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## **RECOGNITION AND CLASSIFICATION**

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## **OF EMERGENCY CONDITIONS**

CONTROLLED BVPS UNIT 1

**Revision 4** 

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EPP/I-1a Unit 1

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- A. Purpose
- B. References
- C. Responsibilities
- D. Action Levels/Precautions
- E. Procedure
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#### A. <u>PURPOSE</u>

- 1.0 This procedure describes the immediate actions to be taken to recognize and classify an emergency condition.
- 2.0 This procedure identifies the four emergency classifications and emergency action levels.
- 3.0 Reporting requirements for non-emergency abnormal events are provided.

#### B. <u>REFERENCES</u>

- 1.0 Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
- 2.0 Title 10, Code of Federal Regulations Part 50, Appendix E.
- 3.0 NUREG-0654/FEMA-REP-1, <u>Criteria for Preparation and Evaluation of</u> <u>Radiological Emergency Response Plans and Preparedness in Support of Nuclear</u> <u>Power Plants</u>
- 4.0 Beaver Valley Power Station Operating Manual
- 5.0 NUMARC/NESP-007, <u>Methodology for Development of Emergency Action</u> <u>Levels</u>
- 6.0 ERS-SFL-91-041-REV 1 (U1/U2 Containment Monitor Readings due to LOCA's with various Source Terms).
- 7.0 Condition Report #992522
- 8.0 Condition Report #991327-1
- 9.0 Unit 1 Technical Specification Amendment 204 and Unit 2 Technical Specification Amendment 101.
- 10.0 EPPOS #2 "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions".
- 11.0 NEI 99-02 "Regulatory Assessment Performance Indicator Guideline"
- 12.0 Condition Report #00-3939
- 13.0 Condition Report #99-1234
- 14.0 Condition Report #02-02125-02
- 15.0 Condition Report #02-05069
- 16.0 Unit 1 Technical Specification Amendment 244

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- 17.0 Calculation Package No. ERS-ATL-93-021
- 18.0 ODCM Procedure 1/2-ODC-2.01
- 19.0 Calculation Package No. ERS-HHM-87-014
- 20.0 Calculation Package No. ERS-SFL-86-005
- 21.0 Calculation Package No. ERS-SFL-99-014
- 22.0 Condition Report #02-08649
- 23.0 Condition Report #02-09224

#### C. <u>RESPONSIBILITY</u>

The Emergency Director (Shift Manager, until properly relieved by a designated alternate) has the responsibility and authority for the performance of the actions prescribed in this procedure.

#### D. <u>ACTION LEVELS/PRECAUTIONS/GUIDANCE</u>

- 1.0 ACTION LEVELS
  - 1.1 An off-normal event has occurred.
  - 1.2 An action step in a plant operating or emergency operating procedure refers to this procedure for classification of the indicated plant condition.

#### 2.0 PRECAUTIONS

- 2.1 The Emergency Director must review all applicable EALs to ensure that the event is properly classified since a given INDICATOR may be associated with more than one CRITERION. A particular INDICATOR omitted from the fission product barrier matrix may be addressed as an event-based EAL in one of the other tabs. Event-based EALs may escalate to the fission product barrier matrix. The Emergency Director may need to consider related events (e.g., fire and explosion) or the possible consequences of the event (e.g., fire in an MCC resulting in loss of AC) in classifying an event.
- 2.2 Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classification is appropriately revised as conditions change, or as more definitive information is obtained.
- 2.3 If there is any doubt with regard to assessment of a particular EAL, the EAL Basis Document (*i.e., Chapter 4 of the EPP*) entry for that EAL can be reviewed. Classifications shall be consistent with the fundamental definitions of the four emergency classifications (tabulated in Tab 4.7).

2.4 The Emergency Director shall take whatever mitigative or restoration actions are necessary to protect public health and safety. The Emergency Director shall not reject courses of action solely on the basis that the action would result in escalation of the emergency classification.

#### 3.0 GUIDANCE

- 3.1 Structure of the EALs
  - 3.1.1 There are two types of Emergency Action Levels included in this procedure:
    - 3.1.1.1 <u>Barrier-Based EALs</u>: These EALs address conditions that represent potential losses, or losses, of one or more of the Fuel Clad, RCS, or Containment fission product barriers. INDICATORs of these conditions include CRITICAL SAFETY FUNCTION status, fundamental indications such as subcooling or reactor vessel water level, or auxiliary indications such as containment radiation monitor readings. Classifications are based on the number of barriers lost or potentially lost.
    - 3.1.1.2 <u>Event-Based EALs</u>: These EALs address discrete conditions or events that are generally precursors to fission product barrier degradation, or are otherwise degradations in the level of safety of the plant. Events may be external (*e.g., severe weather, earthquakes, loss* of offsite power) internal (*e.g., fires, explosions, instrumentation failure*) or may involve radioactivity releases.
  - 3.1.2 The EALs are grouped by recognition category as follows:
    - Tab 1Fission Product Barrier Matrix
    - Tab 2System Degradation
    - Tab 3 Loss of Power
    - Tab 4 Hazards and ED Judgement
    - Tab 5 Destructive Phenomena
    - Tab 6 Shutdown Systems Degradation
    - Tab 7 Radiological
  - 3.1.3 Each of the EAL tabs includes one or more columns that address one initiating condition (*e.g., fires*). Each column provides EALs for each of the four emergency classifications, as applicable. A notation adjacent to each EAL identifies the plant operating mode(s) for which the EAL is applicable.

- 3.1.4 Each EAL is comprised of a CRITERION, printed in bold type, and one or more INDICATORs. The purpose of each is as follows:
  - 3.1.4.1 CRITERION: identifies the emergency condition and any numeric values which define that condition (*i.e., the basis of the declaration*) All classifications are based on an assessment (*i.e., determination that the condition is VALID*) by the Emergency Director that the CRITERION has been met or exceeded. Implicit in this protocol is the necessity for these assessments to be completed within 15 minutes (unless otherwise noted) of indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.
  - 3.1.4.2 INDICATOR: is available via instrumentation, calculations, procedure Entry (AOPs, EOPs, etc.), operator knowledge of plant conditions (pressure, temperatures, etc.) in the Control Room, or reports received from plant personnel, whichever is most limiting, or other evidence that the associated criterion may be exceeded. Upon occurrence of one or more indicators, the Emergency Director performs an assessment against the criterion. Depending on the particular condition, this assessment may be as simple as a review of the criterion, an instrument channel check, or a detailed calculation as in the case of a radioactivity release.
  - 3.1.4.3 Inherent in this protocol is the necessity for these assessments to be completed within 15 minutes (unless otherwise noted) of sufficient indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.
  - 3.1.4.4 The INDICATORs were selected with the objective of providing unambiguous guidance to assist with assessment of the CRITERION. There may be other INDICATORs not envisioned by the writers of this procedure that, in the judgment of the Emergency Director, correspond to the CRITERION. In these cases, the Emergency Director should base the declaration on engineering judgment, using the supplied INDICATORs as examples of the severity of the condition.

#### 3.2 Common Plant Conditions

- 3.2.1 IF an event occurs such that both reactor units are affected, e.g., tornado, toxic gas offsite, etc., <u>THEN</u> the senior Shift Manager shall make the appropriate classification and assume the role of Emergency Director.
- 3.2.2 IF the common plant condition results in a higher emergency classification at one reactor unit, <u>THEN</u> the Shift Manager from that unit shall make the appropriate classification and assume the role of Emergency Director.

