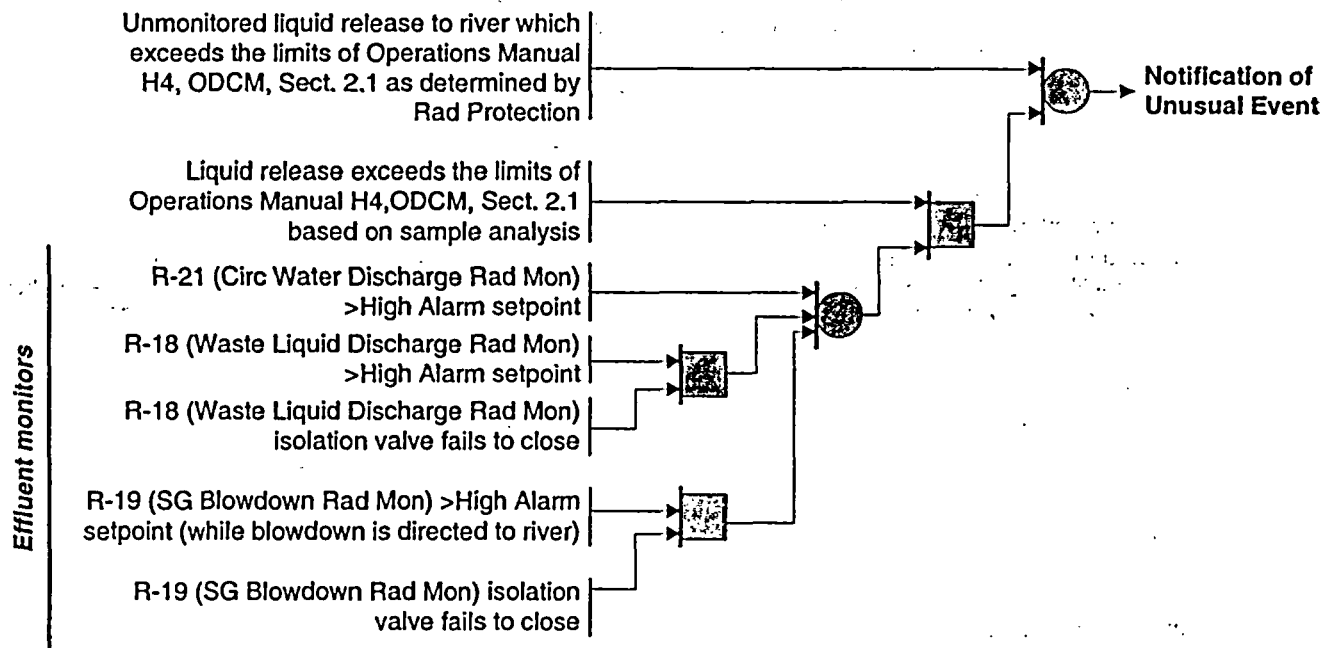
**Airborne Radiological effluent
Technical Specifications exceeded**

(EAL Ref Manual 8A)



Liquid Radiological effluent Technical Specification limits exceeded

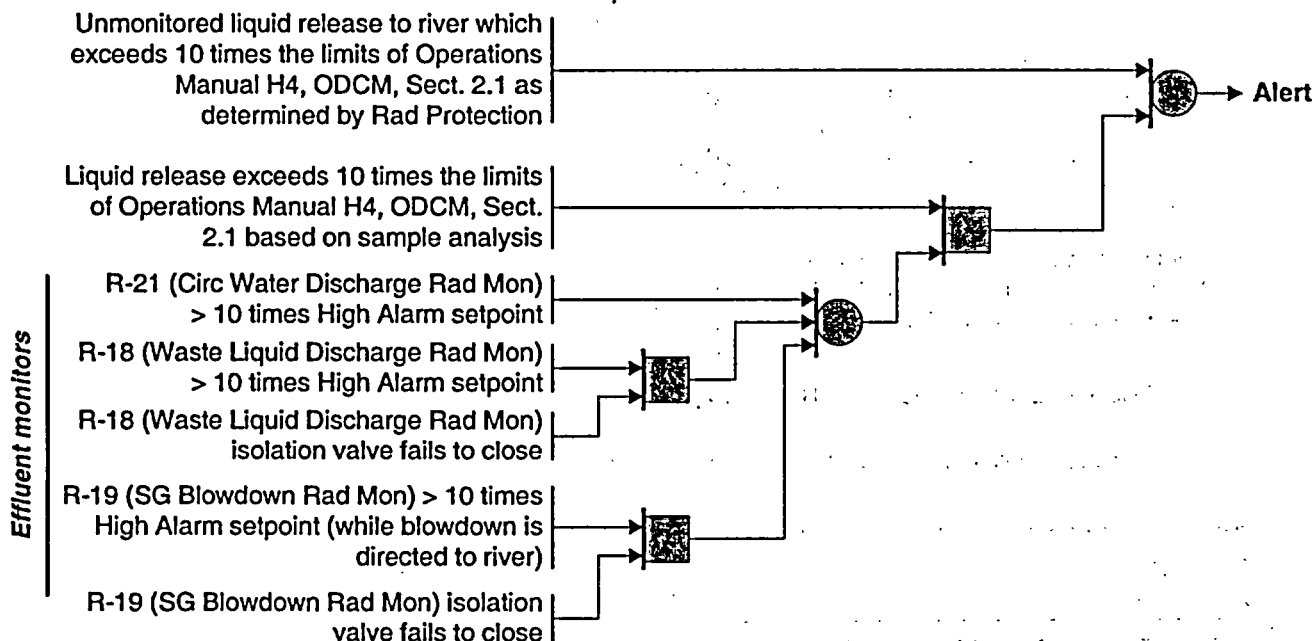
(EAL Ref Manual 8B)



Condition 8 : Radiological Effluents

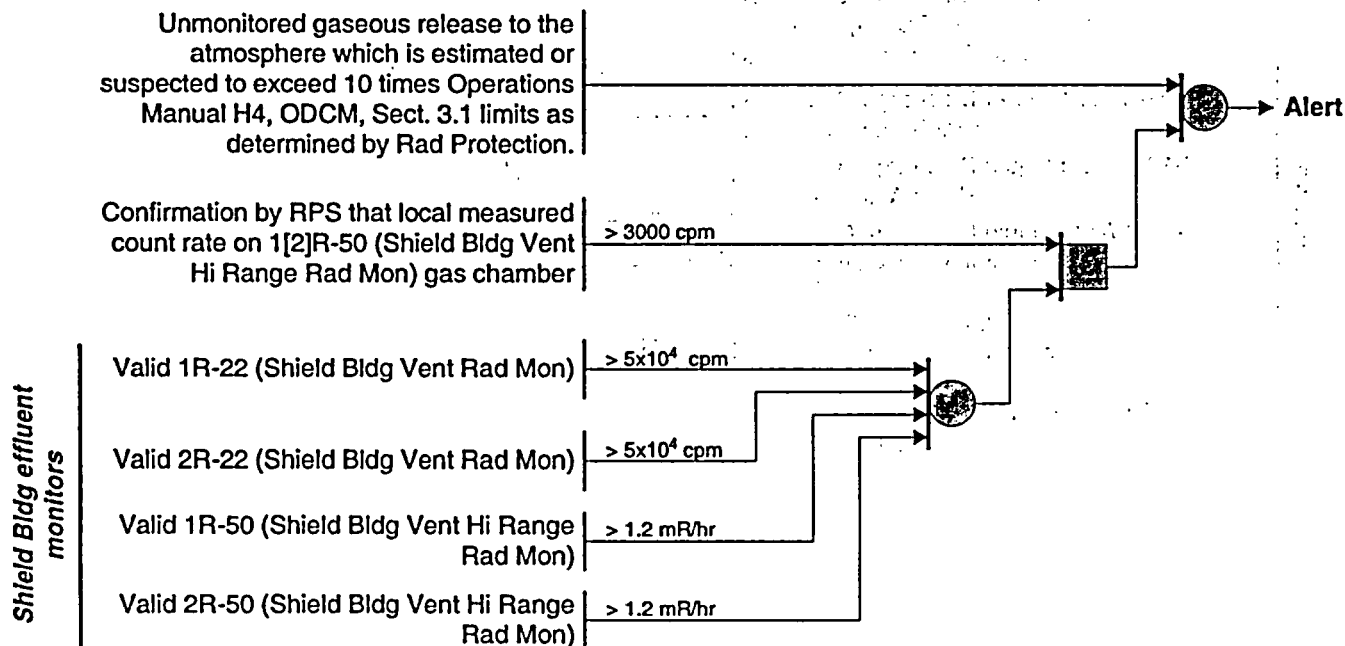
Liquid Radiological effluent greater than ten times Technical Specification limits:

(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

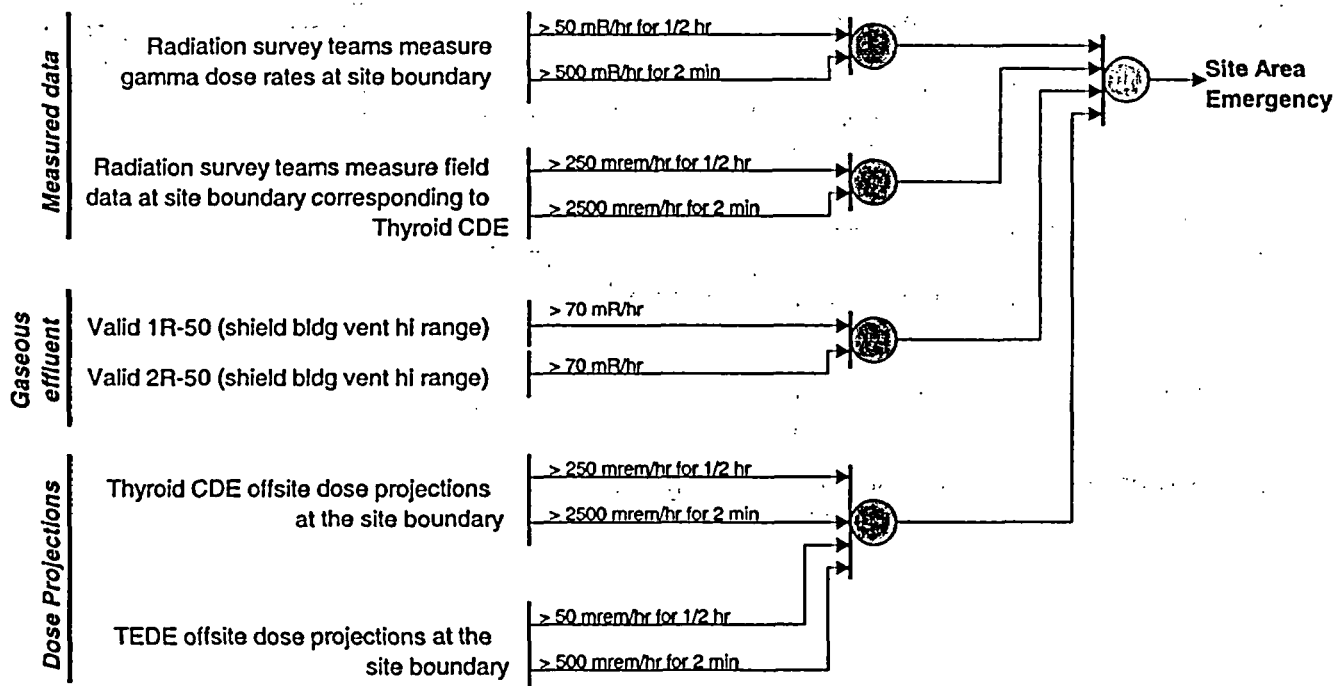
Airborne Effluent monitors detect levels corresponding to greater than:

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 Equivalents

(EAL Ref Manual 8E)



Condition 8 : Radiological Effluents

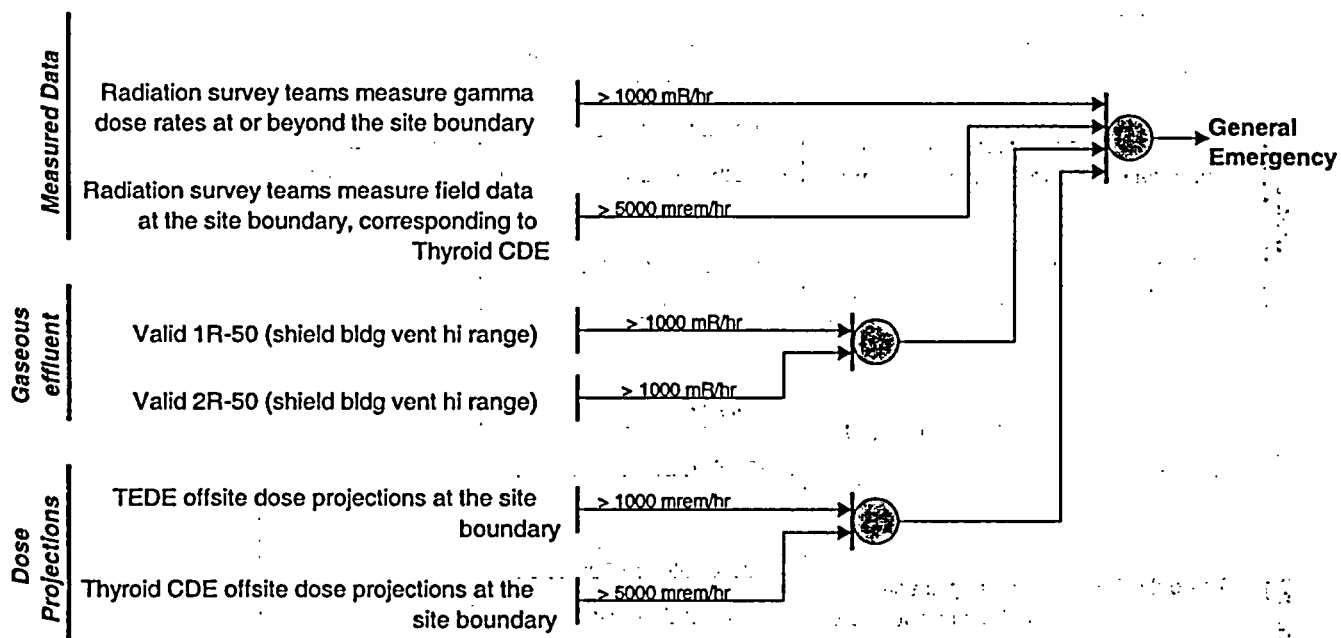
Effluent monitors detect levels corresponding to

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.

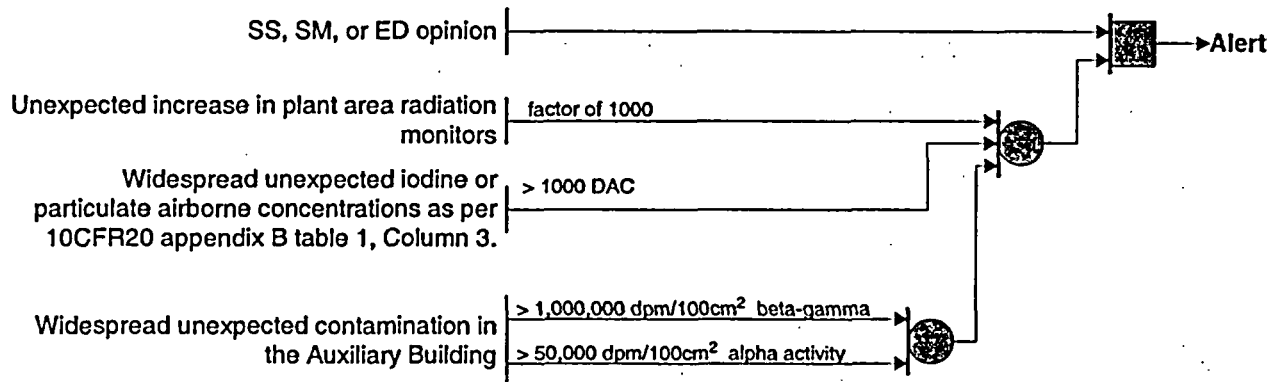
(EAL Ref Manual 8F)



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).