#### 3.3 Mode Applicability

- 3.3.1 The plant operating mode that existed at the time that the event occurred, prior to any protective system or operator action initiated in response to the condition, is compared to the mode applicability of the EALs.
- 3.3.2 IF an event occurs, and a lower or higher plant operating mode is reached before the classification can be made, <u>THEN</u> the classification shall be based on the mode that existed at the time that the event occurred.
- 3.3.3 The fission product barrier matrix is applicable only to those events that occur at mode 4 or higher. An event that occurs in modes 5 or 6 shall not be classified using the fission product barrier matrix, even if mode 4 is entered due to subsequent heatup. In these cases, Tab 6, Shutdown Systems Degradation, shall be used for classification.

#### 3.4 Transient Events

- 3.4.1 For some EALs the existence of the event, without regard to duration, is sufficient to warrant classification. In these cases, the appropriate emergency classification is declared as soon as the Emergency Director assessment concludes that the CRITERION is met.
- 3.4.2 Some EALs specify a duration of occurrence. For these EALs the classification is made when Emergency Director assessment concludes that the specified duration is exceeded or will be exceeded (*i.e., condition can not be reasonably rectified before the duration elapses*), whichever is sooner.

- 3.4.3 IF a plant condition meeting an EAL CRITERION is rectified before the specified duration time is exceeded, <u>THEN</u> the event is <u>NOT</u> classified by that EAL. Lower severity EALs, if any, shall be reviewed for possible applicability in these cases.
- 3.4.4 IF a plant condition meeting an EAL CRITERION is NOT classified at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) AND the condition no longer exists, THEN an emergency shall NOT be declared. However, reporting under 10 CFR 50.72 may be required. Such a condition could occur, for example, if a followup evaluation of an abnormal condition uncovers evidence that the condition was more severe than earlier believed.
- 3.4.5 IF an emergency classification was warranted, but the plant condition has been rectified (such that the CRITERION is no longer met) prior to declaration and notification, <u>THEN</u> the following guidance applies:
  - 3.4.5.1 For transient events that would have been declared as UNUSUAL EVENTS, no emergency is declared. However, the event shall be reported to those local, state, and Federal agencies designated to receive the initial notification form. These agencies shall be told that the UNUSUAL EVENT condition was rectified upon detection and no emergency is being declared.
  - 3.4.5.2 For transient events that would have been declared as an ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY, the event shall be declared and the emergency response organization activated. The EAL CRITERIA for these events has been set at a threshold that warrants declaration even if the initiating condition has been rectified. Termination can occur when the criteria of EPP/IP-6.2, Termination of the Emergency and Recovery can be satisified.
- 3.5 Declaration Timing and Assessment

Emergency conditions shall be classified as soon as the Emergency Director assessment of the INDICATORs shows that the CRITERION is met. IF the EAL specifies a duration, THEN the event shall be declared as soon as it is determined that the condition cannot be corrected within the specified period. In either case, the assessment time starts from the indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.

- 3.5.1 The assessment time is limited to 15 minutes, except as follows:
  - 3.5.1.1 IF the EAL specifies a duration (e.g., release exceeds 2x T/S for one hour), THEN the assessment time runs concurrently with the required duration AND is the same length (e.g., in this example, one hour).
  - 3.5.1.2 The assessment time and any required duration are <u>NOT</u> additive.
- 3.5.2 IF the assessment cannot be completed within the specified period, <u>THEN</u> the event must be declared on the basis of INDICATORs that cannot be reasonably discounted.

#### 3.6 Bases

- 3.6.1 Chapter 4 of the BVPS EPP provides the bases for these EALs. The bases can be used for guidance to assist the Emergency Director in classifying events for which the classification is not immediately apparent.
- 3.7 Defined Terms
  - 3.7.1 In the EALs, words written in bold uppercase letters are defined terms having specific meanings as they relate to this procedure. Definitions of these terms are provided on the reverse side of most pages in the EAL section of this procedure. Such terms shall be interpreted as provided in the definitions.

#### E. <u>PROCEDURE</u>

- 1.0 DETERMINE OPERATING MODE THAT EXISTED AT THE TIME THAT THE EVENT OCCURRED PRIOR TO ANY PROTECTION SYSTEM OR OPERATOR ACTION INITIATED IN RESPONSE TO THE EVENT.
- 2.0 DETERMINE IF THE CONDITION AFFECTS FISSION PRODUCT BARRIERS AND, IF SO, PROCEED TO TAB 1.
  - 2.1 <u>IF</u> the condition involves any of the following <u>AND</u> the initial mode was 1-4 <u>THEN</u> proceed to Tab 1 and follow instructions provided <u>AND</u> continue with Step 2.2.
    - 2.1.1 CSF status tree ORANGE PATH or RED PATH conditions
    - 2.1.2 Core exit thermocouple readings above 719 F

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- 2.1.3 Reactor vessel full range water level less than 40% (no RCPs)
- 2.1.4 Elevated RCS activity >300 μCi/gm
- 2.1.5 Elevated Containment High Range Area Radiation Monitor reading
- 2.1.6 RCS leakrate large enough to require a 2nd charging pump
- 2.1.7 Loss of RCS subcooling
- 2.1.8 Steam Generator Tube Rupture
- 2.1.9 Containment bypass or loss of integrity
- 2.1.10 Rise in containment pressure or hydrogen concentration
- 2.2 Consider other related event-based EALs. IF other EALs are applicable, THEN perform Steps 3.0 and 4.0 if necessary. Otherwise, go to Step 5.0
- 3.0 CATEGORIZE THE EVENT INTO ONE OF THE INITIATING CONDITIONS AND LOCATE THE TAB.
  - 3.1 Locate one of the EAL indices provided at the start of each tab.
  - 3.2 Review the index to identify the tab that addresses the event that has occurred.
  - 3.3 Turn to the appropriate tab.

#### NOTE:

The assessment of an emergency condition shall be completed as soon as possible and within 15 minutes of the occurance of one or more INDICATORs. <u>IF</u> the assessment cannot be completed within the specified period, <u>THEN</u> the event must be declared on the basis of INDICATORs that cannot be reasonably discounted.

#### NOTE:

IF the EAL specifies a duration (e.g., release exceeds 2x T/S for one hour), THEN the assessment time runs concurrently with the required duration AND is the same length.

#### 4.0 ASSESS THE EVENT AND COMPARE TO THE EALS

- 4.1 Locate the EAL for the highest severity emergency classification that is applicable for the initiating condition and operating mode
- 4.2 Review the INDICATORs and CRITERION for that EAL
- 4.3 IF the specified INDICATORs are not observed, THEN:
  - 4.3.1 Proceed to the next lower severity EAL and re-perform step 4.2 & 4.3.
  - 4.3.2 IF none of the EALs for an initiating condition are met, THEN reperform steps 3.0 and 4.0 for related initiating conditions.
  - 4.3.3 IF the actions above do not identify an applicable EAL, THEN review the observed conditions against Tab 4.7, Hazards and Emergency Director Judgment.
  - 4.3.4 IF, after performing the above, no EAL is identified, THEN proceed to step 6.0.
- 4.4 IF the specified INDICATORs are observed, THEN:
  - 4.4.1 Perform necessary assessments to validate the instrument readings and/or confirm reported observations.
  - 4.4.2 Initiate any sampling, inspections, or dose assessments specified by the EAL.

#### NOTE:

IF the CRITERION specifies an event or condition duration, THEN the classification shall be made as soon as the duration is exceeded, <u>OR</u> when it is apparent that the duration will be exceeded, whichever is earlier.

4.4.3 Compare the results of the assessments to the CRITERION.

#### NOTE

A given INDICATOR may apply to more than one CRITERION. The Emergency Director shall review other related EALs for applicability.