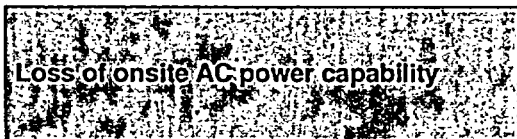
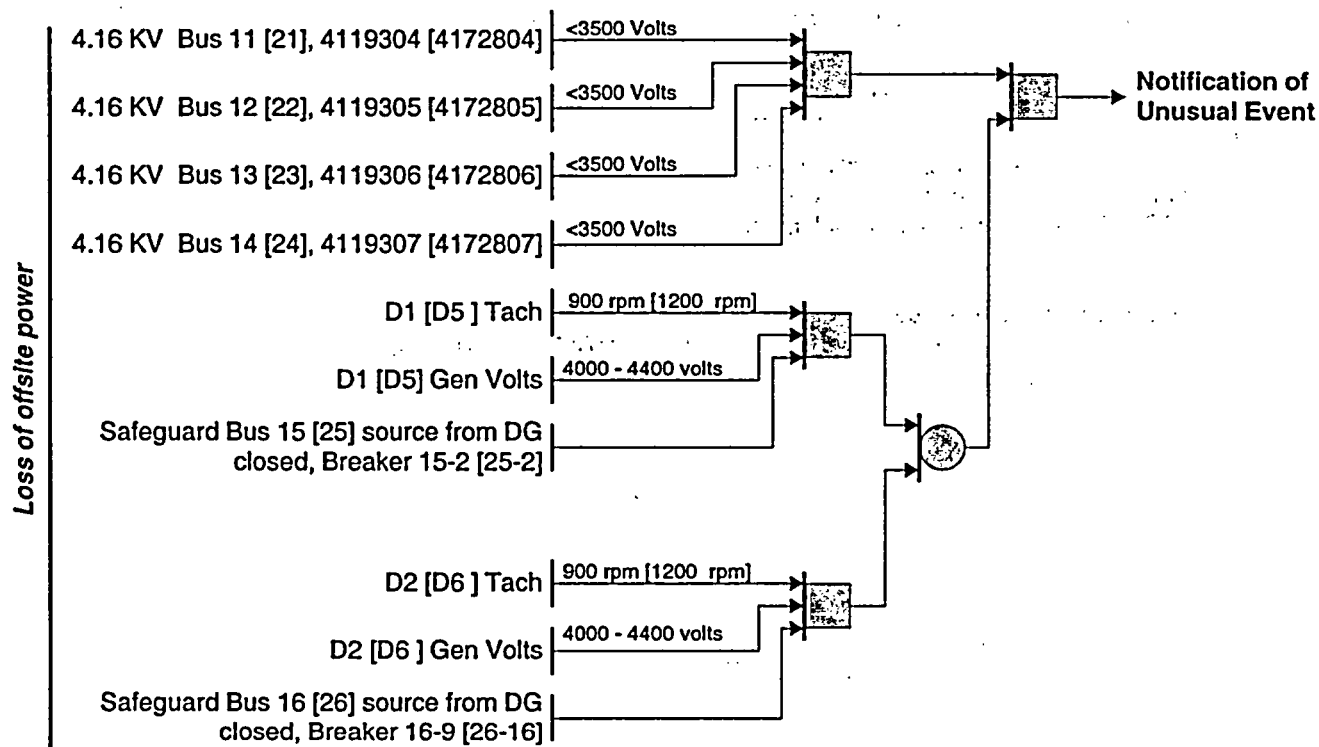
(EAL Ref Manual 8G)



Condition 9 : Major Electrical Failures



(EAL Ref Manual 9A)



(EAL Ref Manual 9B)

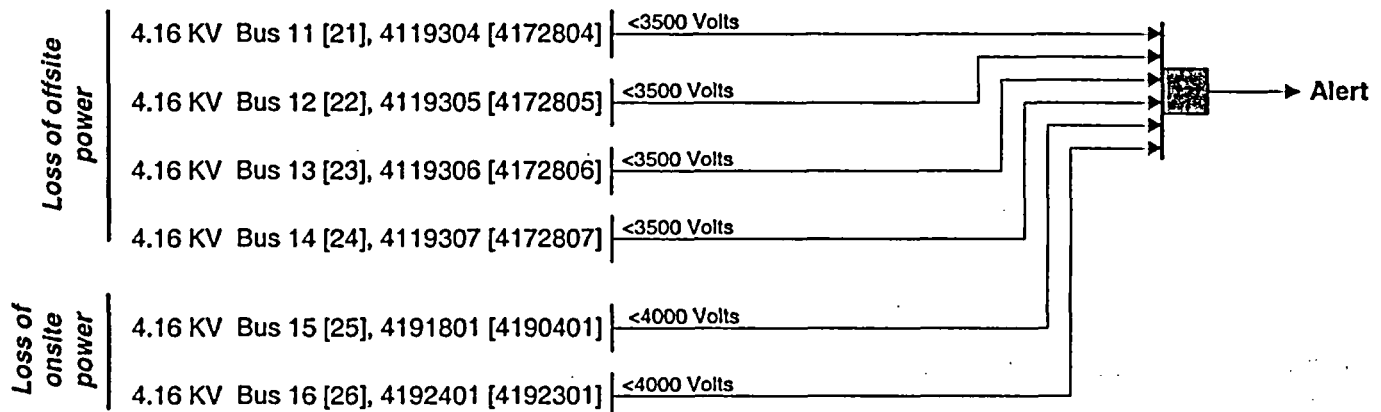
Loss of D1 & D2 [D5 & D6] diesel generators when they are required to be operable by Tech Specs

Notification of Unusual Event

Condition 9 : Major Electrical Failures

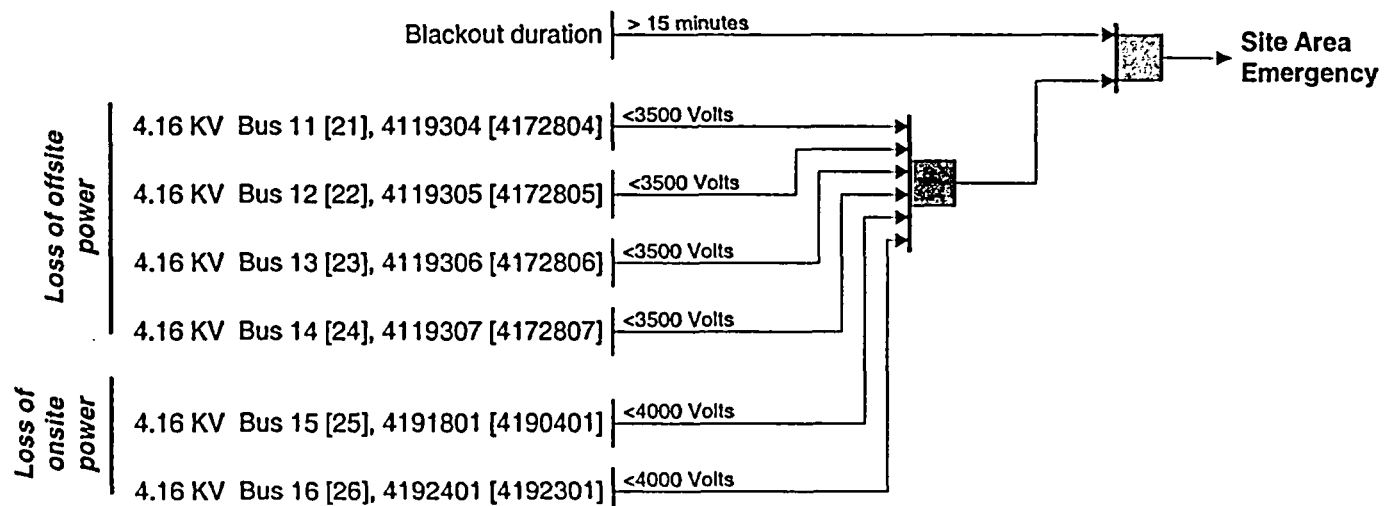
Loss of offsite power and loss of all onsite AC power (See Site Area Emergency for extended loss).

(EAL Ref Manual 9C)



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

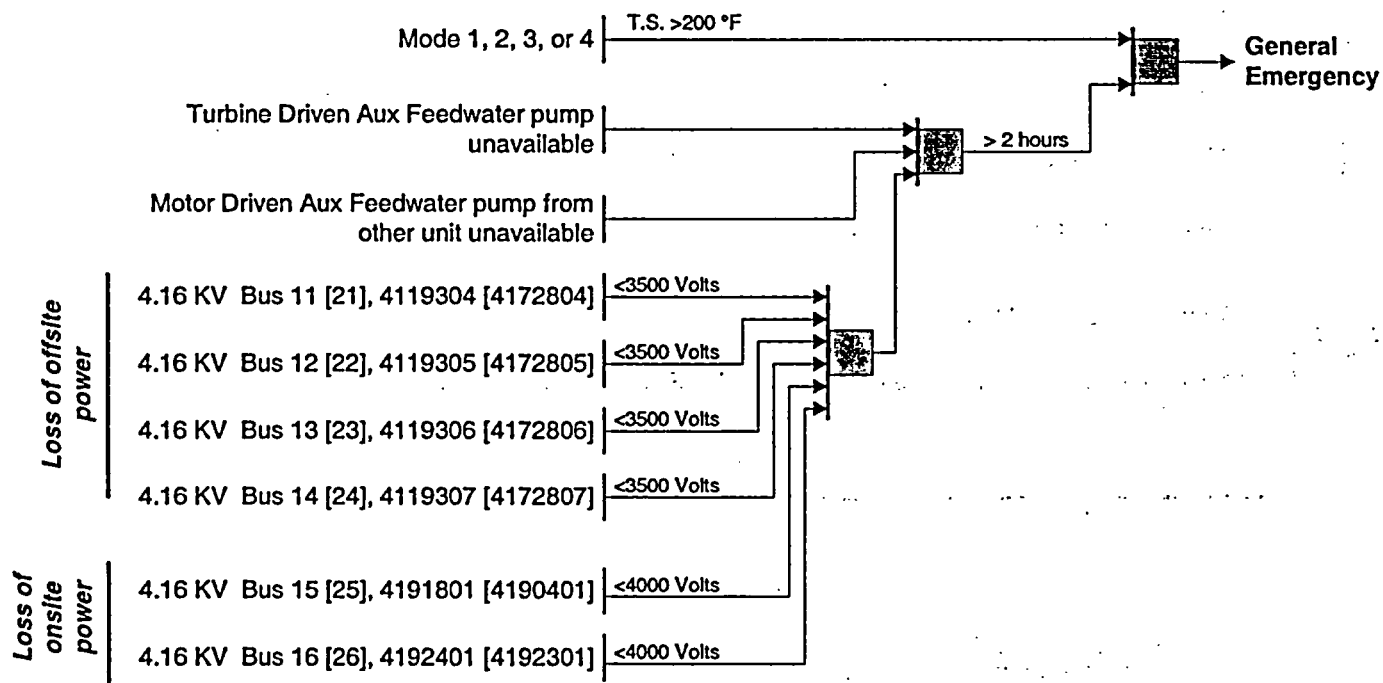
(EAL Ref Manual 9D)



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.

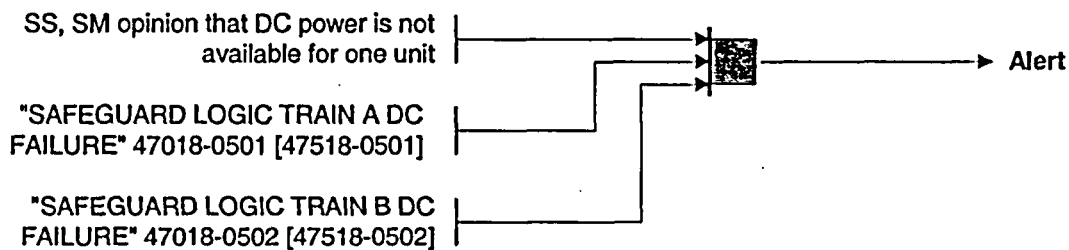
(EAL Ref Manual 9E)



Condition 9 : Major Electrical Failures

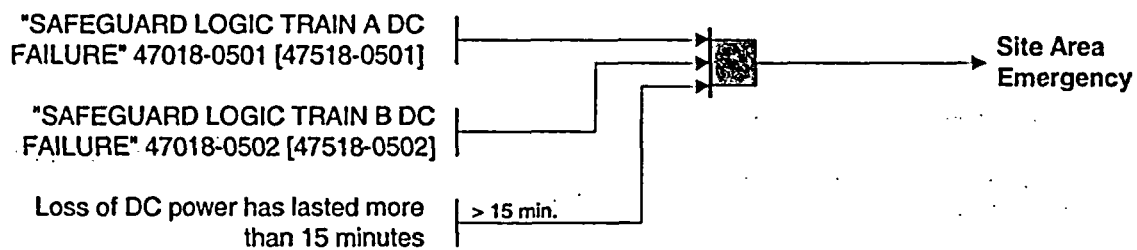
Loss of all onsite DC power (see Site Area Emergency for extended loss)

(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 Panels and local stations within 15 minutes.

(EAL Ref Manual 10B)

Evacuation of Control Room conducted

Control of shutdown systems not established from Hot Shutdown Panels and local stations within 15 minutes

> 15 min.

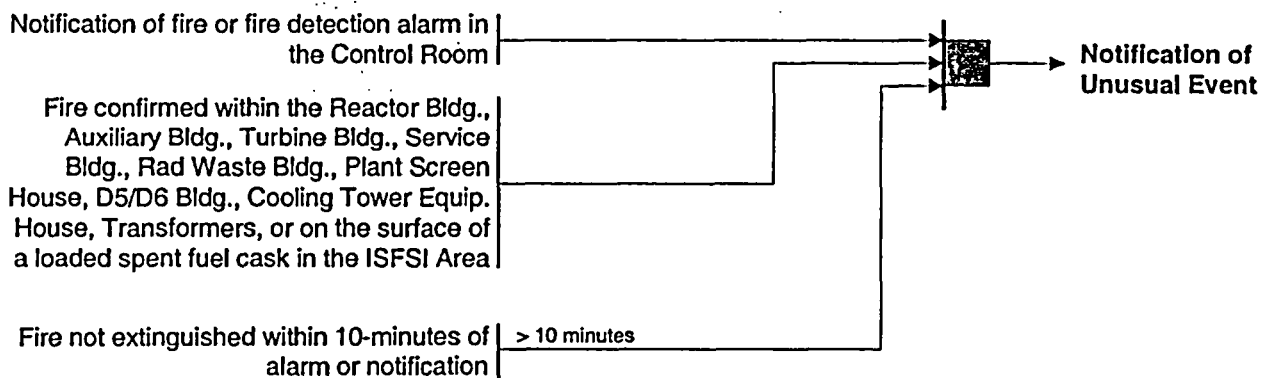
Site Area
Emergency

Condition 11 : Fires

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

(EAL Ref Manual 11A)

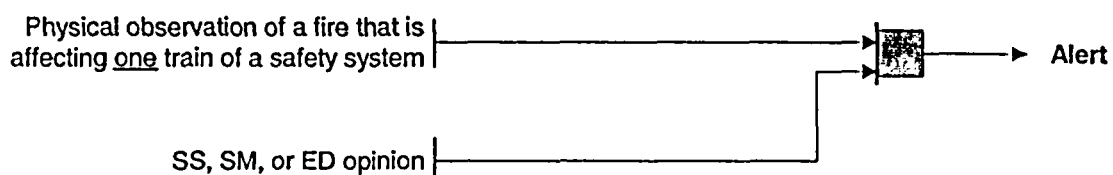
Note: FIRE: is combustion characterized by heat and light (flame). Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.



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.

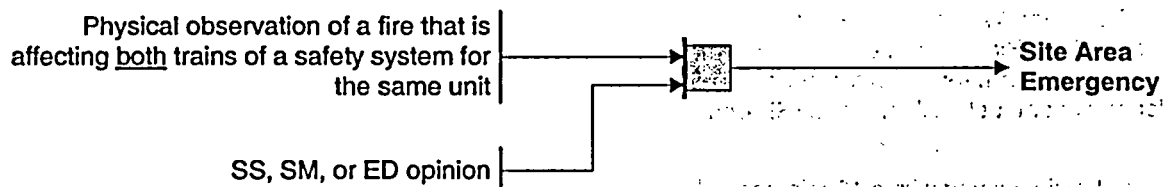


Condition 11 : Fires

Fire compromising the functions of
safety systems.

(EAL Ref Manual 11C)

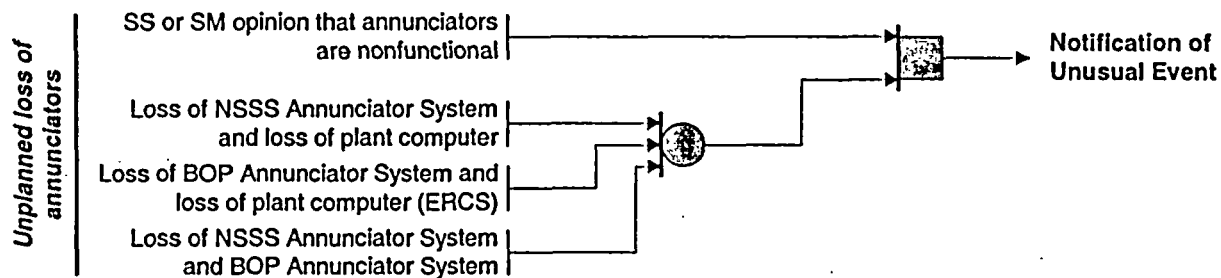
Note: FIRE: is combustion characterized by heat and light (flame). Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.



Condition 12 : Plant Shutdown Functions

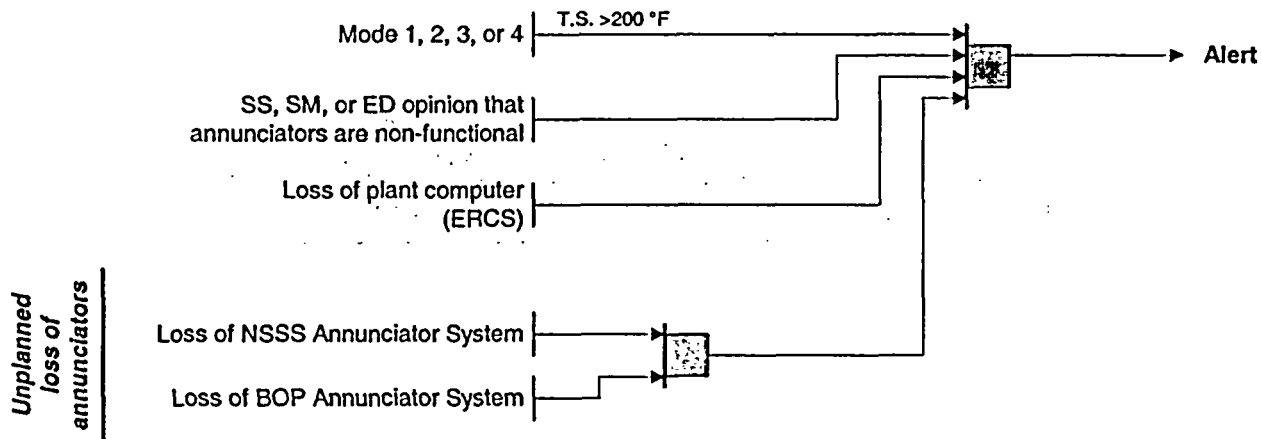
Nonfunctional alarms in the Control Room

(EAL Ref Manual 12B)



Most or all alarms (annunciators) lost

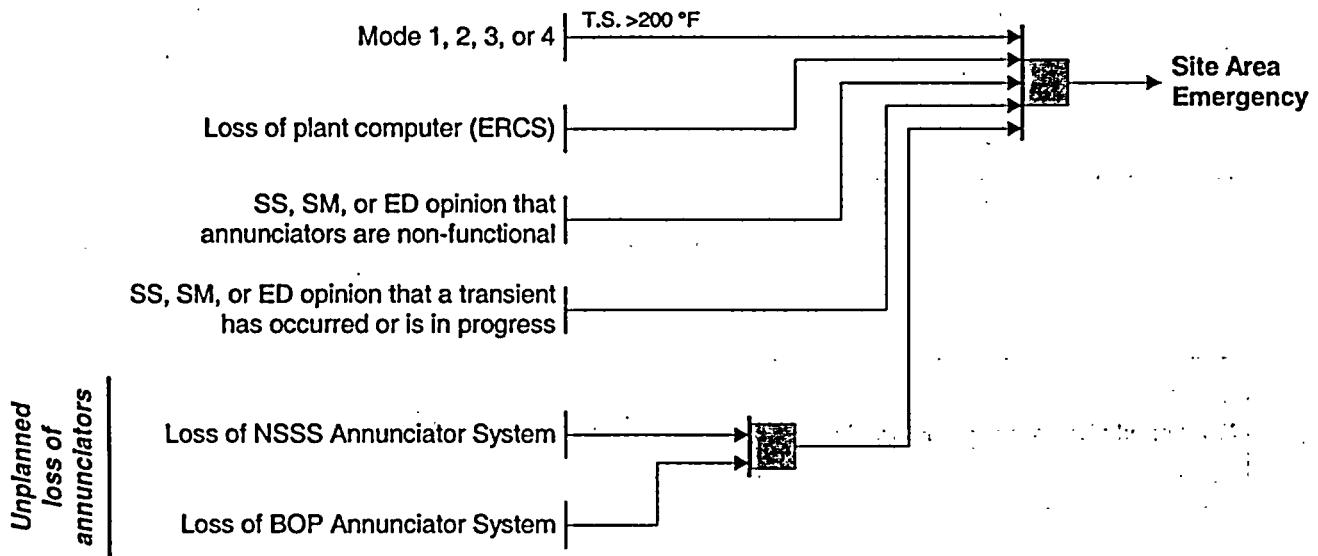
(EAL Ref Manual 12C)



Condition 12 : Plant Shutdown Functions

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

(EAL Ref Manual 12D)



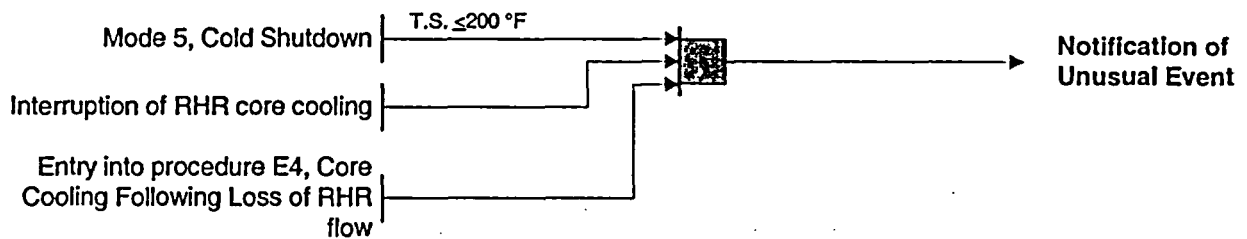
Note:

A transient is an UNPLANNED event involving one of more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection actuation, or (5) thermal power increase or oscillations >10%.

Condition 12 : Plant Shutdown Functions

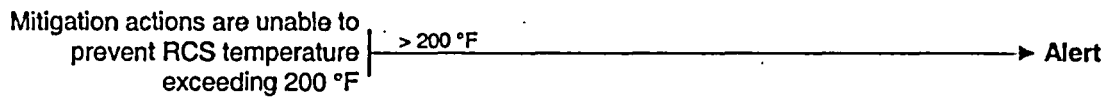
Momentary loss of core cooling needed
for plant Mode 5, Cold Shutdown.

(EAL Ref Manual 12E)



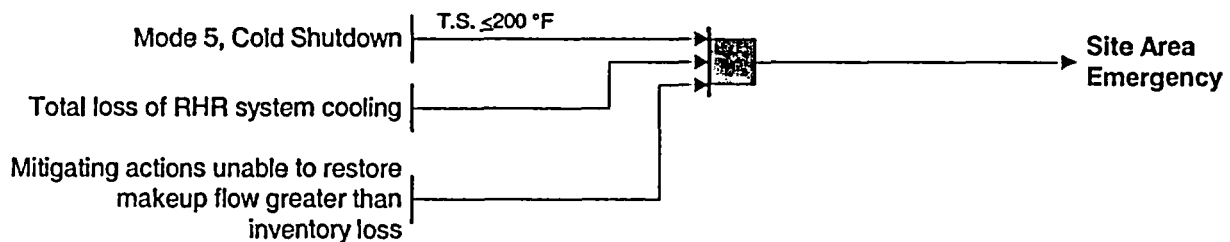
Inability to maintain plant in Mode 5,
Cold Shutdown.

(EAL Ref Manual 12F)



Loss of water level that has uncovered
or will uncover the fuel in the reactor
vessel while at Mode 5, Cold Shutdown.

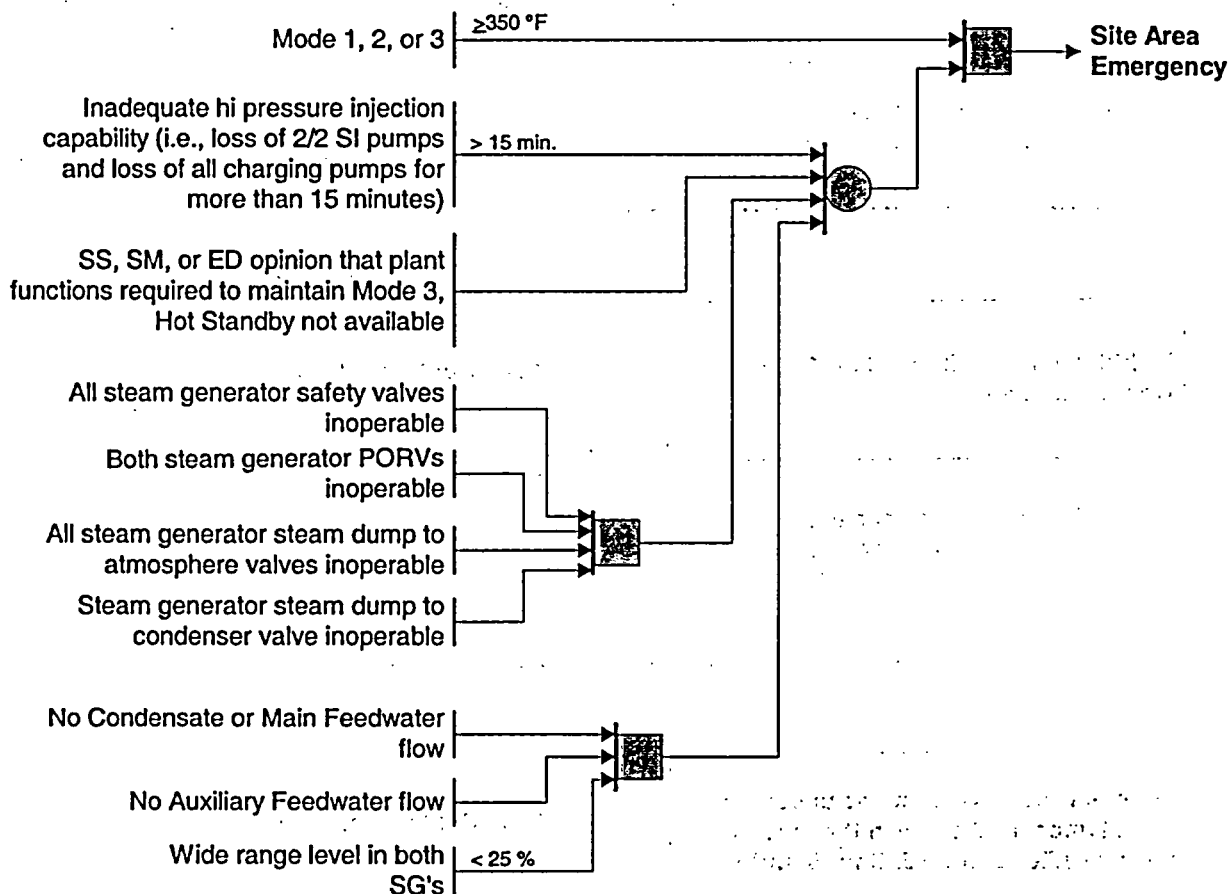
(EAL Ref Manual 12G)



Condition 12 : Plant Shutdown Functions

Complete loss of any function needed for
plant Mode 3, Hot Standby.
(Also see Condition #7 for possible
General if feed and bleed is initiated)

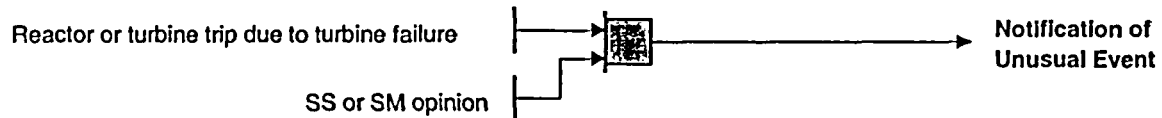
(EAL Ref Manual 12H)



Condition 12 : Plant Shutdown Functions

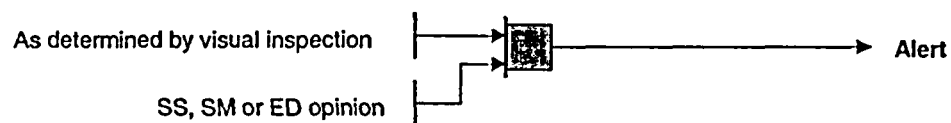
Turbine failure requiring a reactor /
turbine trip.

(EAL Ref Manual 12I)



Turbine failure causing casing
penetration.