- 4.5 IF the assessment concludes that the CRITERION is met, <u>THEN</u> the classification shall be made. Proceed to Step 5.0
- 4.6 <u>IF</u> the assessment concludes that the CRITERION is not met, <u>THEN</u> reperform steps 3.0 and 4.0 for other related initiating conditions as applicable.
- 4.7 IF no classification results from the above, THEN proceed to step 6.0.

#### NOTE:

The declaration of the emergency classification shall be made as soon as the Emergency Director has assessed that the EAL has been met OR will be met, AND within 15 minutes of occurance of the INDICATOR. Once the emergency is classified, notifications to state and local governments shall be completed within 15 minutes of the declaration.

## 5.0 DECLARE THE EMERGENCY CLASSIFICATION AND TRANSITION TO RESPONSE PROCEDURES

- 5.1 IF an UNUSUAL EVENT is declared, THEN proceed to EPP/I-2
- 5.2 IF an ALERT is declared, THEN proceed to EPP/I-3
- 5.3 IF a SITE AREA EMERGENCY is declared, THEN proceed to EPP/I-4
- 5.4 IF a GENERAL EMERGENCY is declared, THEN proceed to EPP/I-5

#### NOTE:

The step below is implemented only if an emergency classification is NOT made. IF a classification is made, THEN the transition indicated in step 5.0 should have been made.

- 6.0 EVALUATE THE NEED FOR AND MAKE NON-EMERGENCY NOTIFICATIONS
  - 6.1 IF the abnormal condition is reportable to the NRC pursuant to 10 CFR 50.72 and 1/2-ADM-2202, THEN perform the following:
    - 6.1.1 Complete the NRC Reactor Plant Event Notification Worksheet (located on the Regulatory Affairs web page).

- 6.1.2 Notify First Energy Communications of the event and provide the information on the NRC Reactor Plant Event Notification Worksheet.
- 6.2 <u>IF</u> directed by station management, <u>THEN</u> make courtesy calls to the following state and local agencies on a timely basis consistent with normal working hours.
  - 6.2.1 BCEMA
  - 6.2.2 PEMA
  - 6.2.3 CCEMA
  - 6.2.4 HCOES

#### F. FINAL CONDITIONS

- 1.0 For emergency events, the transition to the appropriate response procedure has been made and actions pursuant to that procedure are in progress.
- 2.0 For non-emergency events, required notifications have been completed.

#### G. <u>ATTACHMENTS</u>

1.0 Tabs for Classification of Emergency Conditions

#### H. FIGURES

•

1.0 Figures are identified on the EAL indices

## FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

#### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation
- 2.2 Loss of Function/Comm's
- **RCS** Unident Leakage 2.5 2.6
  - Failure of Rx Prot.-ATWS 2.7
- RCS Ident. Leakage
- 2.10 Stm/Feed Line Break

2.9

- Technical Specification S/D Safety Limit Exceeded
- 2.3 2.4 Fuel Clad Degradation
- LOSS OF POWER
- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- Loss of DC 3.3

#### **HAZARDS** and **ED** JUDGEMENT

- 4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A
- 4.3 Flammable Gas 4.4
  - Toxic Gas Table 4-2 Figure 4-B/Figure 4-C

2.8

- **Control Room Evacuation** 4.5 Security 4.6
- ED Judgement 4.7

#### DESTRUCTIVE PHENOMENA

Earthquake 5.1 Tornado/High Winds 5.2 Table 5-1 Figure 5-A

- Aircraft Crash/Projectile 5.3 **River** Level High
- 5.4 5.5
  - River Level Low
- Watercraft Crash (RW/SWS Loss) 5.6

#### SHUTDOWN SYSTEM DEGRADATION

Loss of AC (Shutdown) (Modes 5 & 6) 6.3

7.3

Table 7-2

RCS Inventory-Shutdown 6.2

Loss of Shutdown Systems

- Loss of DC (Shutdown) (Modes 5 & 6) 6.4 6.5 Fuel Handling (All Modes)
- Inadvertent Criticality 6.6

Radiation Levels

#### RADIOLOGICAL

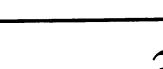
- Gaseous Effluent 7.1
- 7.2 Liquid Effluent
- Table 7-1

6.1

Figure 7-A

7.4 Fuel Handling (All Modes)

Table 4-3/Table 4-4



**Turbine Failure** 









1 - Fission Product Matrix

#### **DEFINITIONS/ACRONYMS**

## AREA EMERGENCY: See EAL 4.7

BOMB: A fused explosive device.

CIVIL DISTURBANCE: A group of ten (10) or more persons violently protesting station operations or activities at the site.

Each CRITERION identifies the emergency condition and any numeric values which define that condition (i e., the basis of the declaration). All classifications are based on an assessment (i.e., determination that the condition is VALID) by the Emergency Director that the CRITERION has been met or exceeded. Implicit in this protocol is the necessity for these assessments to be completed within 15 minutes (unless otherwise noted) of indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.

CRITICAL SAFETY FUNCTION (CSFs): A plant safety function required to prevent significant release of core radioactivity to the environment. There are six CSFs: Subcriticality, Core Cooling, Heat Sink, Vessel Integrity (Pressurized Thermal Shock), Integrity (Containment) and Inventory (RCS).

EXCLUSION AREA BOUNDARY (EAB): A boundary surrounding the BVPS units beyond which the postulated UFSAR accidents will not result in population doses exceeding the criteria of 10 CFR Part 100. Refer to Figure 7-A.

EXPLOSION: A rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems or components

EXTORTION: An attempt to cause an action at the station by threat of force.

FAULTED: (Steam Generator) Existence of secondary side leakage (i.e., steam or feed line rupture) that results in an uncontrolled decrease in steam generator pressure or the steam generator being completely depressurized.

FIRE: Combustion characterized by heat and light. 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.

HOSTAGE: A person or object held as leverage against the station to ensure that demands will be met by the station

INDICATOR(s): Are available via instrumentation, calculations, procedure Entry (AOPs, EOPs, etc.), operator knowledge of plant conditions (pressure, temperatures, etc.) in the Control Room, or reports received from plant personnel, whichever is most limiting, or other evidence that the associated criterion may be exceeded. Inherent in this protocol is the necessity for these assessments to be completed with 15 minutes (unless otherwise noted) of sufficient indications being available to Control Room Operators that an Emergency Action Level (EAL) has been exceeded.

INEFFECTIVE: The specified restoration action(s) does not result in a reduction in the level of severity of the RED PATH condition within 15 minutes from identification of the Core Cooling CSF Status Tree RED A reduction in the level of seventy is an PATH TERMINUS. improvement in the applicable parameters (e g., increasing trend in reactor vessel water level (RVLIS full range) and/or decreasing trend on core thermocouple temperatures).

INTRUSION/INTRUDER: Suspected hostile individual present in a protected area without authorization.

LOWER EXPLOSIVE LIMIT (LEL): Concentration level below which combustible gases will not explode due to ignition.

LCO, LIMITING CONDITION FOR OPERATION: as specified in the BVPS Technical Specifications, the minimum functional performance level for equipment required for safe shutdown.

ALERT, UNUSUAL EVENT, GENERAL EMERGENCY, SITE ORANGE PATH: Monitoring of one or more CSFs by the EOPs which indicates that a CSF is under severe challenge.

> PROJECTILE: An object ejected, thrown, or launched towards a plant structure. The source of the projectile may be onsite or offsite. Potential for damage is sufficient to cause concern regarding the integrity of the affected structure or the operability or reliability of safety equipment contained therein.