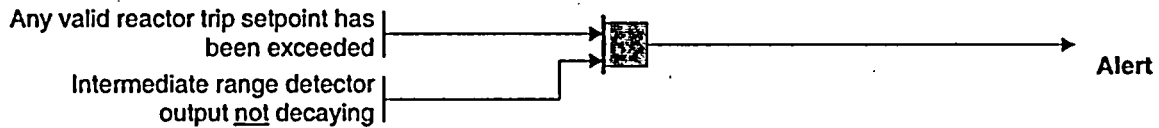
(EAL Ref Manual 12J)



Condition 12 : Plant Shutdown Functions

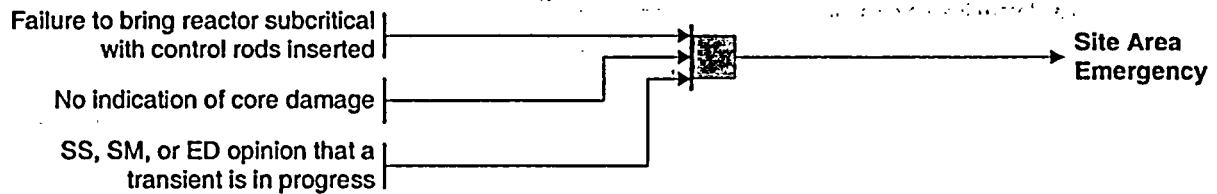
Failure of the reactor protection system to initiate and complete a trip which brings the reactor subcritical

(EAL Ref Manual 12K)



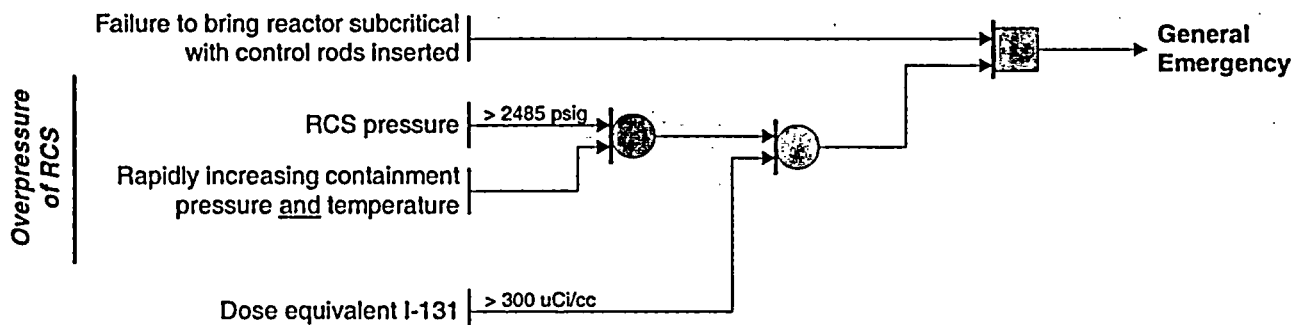
Transient requiring operation of shutdown systems with failure to trip (continued power generation but no core damage immediately evident)

(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)

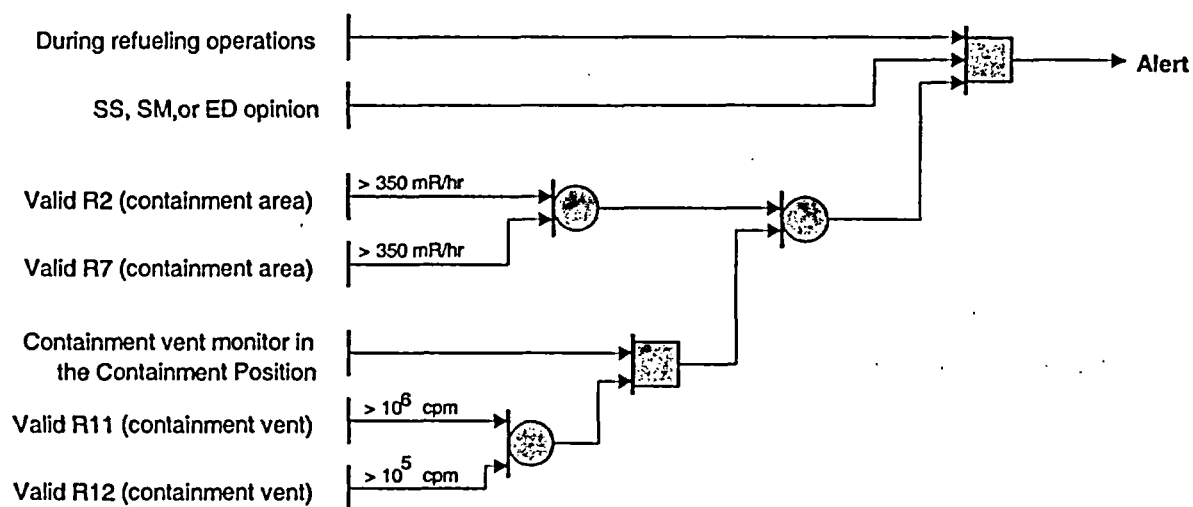
(EAL Ref Manual 12M)



Condition 13 : Fuel Handling Accidents

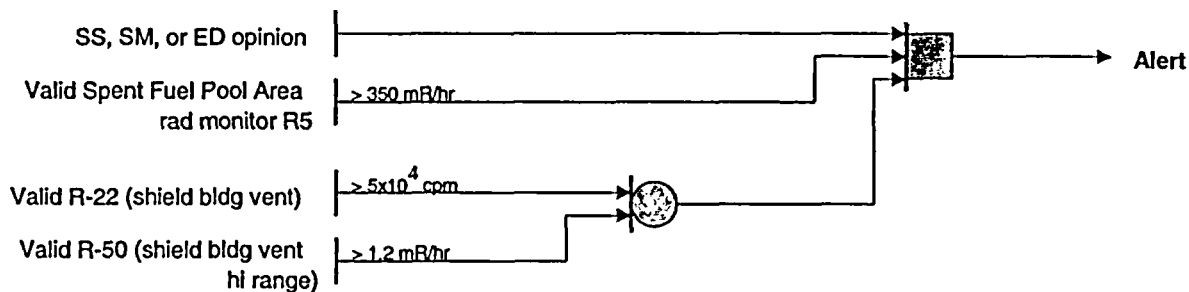
Fuel damage accident with release of radioactivity to containment

(EAL Ref Manual 13A)



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

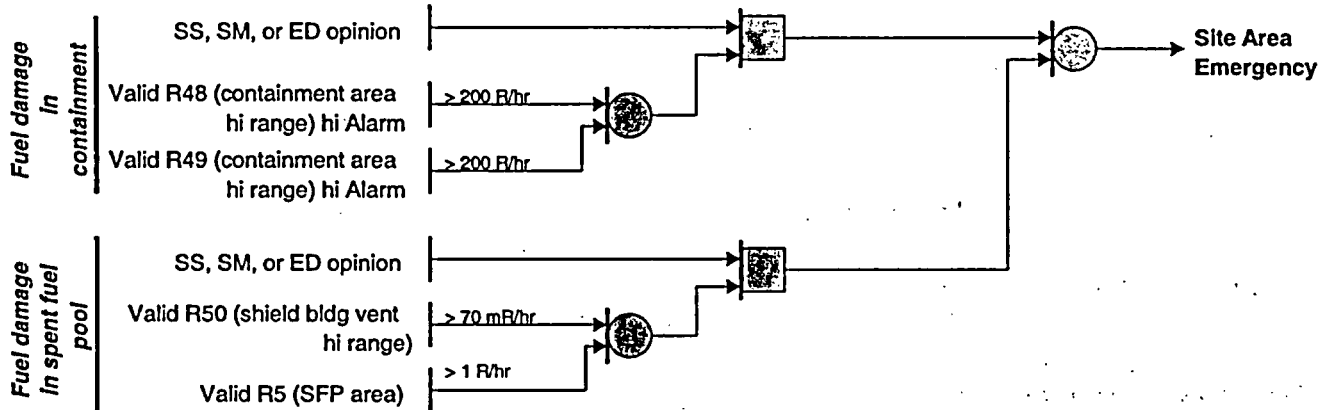
(EAL Ref Manual 13B)



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.

Condition 15 : Contaminated Injured Person

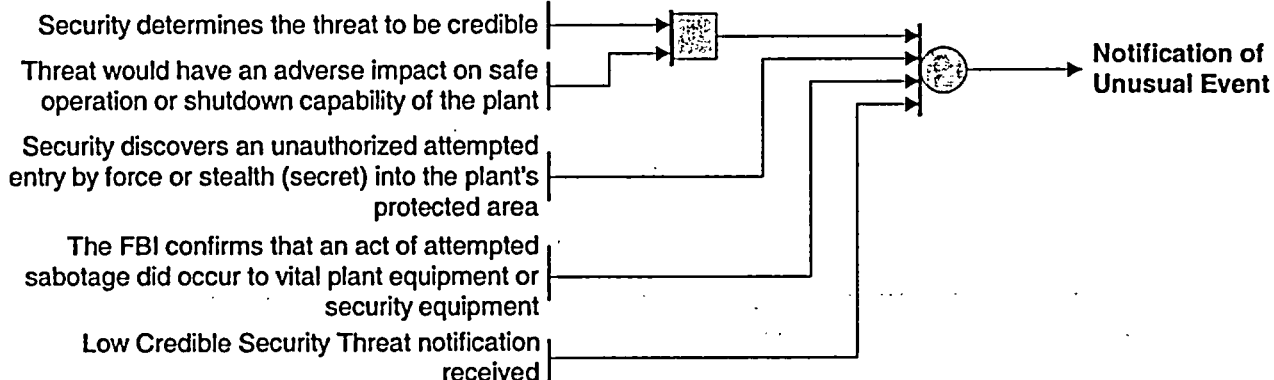
DELETED

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

Condition 16 : Security

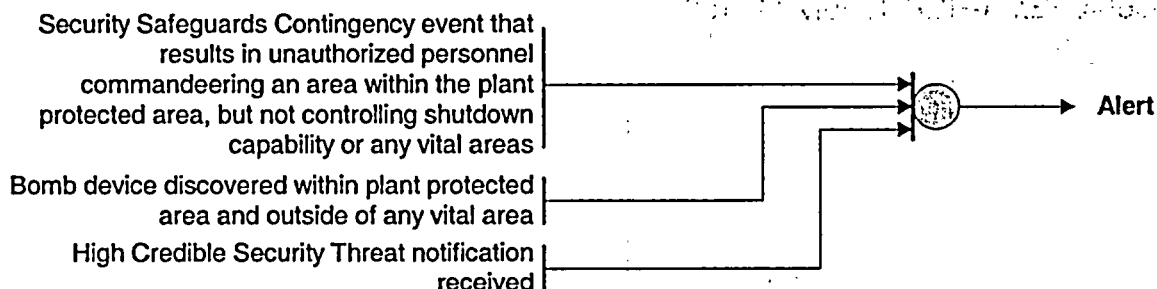
Credible site-specific security threat notification or attempted entry or attempted sabotage

(EAL Ref Manual 16A)



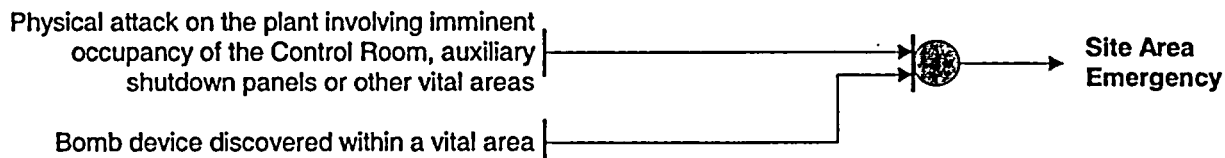
Ongoing security compromise

(EAL Ref Manual 16B)



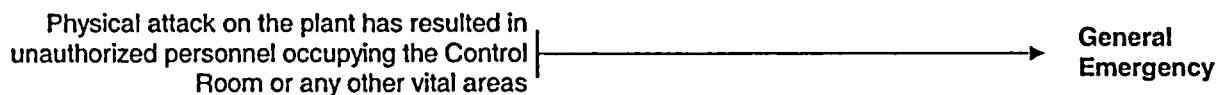
Imminent loss of physical control of the plant

(EAL Ref Manual 16C)



Loss of physical control of the plant

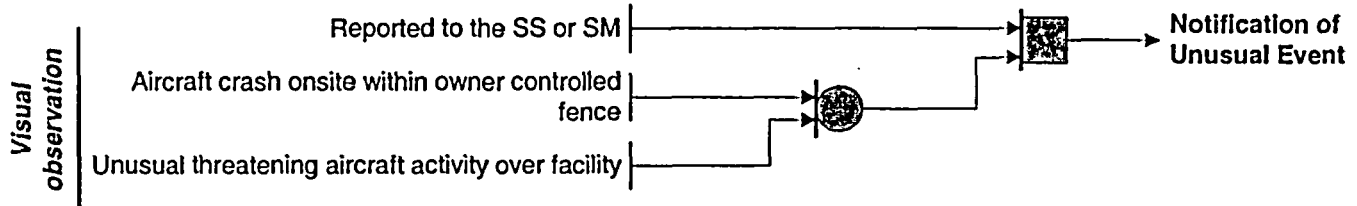
(EAL Ref Manual 16D)



Condition 17 : Hazards to Plant Operations

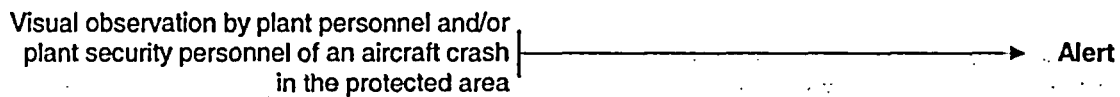
Aircraft crash onsite or unusual aircraft activity over facility

(EAL Ref Manual 17A)



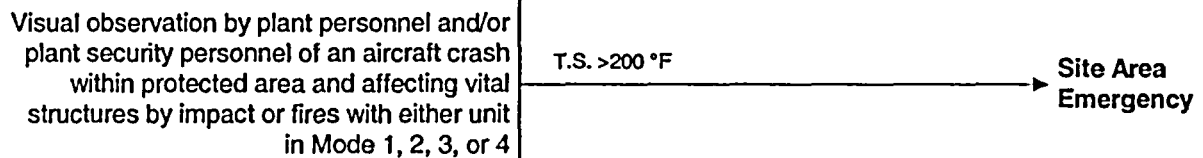
Aircraft crash in the protected area

(EAL Ref Manual 17B)



Aircraft crash within protected area and affecting vital structures by impact or fires with plant not in Mode 5, Cold Shutdown

(EAL Ref Manual 17C)



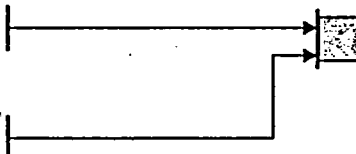
Condition 17 : Hazards to Plant Operations



(EAL Ref Manual 17D)

Visually observed evidence of an unplanned or
unexplained explosion within the owner
controlled fence but not affecting plant safe
operation

Reported to the SS or SM



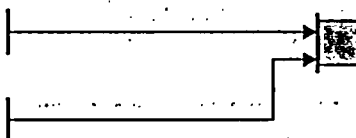
Notification of
Unusual Event



(EAL Ref Manual 17E)

Visually observed evidence of an unplanned
explosion directly affecting plant safe operation

Reported to SS or SM



Alert

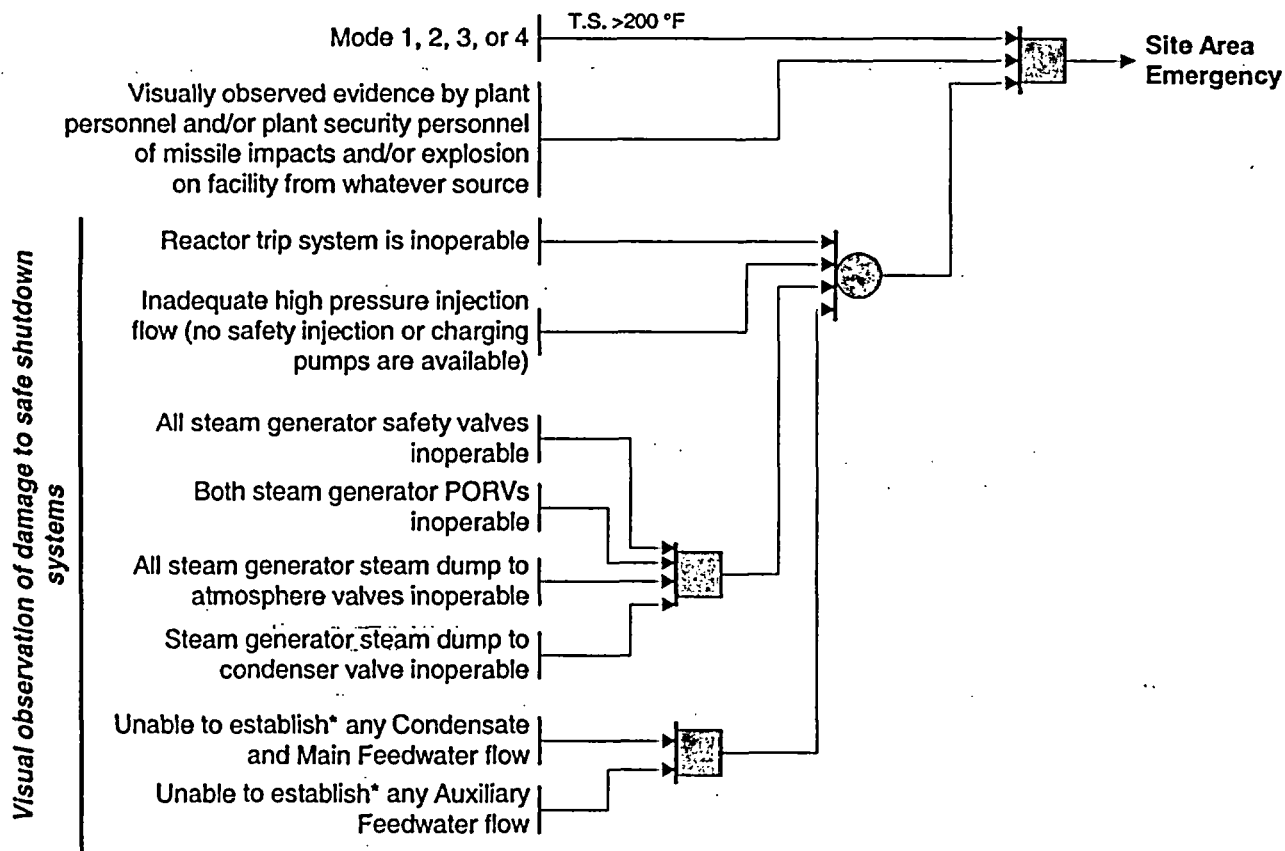
Missile impacts from whatever source on facility

**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 Mode 5, Cold Shutdown

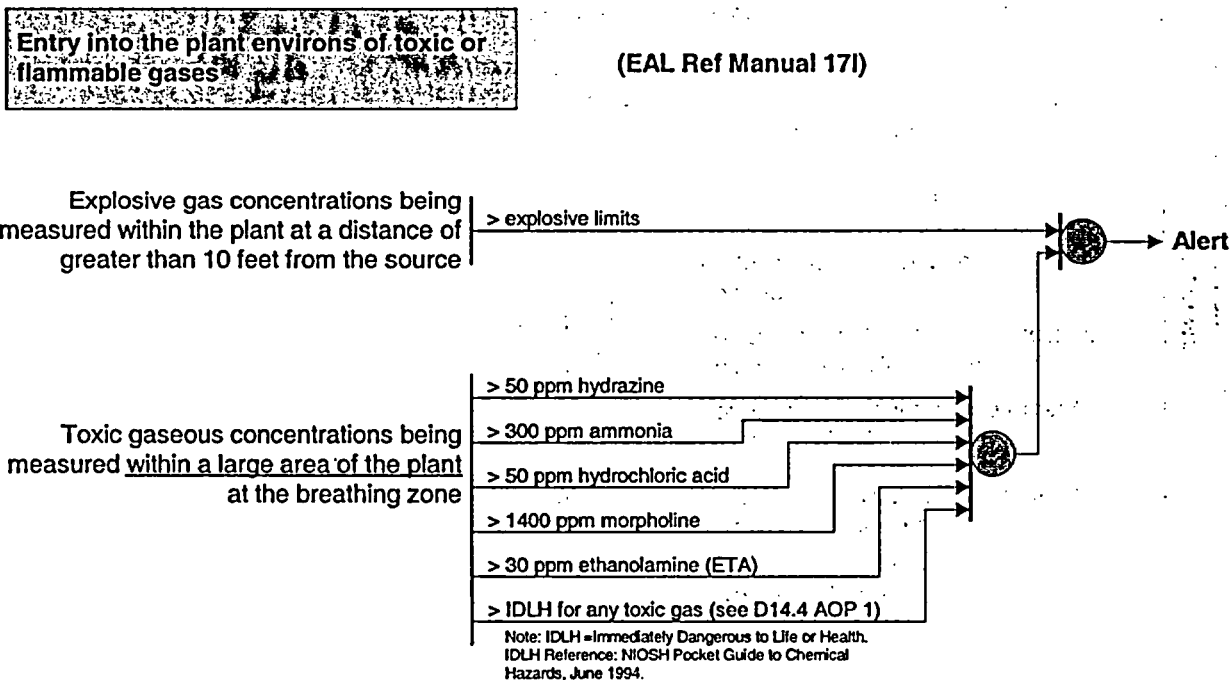
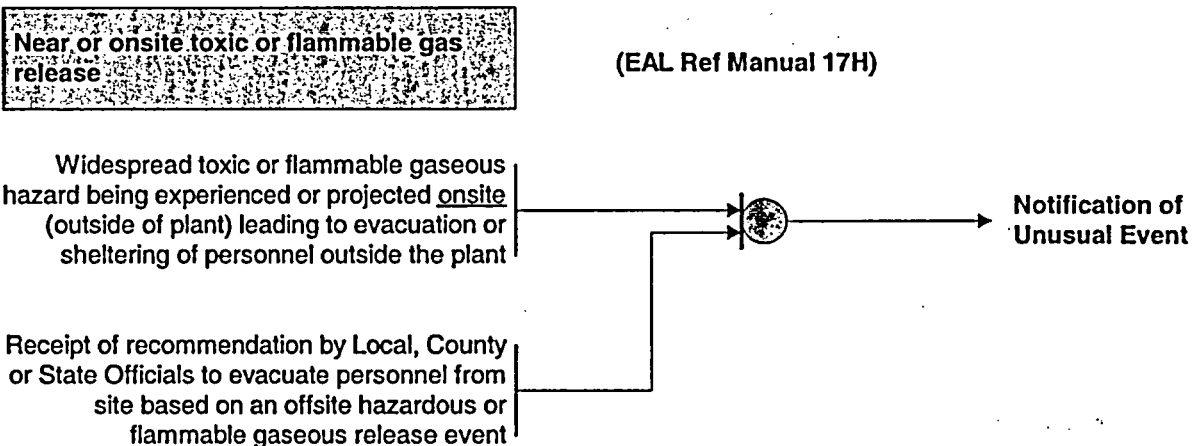
(EAL Ref Manual 17G)



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.

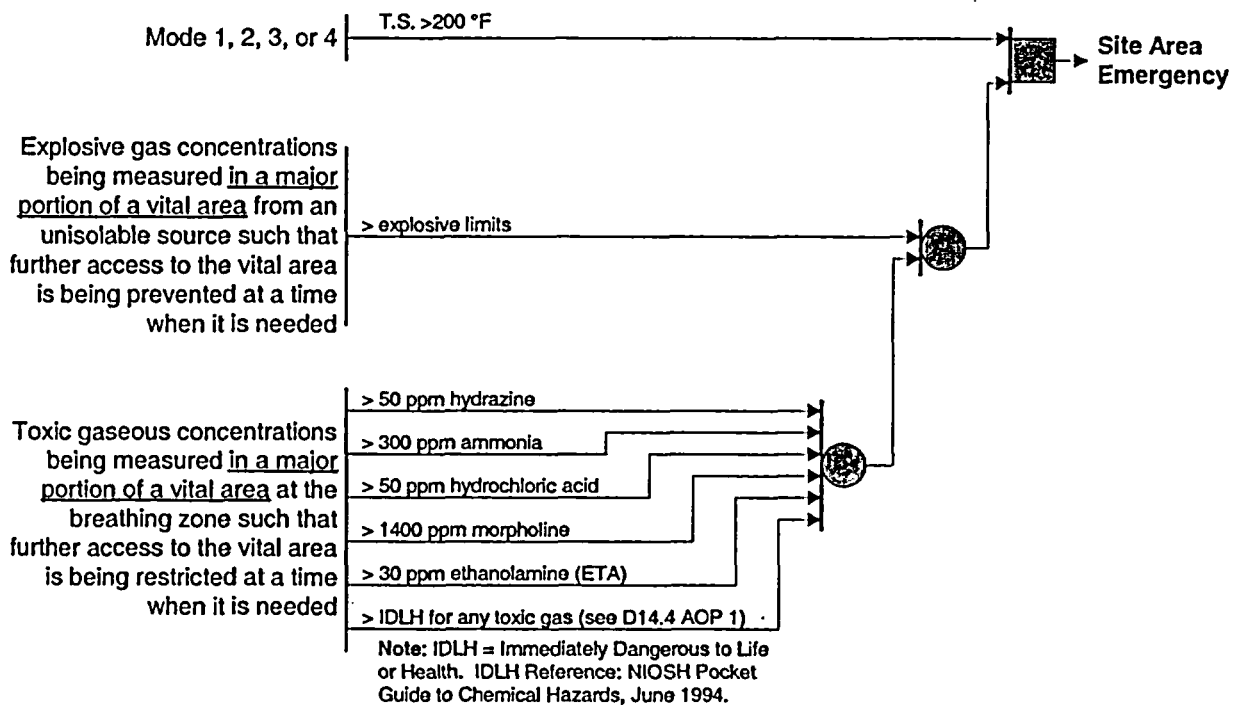
Condition 17 : Hazards to Plant Operations



Condition 17 : Hazards to Plant Operations

Entry of toxic or flammable gases into vital areas with plant not in Mode 5, Cold Shutdown.

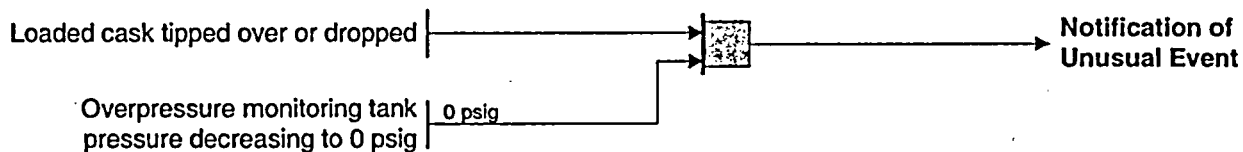
(EAL Ref Manual 17J)



Condition 18 :ISFSI Events

ISFSI cask tip over or drop resulting in
cask seal leakage

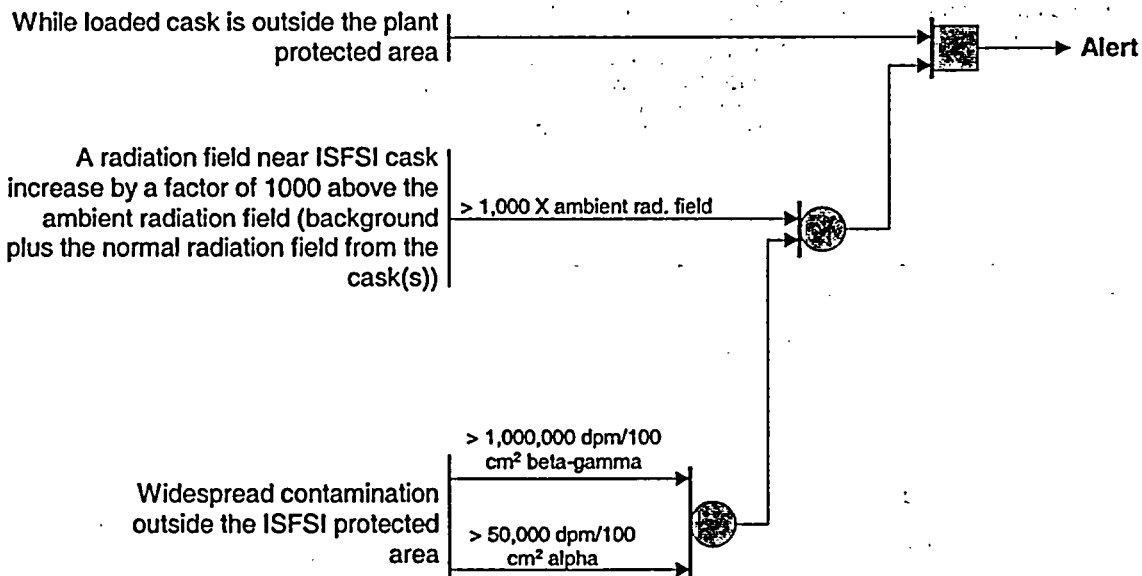
(EAL Ref Manual 18A)



Loss of ISFSI cask/fuel containment
barrier

(EAL Ref Manual 18B)

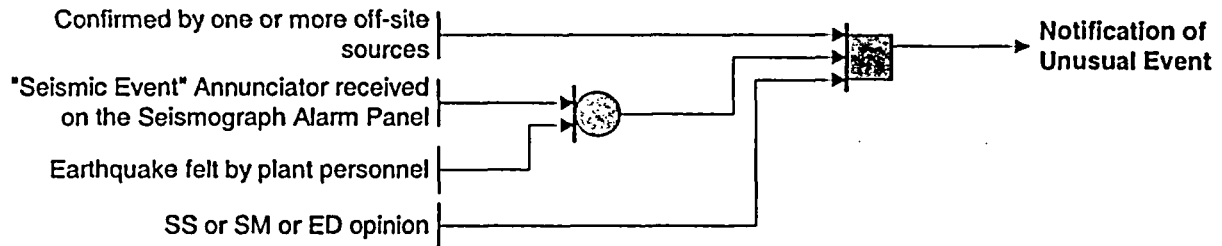
Physical breach of cask indicated by
Radiation Survey Team measure results of:



Condition 19 : Natural Events

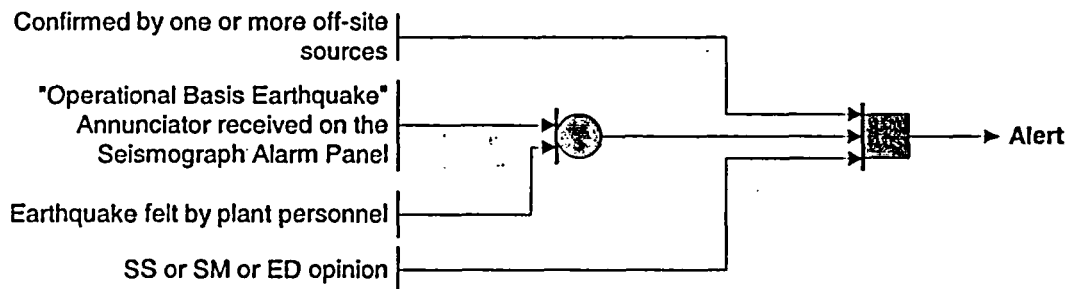
Any confirmed earthquake

(EAL Ref Manual 19A)



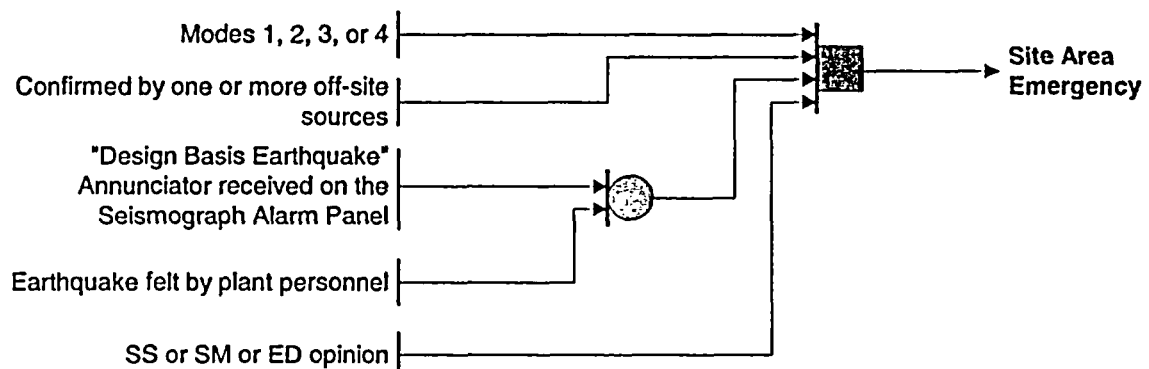
Earthquake greater than Operational Basis Earthquake

(EAL Ref Manual 19B)



Earthquake greater than Design Basis Earthquake with plant not in Mode 5, Cold Shutdown

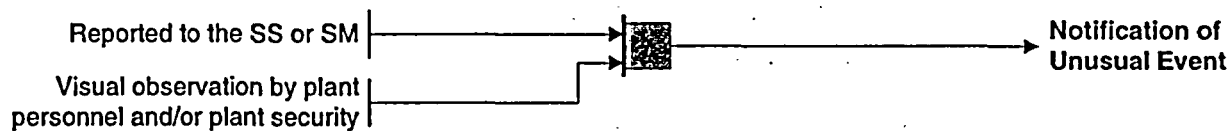
(EAL Ref Manual 19C)



Condition 19 : Natural Events

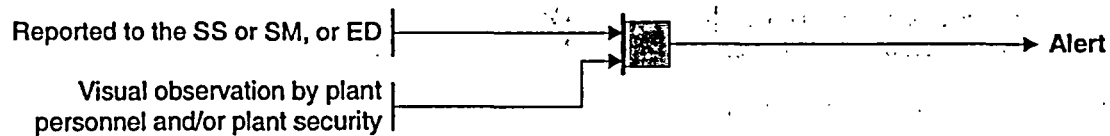
Any tornado on site

(EAL Ref Manual 19D)



Any tornado striking the facility

(EAL Ref Manual 19E)



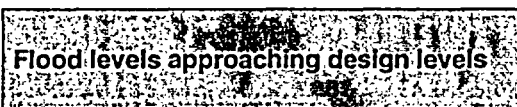
Condition 19 : Natural Events



(EAL Ref Manual 19F)

River Intake Elevation | > 686 ft

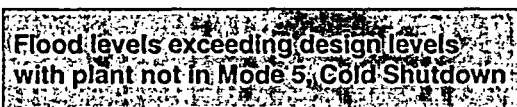
Notification of
Unusual Event



(EAL Ref Manual 19G)

River Intake Elevation -
(USAR 2.4.3.5) - requires both units to
be shut down to Mode 2, 3, 4 or 5 | > 692 ft

Alert



(EAL Ref Manual 19H)

Mode 1, 2, 3, or 4 | T.S. >200 °F
River Intake Elevation - Power
operation design level (highest level
transformers will function) | > 698 ft

Site Area
Emergency

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.