The PROTECTED AREA encompasses all owner controlled areas within the security perimeter fence as shown on Figure 4-A.

RED PATH: Monitoring of one or more CSFs by the EOPs which indicates that a CSF is under extreme challenge.

RUPTURED: (Steam Generator) Existence of primary to secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

SABOTAGE: Deliberate damage, mis-alignment, or mis-operation of plant equipment with the intent to render the equipment unavailable.

SIGNIFICANT TRANSIENT: An UNPLANNED event involving one or 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 System Activation

The SITE PERIMETER encompasses all owner controlled areas in the immediate site environs as shown on Figure 4-A.

STRIKE ACTION: A work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands made on the BVPS or one of its vendors. The STRIKE ACTION must threaten to interrupt normal plant operations to be considered.

TOXIC GAS: A gas that is dangerous to life or health by reason of inhalation or skin contact (e.g, chlorine).

UNPLANNED: An event or action is UNPLANNED if it is not the expected result of normal operations, testing, or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.

With specific regard to radioactivity releases, a release of radioactivity is UNPLANNED if it has not been authorized by a Radioactive Waste Discharge Authorization (RWDA). Implicit in this definition are unintentional releases, unmonitored releases, or planned releases that exceed a condition specified on the RWDA (e.g., alarm setpoints, minimum dilution flow, minimum release times, maximum release rates, and/or discharge of incorrect tank).

VALID: An indication or report or condition is considered to be VALID when it is conclusively verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment (i.e., within 15 minutes).

VISIBLE DAMAGE: Damage to equipment or structure that is readily observable without measurements, testing, or analyses. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage includes: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VITAL AREA is any area within the PROTECTED AREA which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation

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	-O 1.1.4 Primary Coolant A		
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	-0 1:1:5 : Letdown Monitor I		
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			を読
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	1.1.6 Containment Radi		័ះ្ 1
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				RCS leak causes safety	. 19
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				required by EOP E-0	5.6
Ż					22
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13.1 Critical Saf	fety Function Status
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	<u>OR</u>
	Actions of FR-C.1 (RED
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	-OR-
2	nt Pressure / Hydrogen Conc.
LOSS	Potential LOSS
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	essure PSIG
following initial rise	
<u>OR</u>	CNMT H2 rises >4%
CNMT pressure or	
	NOT CNMT pressure >8 PSIG
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	-OR-
1.3.3 Containme	nt Isolation Status
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	-OR-
1.3.4 Containme	nt Bypass
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RUPTURED S/G is       FAULTED Outsid       CNMT <u>OR</u> P-to-S leakrate >	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA
RUPTURED S/G is         FAULTED Outsid         CNMT         OR         P-to-S leakrate >         with approx.       4-8	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA hr. <u>OR</u>
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx.       4-8         steam release       4-8	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA br. <u>OR</u> from Hi-Hi Alarm on RM-
RUPTURED S/G is FAULTED Outsid CNMT P-to-S leakrate > with approx. 4-8 steam release affected S/G	s also de of un reading on area on ventilation monitors in contiguous areas with known LOCA b hr. from from via RW-100A,B,C, or D
RUPTURED S/G is         FAULTED Outsud         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA b hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is
RUPTURED S/G is         FAULTED Outsuid         OR         P-to-S leakrate >         with approx.       4-8         steam release       affected       S/G         nonisolable       M       SGADV, or from N	s also de of unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA b hr. from from via RW-100A,B,C, or LSSV, AND affected HX is Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note
RUPTURED S/G is         FAULTED Outsuid         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected       S/G         nonisolable       M	s also de of un reading on area on ventilation monitors in contiguous areas with known LOCA b hr. from via RW-100A,B,C, or D ISSV, MSLB NOT isolated Unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA OR 0R 1557, 07 1557, 07
RUPTURED S/G is FAULTED Outsid CNMT P-to-S leakrate > with approx. 4-8 steam release affected S/G nonisolable M SGADV, or from N outside of CNMT	s also de of unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         M         SGADV, or from M         outside of CNMT	s also de of le of T/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         M         SGADV, or from N         outside of CNMT	s also de of le of T/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         M         SGADV, or from M         outside of CNMT	s also de of le of T/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/S tr/
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         M         SGADV, or from N         outside of CNMT	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA hr. from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, AND affected HX is NOT isolated C-OR- Radioactivity in Containment Potential LOSS VALID reading exceeds:
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         M         SGADV, or from N         outside of CNMT	s also Unexplained VALID rise in reading on area or ventilation monitors in contiguous areas with known LOCA hr. from Hi-Hi Alarm on RM- via RW-100A,B,C, or D SSV, AND affected HX is NOT isolated C-OR- Radioactivity in Containment Potential LOSS VALID reading exceeds: Time After RM-219A/B RM-201
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected       S/G         nonisolable       M         SGADV, or from N         outside of CNMT         LOSS         Not applicable	s also Unexplained VALID rise de of in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated -OR- Radioactivity in Containment Potential LOSS VALID reading exceeds: Time After RM-219A/B RM-201 S/D, hrs R/hr mR/hr 0.05 15E4 10E5
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable         * Due to streaming to	s also Unexplained VALID rise de of in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated -OR- Radioactivity in Containment Potential LOSS VALID reading exceeds: Time After RM-219A/B RM-201 S/D, hrs R/hr mR/hr 0.05 15E4 10E5
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable	s also Unexplained VALID rise le of in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated <b>OR</b> - <b>CR</b>
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable         * Due to streaming to         airlock	s also le of le of l
RUPTURED S/G is FAULTED Outsid CNMT P-to-S leakrate > with approx. 4-8 steam release affected S/G nonisolable M SGADV, or from M outside of CNMT 1.3.5 Significant LOSS Not applicable * Due to streaming to airlock	s also Unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NSLB <u>NOT</u> isolated -OR- Radioactivity in Containment - VALID reading exceeds: Time After RM-219A/B RM-201 S/D, hrs R/hr mR/hr 0-0 5 1 5E4 10E5 0 5-4 5 2E3 3 4E4 4-12 2 2E3 1.3E4 12-24 10E3 60E3
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable         * Due to streaming tairlock         1.3.6         Emergency	s also Unexplained VALID rise le of in reading on area on ventilation monitors in contiguous areas with known LOCA 3 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated -OR- Radioactivity in Containment Potential LOSS VALID reading exceeds: Time After RM-219A/B RM-201 S/D, hirs R/hir mR/hir 0-0 5 1 5E4 10E5 05-4 5 2E3 3 4E4 4-12 2 2E3 1.3E4 12-24 10E3 60E3 -OR-
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable         * Due to streaming to airlock         1.3.6         Emergency         Any condition that	s also Unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA 5 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated -OR- Radioactivity in Containment -OR- Radioactivity in Containment S/D, hrs R/hr mR/hr 0-0 5 1 5E4 10E5 0 5-4 5 2E3 3 4E4 4-12 2 2E3 1.3E4 12-24 10E3 60E3 OR- y Director Judgement t, in the judgement of the SM/ED
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         LOSS         Not applicable         * Due to streaming to airlock         1.3.6 Emergency         Any condition that indicates loss or potential	s also Unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA is hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D MSLB <u>NOT</u> isolated <b>COR-</b> <b>Radioactivity in Containment</b> <b>Potential LOSS</b> VALID reading exceeds: Time After RM-219A/B RM-201 S/D, hrs R/hr mR/hr 0-0 5 1 5E4 10E5 0 5-4 5 2E3 3 4E4 4-12 2 2E3 1.3E4 12-24 10E3 60E3 <b>OR-</b> <b>OR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR-</b> <b>CR</b>
RUPTURED S/G is         FAULTED Outside         OR         P-to-S leakrate >         with approx. 4-8         steam release         affected S/G         nonisolable         MSGADV, or from N         outside of CNMT         I.3.5 Significant         LOSS         Not applicable         * Due to streaming to airlock         I.3.6 Emergency         Any condition that indicates loss or pote	s also Unexplained VALID rise in reading on area on ventilation monitors in contiguous areas with known LOCA 5 hr. <u>OR</u> from Hi-Hi Alarm on RM- via RW-100A,B,C, or D ISSV, <u>AND</u> affected HX is NOT isolated -OR- Radioactivity in Containment -OR- Radioactivity in Containment S/D, hrs R/hr mR/hr 0-0 5 1 5E4 10E5 0 5-4 5 2E3 3 4E4 4-12 2 2E3 1.3E4 12-24 10E3 60E3 OR- y Director Judgement t, in the judgement of the SM/ED

1

# Modes: 1,2,3,4 INSTRUCTIONS

ì	IVIOUCS: 1,2,3,4	
	INSTRUCTIONS	
NO	TE: An INDICATOR is considered to be MET if the stated threshold has been, or is, reached or exceeded, on the basis of confirmed observation or VALID instrument readings The Emergency Director must use judgement when classifying parameters that may be transitory (e.g., containment pressure).	TRIX - U
NOT	E: The INDICATOR should be considered MET if the parameter is indeterminate due to instruments that are not available or out of range and the existence of the condition can not be reasonably discounted.	ER MA
NOT	E: An INDICATOR is considered to be MET if, in the judgement of the Emergency Director, the INDICATOR will be MET imminently (i e., within 1 to 2 hours in the absence of a viable success path). The classification shall be made as soon as this determination is made	
1.	In the matrix to the left, review the LOSS INDICATORS in each barrier column. If one or more INDICATORS are met, check the LOSS block at the bottom of the column.	UCT
2.	If no LOSS is identified for a particular barrier, review the potential LOSS INDICATORS for that barrier. If one or more INDICATORS are met, check the potential LOSS block at the bottom of the barrier column.	PROD
3.	Compare the blocks checked to the CRITERIA below and make the appropriate declaration.	
	CRITERIA	OI
ľ	GENERAL EMERGENCY	S
	OSS of any Two (2) barriers and Potential LOSS of third	FI
ä	barrier.	
	OSS of all three (3) barriers.	
	SITE AREA EMERGENCY	
	OSS or Potential LOSS of any Two (2) barriers.	
	OR LOSS of one (1) barrier and a Potential LOSS of a second parrier.	
-	ALERT	
ě	Any LOSS or Potential LOSS of Fuel Clad barrier. OR Any LOSS or Potential LOSS of RCS barrier.	
E E	UNUSUAL EVENT	~
	LOSS or Potential LOSS of CNMT barrier.	1
	SEE ALSO EAL'S:	<b>`</b>
an was die noorde dae	<ul> <li>Fuel Clad Degradation (RCS Specific Activity &gt;LCO)</li> <li>RCS Unidentified or Pressure Boundry Leakage</li> <li>RCS Identified Leakage</li> </ul>	.1, 1.2, 1
2.4 A		

## FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

- 1.1 Fuel Clad (RCS activity, corecooling, heat sink)
- 1.2 RCS (Integrity, SGTR, heat sink)
- 1.3 Containment (CNMT Red Path, CNMT bypass)

#### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation 2.5 2.2 Loss of Function/Comm's
  - **RCS** Unident Leakage 2.6
    - 2.10 Stm/Feed Line Break
- 2.3 Failure of Rx Prot.-ATWS 2.7 2.4 Fuel Clad Degradation
- RCS Ident. Leakage
- Technical Specification S/D
- 2.8 Safety Limit Exceeded

#### LOSS OF POWER

- 3.1 Loss of AC (Power Ops) (Modes 1-4)
- 3.2 Loss of AC (Shutdown) (Modes 5 & 6)
- 3.3 Loss of DC

#### HAZARDS and ED JUDGEMENT

4.1 Fire 4.2 Explosion Table 4-1

Figure 4-A

(

- 4.3 Flammable Gas 4.4 Toxic Gas Table 4-2 Figure 4-B/Figure 4-C
- 4.5 Control Room Evacuation
- 4.6 Security

2.9

**Turbine Failure** 

- 4.7 ED Judgement
- Table 4-3/Table 4-4

#### **DESTRUCTIVE PHENOMENA**

- 5.1 Earthquake
- 5.2 Tornado/High Winds Table 5-1 Figure 5-A

- 5.3 Aircraft Crash/Projectile 5.4 **River Level High** 
  - River Level Low
  - Watercraft Crash (RW/SWS Loss)

#### SHUTDOWN SYSTEM DEGRADATION

- 6.1 Loss of Shutdown Systems 6.2 RCS Inventory-Shutdown
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6) Loss of DC (Shutdown) (Modes 5 & 6) 6.4
- 6.5 Fuel Handling (All Modes)
  - 6.6 Inadvertent Criticality