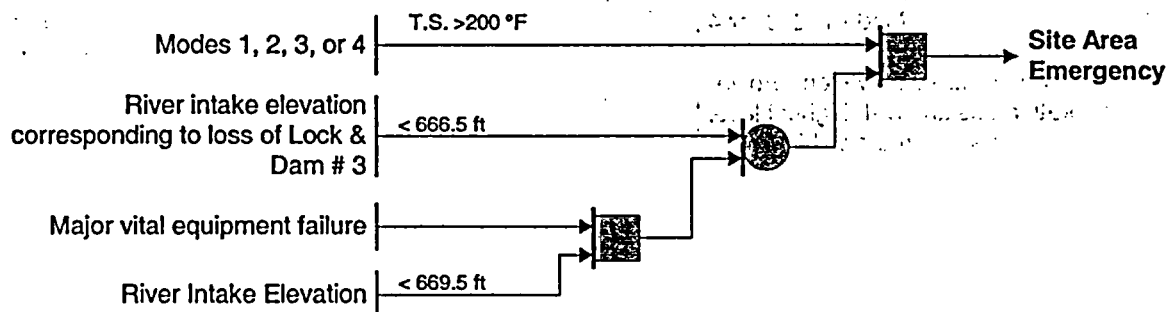
(EAL Ref Manual 19J)

River intake elevation | < 669.5 ft

Alert

With plant not in Mode 5, 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 Mode 5, Cold Shutdown.

(EAL Ref Manual 19M)

Modes 1, 2, 3, or 4 | T.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)

SM and SS concurrence that plant conditions warrant increased awareness

Notification of Unusual Event

Inability to reach required shutdown within Technical Specification Limits.

(EAL Ref Manual 20B)

T.S.ACTION TABLE not met requires plant shutdown or cooldown

Reactor power reduction or cooldown requirements have been exceeded

Notification of Unusual Event

Conditions that involve other than normal controlled shutdown.

(EAL Ref Manual 20C)

Reactor power reduction or cooldown has been initiated

Emergency Safeguard Function equipment did NOT perform its function if required

Cooldown rate exceeded Tech Spec Limit

SS or SM opinion that lack of control of shutdown or cooldown warrants offsite agency notification

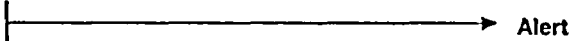
Notification of Unusual Event

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

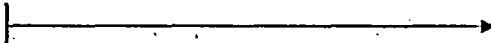


Alert

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

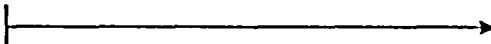


Site Area
Emergency

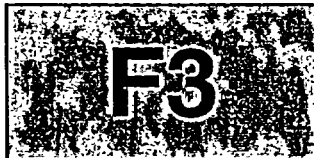
Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible; e.g., any core melt situation

(EAL Ref Manual 20F)

SS, SM, or ED opinion



General
Emergency

**RESPONSIBILITIES OF THE RADIATION
SURVEY TEAMS DURING A
RADIOACTIVE AIRBORNE RELEASE**

NUMBER:

F3-15REV: **23****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:


10-24-03

OWNER:

M. Werner

EFFECTIVE DATE

11-12-03

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
		REV: 23

1.0 PURPOSE

This procedure describes the responsibilities of the Radiation Survey Teams during an airborne radioactive release to the environment.

2.0 APPLICABILITY

This procedure applies to all members of the Prairie Island Radiation Protection Group.

3.0 PRECAUTIONS AND SPECIAL CONSIDERATIONS

- 3.1 Each team should obtain information pertaining to the magnitude and the direction of the release, either from the Control Room, the Radiological Emergency Coordinator (REC), or the Radiation Protection Support Supervisor (RPSS).
- 3.2 Radiation Survey Teams should observe the respiratory protection requirements and the field dose rate precautions as stated in Attachment B.
- 3.3 Report airborne activity sample results in whole numbers, (i.e., microcuries per cc with no decimal places).
- 3.4 Report all radiation levels in whole number mREM per hour, (i.e., three Rem per hour should be reported as three thousand mREM per hour).
- 3.5 Preface each communication with the title or name of the receiving party and your title or name. For example: "Prairie Island TSC; "Survey Team 1..."

After the communication is completed, request the receiving party to repeat the message, if numerical data was relayed.

End message transmission with an appropriate termination phrase. For example: "Survey Team 1, out". During drills always include the words, "THIS IS A DRILL," with each transmission.

- 3.6 When making field estimates of gross activity, if background exceeds 1000 cpm, notify the REC, or RPSS, and proceed to an area of lower background, <1000 cpm for counting, if so instructed by the REC, or RPSS.

F3	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
		REV: 23

- 3.7 The normal means of transportation for survey teams during any emergency is plant vehicles. Extreme environmental conditions (blocked roads, snow, bridges out, etc.) may preclude the use of these vehicles. The following alternate transportation is available:

NOTE:

This does not prohibit the use of personal vehicles in cases where plant vehicles are not available in sufficient numbers.

- 3.7.1 **Power Boats** - Sheriff's Department, plant environmental monitoring team, Red Wing Police.

- 3.7.2 **Four Wheel Drive Vehicle** - at Prairie Island

- 3.7.3 **Helicopter** - available during suitable weather conditions from charter services in Minneapolis and St. Paul. Arrangements to be made via the site emergency organization at the EOF.

- 3.8 The normal means of communication for the survey teams is the portable radios. The normal telephone system will serve as a backup communication system. Telephone numbers in the TSC for the Radiological Emergency Coordinator are:

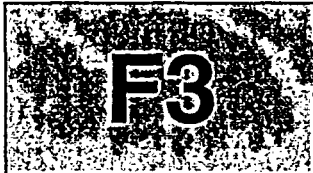
(651) 388-1121
(800) 216-1986
x4350
x4334
(715) 839-0382
(612) 330-7690

Local Plant
Long Distance Plant
REC
F.T. Com.
REC (Wisconsin)
REC (Twin Cities)

Telephone numbers at the EOF are:

Prairie Island EOF	Contact	Monticello EOF
(651) 388-1121, Ext. 4502	Field Team Comm	(763) 295-1504
(651) 388-1165, Ext. 5244	RPSS	(763) 295-1503
(651) 388-1121, Ext. 4500	EOF Coordinator	(763) 295-1502
(651) 388-1121, Ext. 4505	EOF Count Room	(763) 295-1435
(651) 388-1165, Ext. 5236	EOF Count Room	(763) 295-1583

- 3.9 Periodically check dosimeter readings and report results to the Radiological Emergency Coordinator (REC), or the Radiation Protection Support Supervisor (RPSS).

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:	F3-15
		REV:	23

- 3.10 Check meter batteries by switching to BATTERY CHECK position. Replace if necessary.
- 3.11 Meters checks **SHALL** be completed prior to use.
- 3.12 Observe the cold weather operation restrictions (Attachment C).
- 3.13 All surveys should be taken at approximately one meter from ground unless specifically directed by the REC, or RPSS.
- 3.14 During inclement weather, the instrument may be placed against the inside vehicle window or on the dash.
- 3.15 IF connecting or disconnecting the air sampler to the vehicle battery, located in the engine compartment, THEN turn the vehicle **OFF**. (personnel safety)
- 3.16 Particulate filters and silver zeolite adsorbers must be installed and removed carefully to prevent cross-contamination from foreign objects.
- 3.17 The air sample should be a standard 25 cubic foot sample. Sample collection time may be affected if the activity is too high.
- 3.18 All samples **SHALL** be labeled properly with the required information and saved for further analysis.
- 3.19 If hands are contaminated, handle samples with surgeon gloves.
- 3.20 Don appropriate protective clothing for the situation to be expected, this includes orange safety vests when working along roadsides.

4.0 RESPONSIBILITIES

- 4.1 The REC and the RPSS have the responsibility to determine sample priorities and to direct the Radiation Survey teams sampling.
- 4.2 The Radiation Survey teams have the responsibility to conduct sampling during a radioactive Airborne release in accordance with this procedure.
- 4.3 The Radiation Team communicator has the responsibility to maintain communications between the Radiation Survey Teams and the REC in the TSC or the RPSS in the EOF.

**RESPONSIBILITIES OF THE RADIATION
SURVEY TEAMS DURING A
RADIOACTIVE AIRBORNE RELEASE**

NUMBER:	F3-15
REV:	23

5.0 DISCUSSION

There are three radiation survey teams. Two (2) teams perform offsite surveys and another team provides onsite coverage. Each offsite Survey Team as a minimum requires one (1) Survey Team Member. A second Survey Team Member is desirable. Another person maybe assigned as a driver. All team members report to the Radiological Emergency Coordinator (REC) in the Operation Support Center, for assignments. Other personnel can be used to assist Survey Team Members. The Survey Team Member has the responsibility to ensure proper survey and sampling technique and to perform field calculations.

In the event of an offsite airborne release, the Radiological Emergency Coordinator (REC) may request support for offsite surveys from Monticello. When the Monticello Field Teams arrives at the Prairie Island Near-Site EOF, they will be provided Prairie Island Radios if necessary and they will accept the responsibility for offsite surveys and sampling. This allows the Prairie Island personnel, to augment the Onsite Radiation Survey Team. All offsite surveys will continue under the direction of the Emergency Manager at the Prairie Island Near-Site EOF, with the Offsite Survey Teams reporting their activities to the Radiation Protection Support Supervisor.

6.0 EQUIPMENT AND PERSONNEL REQUIRED**6.1 Team Members**

Personnel trained in performing surveys.

6.2 Team Equipment Required**6.2.1 Field Teams 1 & 2 (Offsite Survey Teams)**

A. Vehicle (plant or personal)

B. Offsite sample kit (Attachment A)

6.2.2 Onsite Radiation Monitoring Team

A. Normal counting room equipment, if available

B. E.O.F. counting room equipment

C. All available onsite radiation protection equipment

7.0 PREREQUISITES

An emergency of an Alert, Site Area, or General Emergency has been declared.

F3	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:
		F3-15
		REV: 23

8.0 PROCEDURE

8.1 All members of Radiation Survey Teams should **assemble** in the Operational Support Center, unless directed by the Emergency Director or the Radiological Emergency Coordinator (REC):

8.2 Field Teams 1 & 2 (Offsite Survey Teams)

8.2.1 **Obtain** the necessary information from the Control Room Operator or TSC personnel regarding the type and amount of release, wind direction, etc.

8.2.2 **Designate** two (2) members for Team 1 and two (2) members for Team 2 (if available) to perform offsite surveys.

NOTE

Any available plant personnel may be designated as the driver for a single team member.

8.2.3 **Obtain** a plant vehicle or personal vehicle.

8.2.4 **Obtain** the necessary equipment (Attachment A) from the NPD Office Building equipment locker or EOF.

8.2.5 **Obtain** TLD's and dosimeters for each Team member.

NOTE

Survey Team Members should keep their personal TLD's if departing from the plant site.

8.2.6 **Ensure** dosimeter is <25% of scale and **record** readings on the dosimeter signout sheet.

8.2.7 **IF** vehicle with installed radio is NOT available, **THEN obtain** a portable radio, and magnetic antenna from EOF Receiving Area.

8.2.8 **Test** the operation of the radios (on channel 13, Rad Team 1) and meter check all meters prior to departing.

8.2.9 **Perform** offsite surveys as directed by REC or RPSS.

8.2.10 **Conduct** a search for the plume, in accordance with Attachment D, when departing the plant site.

**RESPONSIBILITIES OF THE RADIATION
SURVEY TEAMS DURING A
RADIOACTIVE AIRBORNE RELEASE**

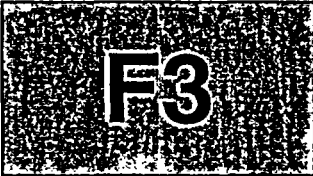
NUMBER:

F3-15

REV:

23

- 8.2.11 Observe the respiratory protection and the field dose rate precautions, as stated in Attachment B, at all times.
- 8.2.12 Perform beta and gamma surveys in accordance with the applicable procedure, Attachment E, as directed by the REC, or the RPSS at areas where the plume is encountered, or at each designated survey point.
- 8.2.13 Identify survey locations using either:
- A. Predesignated survey location numbers, as shown on the applicable Radiological Sampling Points map;
 - OR
 - B. Known landmarks, road intersections, grid coordinates, etc. to identify locations the plume is encountered and/or sampling is done when NOT at a predesignated survey point.
- 8.2.14 Report results to the REC, or the RPSS, via the radio or telephone.
- 8.2.15 Obtain airborne samples (particulate, iodine and gas), or ground deposition samples, at locations requested by the REC, or RPSS, IAW Attachments F, G, and H.
- 8.2.16 Document all survey data on the PINGP 1226, Field Team Air Sample Results Log, PINGP 1227, Plume Search Log, or PINGP 956, Ground Deposition Sample Results Log.
- 8.2.17 WHEN directed by REC or RPSS, One (1) Team should perform offsite surveys depending on the wind direction and time of emergency per Attachment I.
- 8.2.18 Check personal dosimeters frequently. IF cumulative exposure approaches administrative limits, THEN request relief.
- 8.2.19 WHEN directed by the REC or RPSS, THEN deliver samples to the designated location for pickup by a Sample Courier.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
		REV: 23

8.3 Radiological Monitoring Team

- 8.3.1 Perform all operations requested by the Emergency Director or REC.
- 8.3.2 Control radiation exposure onsite (internal and external).
- 8.3.3 Analyze air samples, ground deposition samples, food stuffs, etc., obtained by the onsite and offsite survey teams, using the Count Room facilities and/or the E.O.F. count room facilities. Store all samples for future analysis.
- 8.3.4 Perform onsite surveys as requested by the Emergency Director and/or REC per F3-14.1, Onsite Radiological Monitoring.
- 8.3.5 Perform required personnel monitoring at the emergency operating centers and supervise any necessary personnel decontamination per F3-19, Personnel and Equipment Monitoring and Decontamination.
- 8.3.6 Obtain and process samples from the reactor coolant system, containment air, stack release, etc., as requested by the REC per F3-23, Emergency Sampling and F3-20, Determination of Radioactive Release Concentrations.
- 8.3.7 Report all results to the REC via the available communication system.

8.4 Radiation Field Team Communicator

- 8.4.1 Report to the Technical Support Center when the emergency is declared, and utilize PINGP 1156, TSC Field Team Communicator Checklist.
- 8.4.2 Obtain current plant status, release information and meteorological data.
- 8.4.3 Establish communications with the Field Teams, using the TSC Console in the REC area.
 - A. Identify teams as PI Team 1, etc.
 - B. Obtain team member names.
 - C. IF radio communication is NOT possible, THEN Survey Teams will utilize telephone system.
 - D. Update Teams with present plant status, release information, met data, etc.



RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE

NUMBER:
F3-15
REV: **23**


- 8.4.4 Dispatch Survey Teams in the downwind direction, to conduct a search where the plume is expected. The search area should be wide enough to ensure plume is encountered. **DO NOT** let Survey Teams sit idle. Crossing of the plume by field teams should be limited in order to minimize personnel dose.
- 8.4.5 IF and WHEN directed by the REC, THEN direct one field team to perform surveys IAW Attachment I.
- 8.4.6 Plume search should be conducted to identify the edges of the plume, confirm the projected dose rates associated with the plume, and verify the expected isotopic mixture.