5.5

5.6

#### RADIOLOGICAL

- 7.1 Gaseous Effluent
- 7.2 Liquid Effluent
- Table 7-1 Figure 7-A

- 7.3 Radiation Levels 7.4 Fuel Handling (All Modes)
- Table 7-2









2 - System Degradation

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2.1	Loss of Instrumentation	2.2	Loss of Function	2.3	Failure of Rx Protection
Mode	Criterion / Indicator	Mode	Criterion / Indicator	Mode	Criterion / Indicator
	Refer to Tab 1 "Fission Product Barrier Matrix" and Tab 7 "Radiological Effluents"	1 2 3 4	<ul> <li>Inability to cool the core [1 or 2]</li> <li>Actions of FR-C.1 (RED PATH) are INEFFECTIVE</li> <li>[a and b] <ul> <li>a. Five hottest core exit thermocouples &gt;1200 F; or five hottest core exit thermocouples &gt;719 F with NO RCPs running and RVLIS full range level &lt;40%</li> <li>b. Actions taken have NOT resulted in a rising trend in RVLIS full range level or a dropping trend in core exit thermocouple temperatures within 15 minutes of initiation of restoration actions</li> </ul> </li> </ul>	1 2	<ul> <li>Reactor power &gt;5% after VALID trip signal(s and loss of core cooling capability [1 and 2]</li> <li>1. Ops personnel report FR-S1 has been entered and subsequent actions do NOT result in reduction of power to &lt;5% and decreasing</li> <li>2. [a or b] <ul> <li>a Ops personnel report CSF status tree RED PATH terminus exists for cor cooling or heat sink</li> <li>b. Five hottest core exit thermocouples &gt;1200 F; or five hottest core exit thermocouples &gt;719 F with NO RCF running and RVLIS full range level &lt;400</li> </ul> </li> </ul>
1 2 3 4	<ul> <li>Inability to monitor a SIGNIFICANT TRANSIENT in progress [1 and 2 and 3 and 4]</li> <li>Loss of most (&gt;75%) annunciators <u>or</u> indications</li> <li>SIGNIFICANT TRANSIENT in progress</li> <li>Loss of SER <u>and</u> SPDS</li> <li>Inability to directly monitor any of the following CSFs:</li> <li>Subcriticality Vessel Integrity Core Cooling Containment Heat Sink</li> </ul>	1 2 3 4	<ul> <li>Loss of function needed to achieve or maintain hot shutdown [1 or 2]</li> <li>1. Ops personnel report a CSF status tree RED PATH terminus for core cooling or heat sink exists</li> <li>2. Five hottest core exit thermocouples &gt;1200 F; or five hottest core exit thermocouples &gt;1200 F; or five hottest core exit thermocouples &gt;719 F with NO RCPs running and RVLIS full range level &lt;40%</li> <li>Also Refer to Tab 2.3 "Failure of Reactor Protection" and Tab 1 "Fission Product Barrier Matrix"</li> </ul>	1 2	<ul> <li>Reactor trip failure after VALID Trip signal( with reactor power &gt;5% and attempts to caus a manual trip from the control room an unsuccessful.</li> <li>1. Ops personnel report FR-S1 has bee entered and manual reactor trip from contr room did NOT result in reduction of power &lt;5% and decreasing</li> </ul>
1 2 3 4	<ul> <li>UNPLANNED loss of most annunciators or indications for &gt;15 minutes with either a SIGNIFICANT TRANSIENT in progress or a loss of non-alarming compensatory indications [1 and 2 and 3]</li> <li>1. UNPLANNED loss of most (&gt;75%) annunciators or indications for &gt;15 minutes</li> <li>2. SM judgement that additional personnel (beyond normal shift complement) are required to monitor the safe operation of the unit</li> <li>3. [a or b]</li> <li>a. SIGNIFICANT TRANSIENT in progress</li> <li>b. Loss of SER and SPDS</li> </ul>	1 2 3 4	<ul> <li>Complete loss of function needed to achieve Cold Shutdown when Shutdown required by Tech Specs [1 and 2 and 3]</li> <li>Loss of decay heat removal capability (RHR, CCR or RPRW) / (RHS, CCP, SWS)</li> <li>Inability to remove heat via the condenser</li> <li>Shutdown to mode 5 required by T/S</li> </ul>	1 2	<ul> <li>Automatic reactor trip did not occur aft VALID trip signal and manual trip froe control room was successful [1 and 2]</li> <li>1. VALID reactor trip signal received required.</li> <li>2. Manual reactor trip from control room v successful and power is &lt;5% and decreasing</li> </ul>
1 2 3 4	<ul> <li>UNPLANNED loss of most annunciators or indications for &gt;15 minutes [1 and 2]</li> <li>UNPLANNED loss of most (&gt;75%) annunciators or indications for &gt;15 minutes</li> <li>SM judgement that additional personnel (beyond normal shift complement) are required to monitor the safe operation of the unit</li> </ul>	ALL	<ul> <li>UNPLANNED Loss of communications [1 or 2]</li> <li>1. In-plant [a and b and c] <ul> <li>a. UNPLANNED Loss of All Pax Phones</li> <li>b. UNPLANNED Loss of All Gaitronics (Page/Party)</li> <li>c. UNPLANNED Loss of All Radios (Handie-Talkies)</li> </ul> </li> <li>2. Offsite [a and b and c] <ul> <li>a. UNPLANNED Loss of ENS</li> <li>b. UNPLANNED Loss of Bell Lines</li> <li>c. UNPLANNED Loss of Radios to Offsite</li> </ul> </li> </ul>		Not Applicable

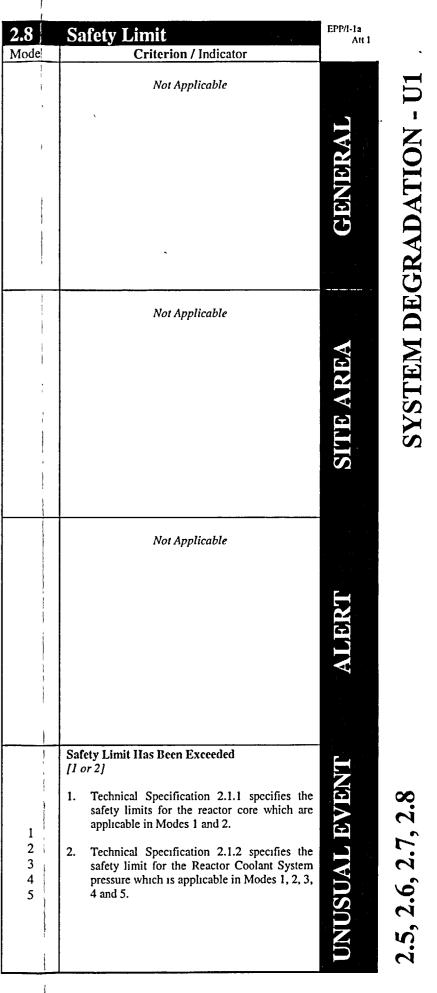
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.4	Fuel Clad Degradation	ЕРРЛ-1а Att 1	
Iode	Criterion / Indicator Refer to Tab I "Fission Product Barrier Matrix"	GENERAL	<b>XADATION - U1</b>
	Refer to Tab 1 "Fission Product Barrier Matrix"	SITE AREA	<b>SYSTEM DEGRADATION - U</b>
	Refer to Tab 1 "Fission Product Barrier Matrix"	ALERT	
1 2 3 4 5	<ul> <li>Reactor coolant system specific activity exceeds LCO (refer to BVPS technical specification 3.4.8) [1 or 2]</li> <li>1. VALID high alarm on RM-CH-101A or B reactor coolant letdown monitor</li> <li>2. Radiochemistry analysis exceeds Technical Specification 3 4 8.</li> </ul>	UNUSUAL EVENT	2.1, 2.2, 2.3, 2.4

2.5	RCS Unidentified Leakage	2.6	RCS Identified Leakage		2.7	Technical Specification
Mode	Criterion / Indicator	Mode	Criterion / Indicator	l .	Mode	Criterion / Indicator
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"	1		Not Applicable
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	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"	1		
					1	Not Applicable
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•	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"	· ·		
						Refer to Tab 2.2, "Loss of Function"
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						1
	Unidentified or pressure boundary RCS		Identified RCS leakage >25 GPM	, ,		Inability to Reach Required Shutdown Mo
	leakage >10 GPM		1			Within Technical Specification Time Limits
· · ·			1. Identified RCS leakage (as defined by			[1 and 2]
•	1. Unidentified or pressure boundary leakage (as defined by Technical Specifications) >10		Technical Specifications) >25 GPM as indicated below [a or b or c]	1 '		1. A Technical Specification action statement
	GPM as indicated below [a or b]	1		<b>!</b> '	.	requiring a mode reduction, has been entere
1 2		2	a. OST 1.62 or 162A Results			
3	a. OST 1 6 2 results	3	b. UNPLANNED level rise in excess of		23	2. The unit has NOT been placed in the required mode within the time prescribed
4	b. With RCS temp. and PZR level stable,	4	25 GPM total into PRT, DG-TK-1, and		4	the action statement
5*	VCT level dropping at a rate >10 GPM	5*	DG-TK-2			
	(>1%/min indicated on LI-CH-115 with no VCT makeup in progress)		c. Indication of Steam Generator Tube	<b>,</b> '		
	, , , , , , , , , , , , , , , , , , ,		leakage >25 GPM		1	
	*Applies to Mode 5 if RCS Pressurized			'		
	1 1					