NOTE:

Consider that plume diversion is likely to occur if the wind is from the East or West such that the plume is traveling towards the Minnesota or Wisconsin bluffs. Deploy the survey teams to conduct a plume search both beyond the bluffs and up and down the valley, where plume diversion is likely to occur.

- A tall object (bluff or mountain) will normally prevent dispersion and will almost always change the plume direction.
- The bluffs and hills around the plant can change the plume direction by more than 90° depending on the time of day. During morning hours it is possible for the plume to double back on itself due to heating of the air in the valley.
- Most of the bluffs are within about 1.5 miles of the plant and therefore plume diversion is going to occur within about the first 20 minutes of the release in low wind situations.
- A wind direction from about 345° to about 35° can result in severe diversion as the plume goes over Mt. Carmel and into the Cannon Valley.

- 8.4.7 Log pertinent information and Survey Team results on the REC Log, PINGP 598, Emergency Center Narrative Log, or PINGP 647, Field Team Communicator Emergency Sample Results Log.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
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Repeat results for verification from survey teams if numerical results are communicated.

- 8.4.8** Instruct the Survey Teams to obtain particulate, iodine and gas samples, as directed by the REC when the plume has been encountered. Air samples taken within the plume (beta activity detected) should be taken in areas of low dose rates, if possible.

Obtaining a sample for iodine and radioactive gas and determining the ratio of gas to iodine is crucial for verifying the offsite doses and can affect protective action recommendations. This is especially critical during steam releases as there are limited sampling methods in the plant. Therefore, these samples should be taken as soon as possible when the plume is encountered. These samples must be taken in the plume (area where beta is detectable).



These samples take approximately 20-30 minutes to accomplish. Communicator should minimize radio contacts with sampling team until the team reports sampling results.

- 8.4.9** Instruct the Survey Teams to return samples to the EOF Count Room for analysis, or dispatch a sample courier.

- 8.4.10** Develop a plume map as follows:

- Obtain** dose projection data, if available, and **plot** on survey map (use red marker). Also plot the time on the mile markers when the plume is expected to arrive.
- Plot** Survey Team results on map (use blue marker). Log gamma and beta survey results in mREM/hr followed by air sample results in $\mu\text{Ci/cc}$.
- Determine** the plume edges and **plot** on the map.
- Plot or outline** areas (using green marker) indicating where protective actions have been implemented or recommended.
- Occasionally **direct** survey team to check location of plume front edge and **note** on map with time circled.

F3**RESPONSIBILITIES OF THE RADIATION
SURVEY TEAMS DURING A
RADIOACTIVE AIRBORNE RELEASE**

NUMBER:

F3-15REV: **23**

8.4.11 Perform a comparison of radiological data as follows:


- A. Compare offsite monitoring results for consistency. Re-monitor areas of concern.**
- B. Compare offsite monitoring results with dose calculation projections. Re-monitor areas of concern.**
- C. Compare plume dose rates close to plant with projected dose rates. This will allow dose projection adjustments and may affect offsite protective action recommendations.**
- D. Inform REC, or RPSS, of results.**

8.4.12 Update the Field Teams periodically with:

- A. Emergency Classification**
- B. Plant Status**
- C. Release Information**
- D. Meteorological Data**

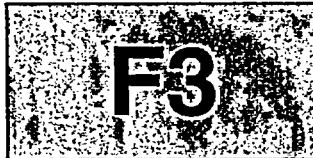
8.4.13 Direct the Field Teams periodically to read their dosimeters and log results.

8.4.14 Instruct the Prairie Island Field Teams to report to the OSC for onsite assignments when the Monticello Field Teams assume responsibility for offsite surveys.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
		REV: 23

Attachment A Offsite Survey Team Equipment Package**1. Each offsite survey team should be equipped with a kit containing the following:**

- Dose rate instrument RO-2 or equivalent
- Count rate instrument RM-14 or equivalent
- 2" GM pancake probe
- Battery powered air sampler
- Personnel self-reading dosimeters (Low Range)
- Personnel self-reading dosimeters (High Range)
- TLD's (if individuals have a normally assigned TLD, they should wear those assigned)
- Plastic Sample Bags
- Garbage bags
- Paper towels
- Masking tape
- Silver zeolite adsorbers
- GMR-I canisters
- Full Face respirators
- Gas Sample Chambers
- Filter assembly (gas sampler)
- Suction bulb (gas sampler)
- Filter paper (gas sampler)
- One liter poly bottles
- Four inch air sampler filter papers
- Survey sample labels
- For Monticello response: IF NOT using vehicles with a radio installed pick up spare radio in EOF or get radio from Monti.
- Flashlight
- D-Cell batteries
- Potassium Iodide Tablets (Thyroid Blocking Agent)
- Orange safety vests
- Tweezers
- Anti-C clothing
- Life Jackets
- PI Field Team vehicles have PI radios installed

**RESPONSIBILITIES OF THE RADIATION
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23**Attachment A - Offsite Survey Team Equipment Package**


- Compass
- Clipboard
- Pens
- Pad of paper (8-1/2" x 11" minimum size)
- Road map of State of Minnesota
- Road map of State of Wisconsin
- Umbrella
- Watch or clock
- Calculator
- Foul weather (rain) gear
- Line (100 feet)
- Weighted poly bottle holder
- Snow Scoop
- Surgeon gloves

2. The Procedures Binder contains:

- Ground Deposition Sample Results Log Forms
- Plume Search Survey Log Forms
- Copy of F3-15, "Responsibilities of the Radiation Survey Teams During a Radioactive Airborne Release"
- Copy of F3-16, "Responsibilities of the Radiation Survey Teams During a Radioactive Liquid Release"
- Copy of F3-22, "Prairie Island Radiation Protection Group Response to A Monticello Emergency"
- Narrative Log

3. Prairie Island and Monticello Emergency Plan Map Sets**4. Aluminum Forms Clipboard/holder:**

- Field Team Air Sample Results Forms

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
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Attachment B Survey Team Radiation Protection Guidelines

1.0 Respiratory Protection

1.1 Radiation Survey Team members should **don** respirators with GMR-I canisters IF the following conditions occur:

1.1.1 A General Emergency is declared AND the affected sectors have been evacuated;

AND

1.1.2 Measured dose rates are more than 100 mREM/hr β , [(w/o - w/c)5] OR IF directed otherwise by the REC or RPSS.

1.2 Respiratory equipment may be **removed** IF the following is indicated:

1.2.1 Field measurement of gross iodine activity indicates less than $1\text{E-}7 \mu\text{Ci/cc}$;

OR

1.2.2 The REC, or RPSS, indicates that no significant iodine is OR has been released from the plant.

OR

1.2.3 Measured dose rates are less than 100 mREM/hr β , [(w/o - w/c)5] OR as directed by the REC or RPSS.

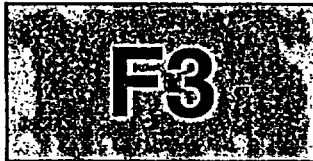
2.0 Plume Dose Rates

2.1 Survey Teams should periodically **read** their personal dosimeters as determined by observed dose rates.

2.2 Survey Teams should **NOT** linger in areas greater than 100 mREM/hr gamma.

2.3 Survey Teams should **NOT** **proceed** to areas greater than 1000 mREM/hr gamma unless directed by the REC, or the RPSS.


2.4 Survey Teams **SHALL NOT** proceed to areas exceeding 10,000 mREM/hr gamma.

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F3-15REV: **23****Attachment C Cold Weather Operation**

1. IF outside temperature is greater than 32°F (0°C), THEN instrument use is unlimited.
2. IF outside temperature is between 32°F (0°C) and 0°F (-18°C), THEN no instrument should be used for more than 5 minutes.
3. IF outside temperature is between 0°F (-18°C) and -20°F (-28°C), THEN no instrument should be used for more than 2 minutes.
4. IF the outside temperature is below -20°F (-28°C), THEN no instrument should be used unless special batteries (alkaline or Ni-CD) are in the instrument and this would increase the temperature range to -40°F (-40°C). The instrument should only be used for very short times (less than 30 seconds).
5. The instrument should completely warm up between periods of cold weather use. Instrument warm-up may be indoors or in a heated vehicle and should take 2-5 minutes.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
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Attachment D Plume Search Technique**1. Purpose**

Plume search should be conducted to identify the edges of the plume, confirm the projected dose rates associated with the plume, and verify the expected isotopic mixture.

NOTE:

All surveys should be taken at approximately one meter from ground unless specifically directed by the REC, or RPSS.

2. WHEN departing the plant site:

- 2.1 **Energize** the instrument observing proper precautions for cold weather (Attachment C).
- 2.2 **Allow** meter to stabilize and **zero** meter.
- 2.3 **Record** the sample results on PINGP 1227, Plume Search Survey Log.

3. Hold the instrument out the vehicle window, while in transit, and watch the instrument for a meter deflection.**NOTE:**

During inclement weather, the instrument may be placed against the inside vehicle window or on the dash.

4. Stop the vehicle and perform a beta and gamma survey of the area when a meter deflection is observed as follows:

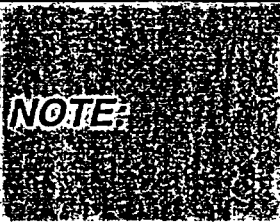
- 4.1 **Scan** the area for maximum meter deflection.
- 4.2 **Open** the probe window for beta gamma reading.
- 4.3 **Record** the "window open" reading.
- 4.4 **Close** the probe window.
- 4.5 **Record** the "window closed" reading.
- 4.6 **Determine** the corrected beta reading.

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F3-15REV: **23****Attachment D Plume Search Technique**

5. Calculate the beta and gamma dose utilizing PINGP 1227, Plume Search Survey Log 7.




1. A gamma reading with zero beta reading indicates the plume is elevated or displaced.
2. A gamma reading and a beta reading indicates that the plume is at ground elevation.
3. Crossing of the plume by field teams should be limited in order to minimize personnel dose.

6. Report the results to the REC, or the RPSS via the Field Team Communicator, as follows:

6.1 Location: _____

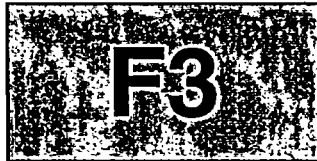
6.2 _____ milliRem/hr Gamma

6.3 _____ milliRem/hr Beta, [(w/o - w/c)5]

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:	F3-15
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Attachment E Beta and Gamma Survey

1. **Record** results on PINGP 1227, Plume Search Survey Log.
 2. **Energize** the instrument.
 3. **Allow** the meter to stabilize and **zero** meter.
 4. **Switch** to the highest scale and **scale down** until an onscale reading is obtained.
 5. **Scan** area at approximately one meter from ground for maximum reading.
 - 5.1 **OPEN** the probe window to obtain the beta-gamma reading.
 - 5.2 **CLOSE** the probe window to obtain the gamma reading.
 6. Determine the beta and gamma dose rates as follows:
 - 6.1 **GAMMA (mRem/hr)** = "Window CLOSED" reading
 - 6.2 **BETA (mRem/hr)** = "Window OPEN" reading minus
"Window CLOSED" reading times
CF or (w/o - w/c) CF
- Where:
- CF = beta correction factor for meter or
assume 5.
- Beta dose rate reported in mRem/hr "Beta"
assuming a quality factor of 1.
7. **Report** results to REC, or RPSS via the field team communicator.



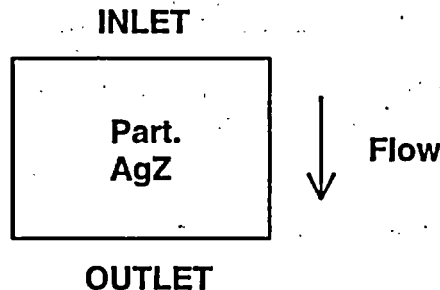
RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE

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Attachment F Particulate and Iodine Sampling


1. Record results on PINGP 1226, Field Team Air Sample Results.




2. Install a new particulate filter and silver zeolite adsorber into the cartridge/filter paper holder as follows:
3. The air sampler **SHALL** be placed in an area that will ensure a representative sample. **DO NOT** place the sampler on the ground or on contaminated surfaces.
4. IF connecting OR disconnecting to the battery in the Engine compartment, THEN turn OFF the engine.
5. IF using terminals located in rear of vehicle, THEN connect the negative (yellow) terminal and then the positive (red) terminal
6. Connect the air sampler (CF-18V) to the vehicle 12 Volt battery terminals.
 - 6.1 IF the vehicle engine is NOT running, THEN start the engine to maintain a steady battery voltage.
 - 6.2 Set the TIMER toggle switch to either the TIME or the MANUAL POSITION.
 - 6.3 IF the TIMER switch is in the TIME position, THEN WHEN the TIMER times out, the sample pump will stop.
 - 6.4 IF TIMER switch is in the MANUAL position, THEN the sampler needs to stop manually at the designated time.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:
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Attachment F Particulate and Iodine Sampling

	(1) DO NOT USE HIGH SWITCH POSITION (CAUSES HIGH FLOW AND MOTOR DAMAGE). (2) STOP THE AIR SAMPLER TO PREVENT DAMAGE TO THE UNIT IF THE SAMPLER BEGINS TO RUN HOT, (FLOW DECREASING CONTINUOUSLY).
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- 6.5 Set the FLOW TOGGLE switch to the VARIABLE position. The air sampler will now start.
- 6.6 Adjust the flow, using the flow adjustment knob, to 2.5 CFM and collect sample for 10 minutes to obtain a 25 cubic foot sample.
- 6.7 Record the flow rate, sample start and stop time on PINGP 1226, Field Team Air Sample Results.
- 6.8 Disconnect the positive (red) terminal and then the negative (yellow) terminal.
7. Place the particulate filter and silver zeolite adsorber in separate plastic sample bags.
8. Utilize PINGP 1226, Field Team Air Sample Results, to calculate field sample activities.
9. Estimate gross activity in the field by the following methods:
 - 9.1 Particulate Activity –
 - 9.1.1 Count the particulate filter outside plastic bag using an RM-14 (or equivalent) with a 2" GM pancake probe.
 - 9.1.2 Estimate the gross particulate activity using Figure 4 or the following formula:

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Attachment F Particulate and Iodine Sampling

$$\text{Sample Vol cc's} = (\text{CFM})(\text{Sample Flow CF})(\text{Sample Time in Min.})(2.83\text{E}4\text{cc/ft}^3)$$

$$\text{Activity } (\mu\text{Ci/cc}) = \frac{(\text{Background Corrected Count Rate}) (4.5 \times 10^{-7} \mu\text{Ci/dpm})}{(\text{Probe Efficiency}) (\text{Sample Volume, cc's}) (\text{CF})}$$

NOTES:	<ol style="list-style-type: none"> 1. Probe efficiency = 0.1 for RM-14, or E120, with a 2" GM pancake probe. 2. Place the 2" GM pancake probe about 1/8" from the filter, with filter outside poly bag. 3. CF = Correction factor for sample. CF is .3 for 4 inch paper counted with a 2 inch probe. 4. Sample Volume (cc's) = (Cubic feet/min.) (Sample time in min.) (2.83 x 10⁴ cc/ft³) (sampler flow correction factor).
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9.1.3 Log $\mu\text{Ci/cc}$ on PINGP 1226.

9.2 Iodine Activity –

9.2.1 Count the silver zeolite adsorber using an RM-14 or equivalent, with probe contacting the bag.


9.2.2 Calculate sample activity using Figure 2 or the following formula:

$$\text{Iodine Activity } (\mu\text{Ci/cc}) = \frac{(\mu\text{Ci's on adsorber})}{(\text{Sample Volume in cc's})}$$

NOTES:	<ol style="list-style-type: none"> 1. $\mu\text{Ci's on adsorber}$ = activity on adsorber determined from Figure 2 using the corrected count rate. 2. Place 2" GM pancake probe directly on adsorber, with adsorber inside poly bag.
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9.2.3 Log $\mu\text{Ci/cc}$ on PINGP 1226.

10. IF requested, THEN conduct Gaseous Activity Sampling per Attachment G.

	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
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Attachment F Particulate and Iodine Sampling

11. Report the results to the REC, or the RPSS.
12. Separate colored NCR copies of PINGP 1226 Field Team Air Sample Results, and attach to the respective samples:

Golden Rod copy.

Pink copy

Yellow copy

White copy

Gas Sample

AgZ Adsorber

Particulate Filter

Field Team copy

13. Save all samples for future analysis.

**RESPONSIBILITIES OF THE RADIATION
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F3-15REV: **23****Attachment G Gaseous Activity Sampling**

1. **Assemble** gas sample apparatus so air passes through filter, gas chamber, then suction bulb.
2. **Install** new filter in filter assembly.
3. **Open** the stop cocks on the gas chamber.
4. **Squeeze** suction bulb minimum of 10 times to obtain representative sample.
5. **Shut** the stop cocks on the gas chamber.
6. **Obtain** a count rate of the chamber volume using an RM-14 or equivalent and a 2 inch GM pancake probe by placing the probe over the mylar window.
7. **Log** the result as "gross CPM", on PINGP 1226, Field Team Air Sample Results.
8. **Obtain** a second chamber labeled "Background". **DO NOT OPEN** the stop cocks of the background chamber.
9. **Obtain** a background count rate by placing a 2 inch GM pancake probe over the mylar window.
10. **Log** the results as "Background CPM", on PINGP 1226.
11. **Obtain** the "Net CPM" by subtracting the "Background CPM" from the "Gross CPM".
12. **Apply** the "Net CPM", obtained by using, Figure 3 to determine the gross gas activity in $\mu\text{Ci/cc}$ Xe-133 equivalent.
13. **Record** the air sample results on PINGP 1226, and **report** the results to the Radiological Emergency Coordinator, or the Radiation Protection Support Supervisor.
14. **Attach** the Golden Rod copy of PINGP 1226 to the Gas Sample and **save** the sample for future analysis.
15. **Estimating** the Gross Gaseous Activity in the plume can be done by:

A (w/o - w/c) reading of about 30 mRem/hr indicates a gas concentration (Xe-133 Dose Equivalent) of about $1 \times 10^{-3} \mu\text{Ci/cc}$. Therefore (w/o - w/c) $(3 \times 10^{-5}) = \mu\text{Ci/cc}$ Xe-133 DE.

F3	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER: F3-15
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Attachment H Ground Deposition Sampling

1. Procedure for Direct Frisk Survey to Determine Ground Deposition Activity

- 1.1 Energize an RM-14 or an E-120 survey meter with a 2" pancake probe, and allow the meter to stabilize.
- 1.2 Switch to highest scale and scale down until an onscale reading is obtained.
- 1.3 Scan flat surfaces in the designated area (e.g., roads, lawns, mailboxes, vehicle, fields, etc.), holding the pancake probe about 1" from the surface.
- 1.4 Record survey results on a PINGP 956 Ground Deposition Sample Results Log and calculate ground deposition activity as follows:

$$\mu\text{Ci}/\text{m}^2 = \frac{\text{Net CPM}}{400}$$

NOTE:

Net CPM is frisker count rate about 1" from surface.

- 1.5 Notify the REC, or RPSS, of the survey results

2. Procedure for Smear Samples to Determine Ground Deposition Activity

- 2.1 Utilize numbered cloth smears and plastic bags.
- 2.2 Proceed to designated area for survey and using moderate pressure, swipe an area, along a line or shape 15 - 18 inches in length (100 cm²).

NOTE:

Surfaces to be smeared should be smooth (e.g., cars, mail boxes, machinery, rain gutters, etc.).

- 2.3 Fold the smear folder in half and place in a plastic bag.

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23**Attachment H Ground Deposition Sampling**

- 2.4 **Count** the smears in a low background area, using an RM-14 or E-120 with a 2" pancake probe. **Cover** work area with poly or absorbent paper to minimize contamination spread. **Hold** the probe about 1/8" above the smear while counting.
- 2.5 **Record** results on a Ground Deposition Sample Results Log PINGP 956, and **calculate** ground deposition activity as follows:

$$\mu\text{Ci}/\text{m}^2 = \frac{\text{Smear CPM} - \text{BKGD CPM}}{200}$$

- 2.6 **Notify** the REC, or RPSS, of the survey results.
3. Procedure for Gamma Exposure Rate Survey to Determine Ground Deposition Activity
- 3.1 **Proceed** to designated survey area, as requested by the REC, or RPSS.
- 3.2 **Conduct** a survey with an RO2/RO2A or equivalent.
- 3.3 **Energize** the instrument and **allow** meter to stabilize.
- 3.4 **Scan** area while observing meter for maximum meter deflection, with Beta Window **CLOSED**, one meter from the ground.
- 3.5 **Record** results on a Ground Deposition Sample Results Log PINGP 956, and **calculate** ground deposition activity as follows:
- $$\mu\text{Ci}/\text{m}^2 = (\text{mR}/\text{hr}) \times 100$$
- 3.6 **Notify** the REC, RPSS, of the survey results.

F3	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:	F3-15
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Attachment H Ground Deposition Sampling**4. Procedure for Snow/Dirt Sampling to Determine Ground Deposition Activity**

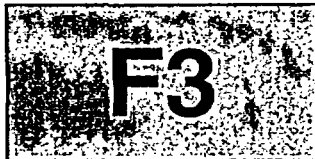
- 4.1 Proceed to designated survey area, as requested by the REC, or RPSS, and select an area where the sample will be taken.**

NOTE:	The area selected should be based on an evaluation of current weather and ground cover conditions (high winds, rain, snow, dirt, etc.) such that the sampled area is representative of the ground cover surface. Sample the area where the deposition of contamination is most likely to occur.
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- 4.2 Remove Snow/Dirt from area surface to a depth of about 1 centimeter (about 0.4 inches) utilizing the scoop from Field Survey Kit.**

NOTE:	The area of the snow scoop is approximately 1,000 square centimeters. By removing surface snow, to a depth of 1 centimeter, the volume of the melted snow sample will be approximately 100 cubic centimeters of liquid, assuming 10:1 snow/water ratio.
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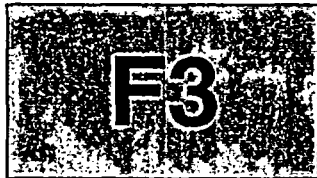
- 4.3 Place the sample material in a poly bag, seal, label and save the sample or future analysis.**
- 4.4 Document sample collection on a Ground Deposition Sample Results Log PINGP 956.**
- 4.5 Activity will be determined by the Count Room.**

**RESPONSIBILITIES OF THE RADIATION
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Attachment I Radiation Survey Team Survey Route Description

1. IF the wind is from the north or west, THEN proceed on the Emergency Route from the plant, through Red Wing, to Diamond Bluff, to Prescott, to Hastings, and back to the plant as shown on Figure 1.
2. IF the wind is from the south or east, THEN proceed on the Emergency Route from the plant, to Hastings, to Prescott, to Diamond Bluff, to Red Wing, and back to the plant, as shown on Figure 1.
3. AFTER completing the emergency route (Figure 1), THEN report to the REC, or RPSS, for further survey instructions.



**RESPONSIBILITIES OF THE
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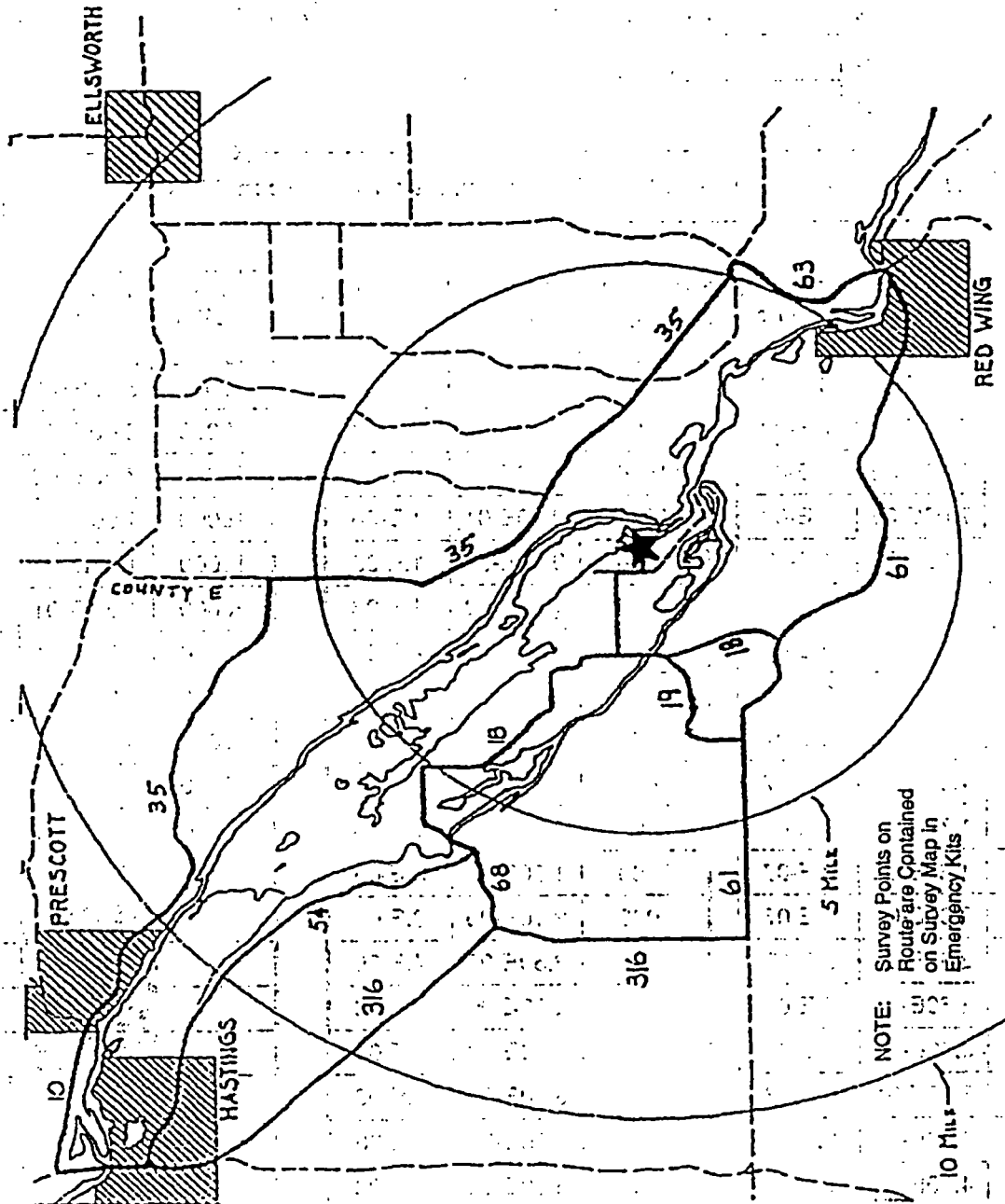
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Figure 1 Radiation Survey Team Survey Route





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Figure 2 Gross Iodine Table Using RM-14 or Equivalent With 2 Inch Pancake Probe With Silver Zeolite Absorber

Run Time	10	Minutes	Volume	707500	cc
Flow rate	2.5	CFM			
Cor. Fact	1				

NOTE:

The uCi/cc activity assumes the above conditions.

CCPM	uCi Iodine	uCi/cc
100	4.30E-02	6.E-08
120	5.30E-02	7.E-08
140	6.00E-02	8.E-08
160	7.00E-02	1.E-07
180	9.00E-02	1.E-07
200	1.00E-01	1.E-07
220	1.20E-01	2.E-07
240	1.40E-01	2.E-07
260	1.50E-01	2.E-07
280	1.60E-01	2.E-07
300	1.70E-01	2.E-07
350	1.80E-01	3.E-07
400	2.00E-01	3.E-07
450	2.30E-01	3.E-07
500	2.60E-01	4.E-07
600	3.00E-01	4.E-07
700	3.60E-01	5.E-07
800	4.00E-01	6.E-07
900	4.60E-01	7.E-07

CCPM	uCi Iodine	uCi/cc
1000	5.00E-01	7.E-07
1200	6.00E-01	8.E-07
1400	7.00E-01	1.E-06
1600	8.00E-01	1.E-06
1800	9.00E-01	1.E-06
2000	1.00E-00	1.E-06
2200	1.10E-00	2.E-06
2400	1.20E-00	2.E-06
2600	1.40E-00	2.E-06
2800	1.50E-00	2.E-06
3000	1.60E-00	2.E-06
3500	1.80E-00	3.E-06
4000	2.10E-00	3.E-06
4500	2.50E-00	4.E-06
5000	2.80E-00	4.E-06
6000	3.20E-00	5.E-06
7000	3.80E-00	5.E-06
8000	4.50E-00	6.E-06
9000	5.00E-00	7.E-06

CCPM	uCi Iodine	uCi/cc
10000	5.60E+00	8.E-06
12000	6.00E+00	8.E-06
14000	7.50E+00	1.E-05
16000	1.00E+01	1.E-05
18000	1.30E+01	2.E-05
20000	1.50E+01	2.E-05
25000	2.50E+01	4.E-05
30000	3.30E+01	5.E-05
35000	5.00E+01	7.E-05
40000	6.00E+01	8.E-05
45000	1.00E+02	1.E-04

F3	RESPONSIBILITIES OF THE RADIATION SURVEY TEAMS DURING A RADIOACTIVE AIRBORNE RELEASE	NUMBER:
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Figure 3 Gas Chamber Table Using RM-14 or equivalent with
2 Inch GM Pancake Probe with 100 CC S.S. Gas Chamber

CCPM	uCi/cc (Xe-133 equiv.)
100	1.E-05
150	2.E-05
200	2.E-05
250	3.E-05
300	4.E-05
350	5.E-05
400	5.E-05
450	6.E-05
500	7.E-05
600	9.E-05
800	1.E-04
1000	2.E-04
1200	2.E-04
1400	2.E-04
1600	3.E-04
1800	3.E-04
2000	4.E-04

CCPM	uCi/cc (Xe-133 equiv.)
2500	4.E-04
3000	6.E-04
3500	8.E-04
4000	9.E-04
4500	1.E-03
5000	1.E-03
5500	1.E-03
6000	1.E-03
8000	2.E-03
10000	3.E-03
12000	3.E-03
14000	4.E-03
16000	5.E-03
18000	5.E-03
20000	6.E-03
25000	8.E-03
30000	1.E-02


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Figure 4 –Gross Particulate Table Using RM-14 Or Equivalent With 2 Inch Pancake Probe

Run Time	10	Minutes	volume	707500	cc	4" filter CF	0.3
Flow rate	2.5	CFM	Probe eff.	0.10			
Flow CF	1		Conversion	4.51E-07	uCi/dpm		

NOTE:	The uCi/cc activity assumes the above conditions.
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CCPM	uCi/ cc
100	2.E-09
120	3.E-09
140	3.E-09
160	3.E-09
180	4.E-09
200	4.E-09
220	5.E-09
240	5.E-09
260	6.E-09
280	6.E-09
300	6.E-09
350	7.E-09
400	8.E-09
500	1.E-08
600	1.E-08
700	1.E-08
800	2.E-08
900	2.E-08

CCPM	uCi/ cc
1000	2.E-08
1200	3.E-08
1400	3.E-08
1600	3.E-08
1800	4.E-08
2000	4.E-08
2200	5.E-08
2400	5.E-08
2600	6.E-08
2800	6.E-08
3000	6.E-08
3500	7.E-08
4000	8.E-08
4500	1.E-07
5000	1.E-07
5500	1.E-07
6500	1.E-07
7000	1.E-07

CCPM	uCi/ cc
7000	1.E-07
8000	2.E-07
9000	2.E-07
10000	2.E-07
12000	3.E-07
14000	3.E-07
16000	3.E-07
18000	4.E-07
20000	4.E-07
25000	5.E-07
30000	6.E-07
35000	7.E-07
40000	8.E-07
45000	1.E-06