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2.9	)	Turbine Failure	2.10	Steam/Feed Line Break
	ode	Criterion / Indicator	Mode	Criterion / Indicator
1010	,	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
GENERAL				
		Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
IKEA		* *		
SITE AREA		, , ,		
ALERT	1 2 3	<ul> <li>Turbine failure generated missiles cause penetration of a missile shield wall of any area containing safety related equipment</li> <li>Plant personnel report missiles generated by turbine failure with casing penetration also results in a through-wall penetration of a missile shield wall listed in Table 2-1</li> </ul>	1	Refer to Tab 1 "Fission Product Barrier Matrix"
UNUSUAL EVENT	1 2 3	<ul> <li>Turbine failure results in casing penetration</li> <li>Plant personnel report a turbine failure which results in penetration of the turbine casing or damage to main generator seals with evidence of significant hydrogen or seal oil leakage .</li> </ul>	1 2 3 4	<ul> <li>UNPLANNED rapid depressurization of the Main Steam System resulting in a rapid RCS cooldown and Safety Injection actuation [1 and 2]</li> <li>1. Ops personnel report rapid depressurization of Main Steam System that causes SLI (&lt;500 psig)</li> <li>2. Ops personnel report Safety Injection has actuated</li> </ul>

# Table 2-1Plant Areas Associated With Shield WallPenetration EAL

Control Room Electrical Switchgear Safeguards Diesel Generator Bldg

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Cable Tray Mezz Containment Primary Aux. Building 1WT-TK-10

2.9, 2.10, Table 2-1

#### FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

2.8

- Fuel Clad (RCS activity,-corecooling, heat sink) 1.1
- 1.2 RCS (Integrity, SGTR, heat sink)
- Containment (CNMT Red Path, CNMT bypass) 1.3

#### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation
- Loss of Function/Comm's 2.2
- 2.5 **RCS** Unident Leakage 2.6
  - RCS Ident. Leakage
  - Technical Specification S/D Safety Limit Exceeded
- Fuel Clad Degradation 2.4

#### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2

Failure of Rx Prot.-ATWS 2.7

Loss of DC 3.3

2.3

#### **HAZARDS and ED JUDGEMENT**

4.1 Fire 4.2 Explosion

Table 4-1

Figure 4-A

Flammable Gas 4.3 4.4 **Toxic Gas** Table 4-2 Figure 4-B/Figure 4-C

#### **DESTRUCTIVE PHENOMENA**

- Earthquake 5.1
- Tornado/High Winds 5.2 Table 5-1 Figure 5-A

- Aircraft Crash/Projectile
- 5.4 **River Level High** 5.5
  - **River Level Low**
  - Watercraft Crash (RW/SWS Loss)

#### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 **RCS** Inventory-Shutdown 6.2
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- 6.4 Loss of DC (Shutdown) (Modes 5 & 6) Fuel Handling (All Modes) 6.5
  - Inadvertent Criticality 6.6

5.3

5.6

RADIOLOGICAL

Gaseous Effluent 71 7.2 Liquid Effluent Table 7-1 Figure 7-A

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7.3 Radiation Levels Fuel Handling (All Modes) 7.4 Table 7-2

**Control Room Evacuation** Security

4.7 ED Judgement Table 4-3/Table 4-4

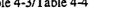
4.5

4.6

2.9

**Turbine Failure** 

2.10 Stm/Feed Line Break













3 - Loss of Power

3.1	Loss of AC (Power Ops)	3.2	Loss of AC (Shutdown) Criterion / Indicator		<b>3.3</b> Mode	Loss of DC Power Criterion / Indicator	
Mode	Criterion / Indicator Prolonged loss of offsite and onsite AC power [1 and 2]	Mode	Refer to Tab 6 "Shutdown System Degradation"	;	Widde	Refer to Tab 1 "Fission Product Barrier Matrix" and Tab 2 2 "Loss of Function", and Tab 6 1 "Loss of Shutdown Systems"	
1 2 3 4	<ol> <li>AE and DF 4KV emergency buses NOT energized from Unit 1 sources for &gt;15 minutes</li> <li>[a or b or c]         <ol> <li>Ops personnel report CSF status tree RED PATH or ORANGE PATH terminus exists for core cooling</li> <li>Restoration of either AE or DF 4KV emergency bus is NOT likely from any source within 3 hours of loss</li> <li>Five hottest core exit thermocouples &gt;1200 F or five hottest core exit thermocouples &gt;719 F with no RCPs</li> </ol> </li> </ol>			4 3 4			GENERAL
	running and RVLIS full range <40% Loss of offsite and onsite AC power for >15 minutes		Refer to Tab 6 "Shutdown System Degradation"	·		Loss of all vital DC power for >15 minutes 1. Voltage <110 4 VDC on DC buses 1-1 and 1-2 and 1-3 and 1-4 for >15 minutes	Y'
1 2 3 4	<ol> <li>AE and DF 4KV emergency buses <u>NOT</u> energized from Unit 1 sources for &gt;15 minutes</li> </ol>	Ţ		-	1 2 3 4	Also Refer to Tab 1 "Fission Product Barrier Matrix", Tab 2.2 "Loss of Function", and Tab 2.1 "Loss of Instrumentation" and Tab 6.1 "Loss of Shutdown Systems"	SITE ARE,
	AC power to emergency buses reduced to a single source of power such that any additional failure will result in the de-energization of both buses [1 and 2]		UNPLANNED loss of offsite and onsite AC power for >15 minutes 1. AE and DF 4KV emergency buses NOT energized from Unit 1 sources for >15			Refer to Tab 1 "Fission Product Barrier Matrix", Tab 2 2 "Loss of Function", and Tab 2.1 "Loss of Instrumentation" and Tab 6 1 "Loss of Shutdown Systems"	AT.
1 2 3 4	<ol> <li>Either AE or DF 4KV emergency bus is de- energized for &gt;15 minutes</li> <li>The energized AE or DF 4KV emergency bus has only one source of power [a or b]</li> </ol>	5 6 De- fuel	minutes Also Refer to Tab 6 "Shutdown System Degradation"	e e e e e e e e e e e e e e e e e e e			ALIBRY
	<ul> <li>a. Emergency diesel generator</li> <li>b. 1A or 1D 4KV normal bus</li> </ul>		UNPLANNED loss of offsite power supply for			UNPLANNED loss of one train of DC power for >15 minutes	L
-	Loss of offsite power supply for >15 minutes [1 and 2] 1. Offsite power supply to AE and DF 4KV buses unavailable for >15 minutes.		<ul> <li>&gt;15 minutes [1 and 2]</li> <li>1. Offsite power supply to AE and DF 4KV buses unavailable for &gt;15 minutes.</li> </ul>	i ] 4 1 2	1	<i>[1 or 2]</i> <i>I.</i> Voltage <110 4 VDC on DC Buses 1-1 and 1-3 for >15 minutes	EVEN
1 2 3 4	<ol> <li>Each diesel generator is supplying power to its respective emergency bus</li> </ol>	5 6 De- fuel	<ol> <li>Either diesel generator is supplying power to its respective emergency bus</li> </ol>	ž	2 3 4	<ol> <li>Voltage &lt;110.4 VDC on DC Buses 1-2 and 1-4 for &gt;15 minutes</li> <li>Refer to Tab 6.4 "Loss of DC (Shutdown)" for modes 5, 6, and defueled</li> </ol>	JAL

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## EPP/I-1a Attachment 1

ł 1

3.1, 3.2, 3.3

Revision 4

## FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

2.8

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- Loss of Instrumentation 2.1
- 2.2 Loss of Function/Comm's
- RCS Unident Leakage 2.5 2.6
  - RCS Ident. Leakage
- 2.3 Failure of Rx Prot.-ATWS 2.7 Fuel Clad Degradation 2.4

#### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- Loss of DC 3.3

1

### HAZARDS and ED JUDGEMENT

- Fire 4.1 4.2 Explosion Table 4-1
- Flammable Gas 4.3 Toxic Gas 4.4

Figure 4-A

- Table 4-2 Figure 4-B/Figure 4-C
- Security 4.6 ED Judgement 4.7

4.5

- Table 4-3/Table 4-4

## DESTRUCTIVE PHENOMENA

- Earthquake 5.1
- 5.2 Tornado/High Winds Table 5-1 Figure 5-A

- Aircraft Crash/Projectile 5.3 River Level High
- 5.4 River Level Low 5.5
- Watercraft Crash (RW/SWS Loss) 5.6

## SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1
- Loss of AC (Shutdown) (Modes 5 & 6) 6.3 Loss of DC (Shutdown) (Modes 5 & 6) 6.4
- **RCS** Inventory-Shutdown 6.2
- Fuel Handling (All Modes)
- 6.5
- Inadvertent Criticality 6.6

#### RADIOLOGICAL

- Gaseous Effluent 7.1 Liquid Effluent 7.2 Table 7-1 Figure 7-A
- Radiation Levels 7.3 Fuel Handling (All Modes)
- 7.4 Table 7-2

**ED** Judgement 4 - Hazards







- Technical Specification S/D Safety Limit Exceeded
- 2.9
  - **Turbine Failure** 2.10 Stm/Feed Line Break

**Control Room Evacuation** 

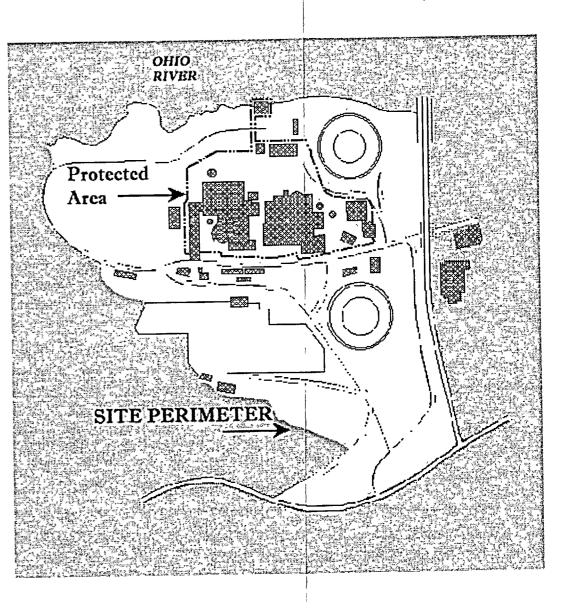
			4.2	Explosions
		Rire (Indiator	Mode	Criterion / Indicator
GENERAL	1 1 2 3 4	Criterion / IndicatorFIRE in the control room, cable tray mezzanine, or process control room resulting in om evacuation of the control room per 1.56C.4 (Alternate Safe Shutdown" and loss of any required equipment results in an uncontrolled RCS Heatup [1 and 2 and 3]1.1.56C.4 "Alternate Safe Shutdown" entered 2. Ops personnel report inability to operate at least one of each of the following components of the available train:Charging pumpAFW pumpDiesel generator RPRW pumpBIPSteam relief path3.Uncontrolled RCS heatup lasting longer than	vioue	Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"
SITTE AREA		<ul> <li>15 minutes</li> <li>FIRE in the control room, cable tray mezzanine, or process control room resulting in an evacuation of the control room per 1.56C.4 "Alternate Safe Shutdown"</li> <li>1. 1.56C.4 "Alternate Safe Shutdown" entered</li> </ul>		Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"
 ALERT	All	<ul> <li>FIRE in any of the areas listed in Table 4-1 that is affecting safety related equipment [1 and 2]</li> <li>1. FIRE in any of the listed areas in Table 4-1</li> <li>2. [a or b]</li> <li>a. Ops personnel report VISIBLE DAMAGE to permanent structure or equipment in listed area due to FIRE</li> <li>b. Control room indication of degraded system or component (within listed areas) response due to FIRE</li> </ul>	All	<ul> <li>EXPLOSION in any of the areas listed in Table</li> <li>4-1 that is affecting safety related equipment [1 and 2]</li> <li>1. EXPLOSION in any of the listed areas in Table 4-1</li> <li>2. [a or b] <ul> <li>a. Ops personnel report VISIBLE DAMAGE to permanent structure or equipment in listed area</li> <li>b. Control room indication of degraded system or component (within listed areas) response due to EXPLOSION Refer to Tab 4.6 "Security"</li> </ul> </li> <li>UNPLANNED EXPLOSION in or adjacent to</li> </ul>
UNUSUAL EVENT	All	FIRE in <u>or</u> adjacent to those areas listed in Table 4-1 not extinguished within 15 minutes from the time of control room notification <u>or</u> verification of control room alarm	All	<ul> <li>UNPLANNED EXPLOSION in <u>or</u> adjacent to those areas listed in Table 4-1</li> <li>1. UNPLANNED EXPLOSION in <u>or</u> adjacent to any of the listed areas in Table 4-1</li> <li>Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"</li> <li>Refer to Tab 4.6 "Security"</li> </ul>

#### TABLE 4-1 PLANT AREAS ASSOCIATED WITH FIRE AND EXPLOSION EALS

Control Room	
Cable Tray Mezz.	
Process Cntrol Rm	
Relay Room	
Rod Drive/MG Rm	
RWST (1QS-TK-1)	

Diesel Gen. Room Intake Str Cubicles U1/U2 CV3 Cable Tunnel AE/DF Switchgear Fuel Building RW Valve Pit

Figure 4-A PROTECTED AREA / SITE PERIMETER



#### EPP/I-1a Attachment 1

Containment Building Prim. Auxiliary Building Safeguards Building Demin Water (1WT-TK-10) CO2 Storage/PG Pump Rm D/G Fuel Oil

1 HAZARDS / ED JUDGEMENT Δ-4.1, 4.2 Table 4-1, Figure 4

4.3	Flammable Gas	4.4	Toxic Gas
Mode	Criterion / Indicator	Mode	Criterion / Indicator
	Refer to Tab 4 1 "Fire", Tab 4.2 "Explosion, or Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
	Refer to Tab 4.1 "Fire", Tab 4 2 "Explosion", or Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
All	<ul> <li>Release of flammable gas within, or contiguous to, a VITAL AREA which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown (Mode 5).</li> <li>1. Report or detection of a flammable gas within, or contiguous to, a VITAL AREA in concentrations greater than explosive concentrations.</li> </ul>	All	<ul> <li>Release of TOXIC GAS within, or contiguout to, a VITAL AREA which jeopardize operation of systems required to maintain satisfies operations or to establish or maintain coll shutdown (Mode 5). (1 and 2)</li> <li>1. Report or detection of a TOXIC GAS within or contiguous to, a VITAL AREA or an arr required for continued safe operation concentrations that will be life threatening plant personnel.</li> </ul>
	Release of flammable gas affecting the		<ol> <li>Plant personnel would be unable to perform actions necessary for continued sations operation or to establish and maintain conshutdown (Mode 5) while utilizing appropriate personnel protection equipment.</li> <li>Release of TOXIC GAS affecting the second seco</li></ol>
All	<ul> <li>PROTECTED AREA deemed detrimental to the safe operation of the plant. (1 or 2)</li> <li>1. (a and b) <ul> <li>a. Report or detection of flammable gas that could enter the SITE PERIMETER in amounts that can affect normal operation of the plant (Refer to Figure 4-A).</li> <li>b. Normal operation of the plant is impeded due to access restrictions implemented by the Control Room within the PROTECTED AREA (Refer to Figure 4-A).</li> </ul> </li> <li>2. Report by local, county or State officials for a potential evacuation of site personnel based on an offsite event.</li> </ul>	All	<ul> <li>PROTECTED AREA deemed detrimental the safe operation of the plant. (1 or 2)</li> <li>1. (a and b)</li> <li>a. Report or detection of TOXIC GAS the could enter the SITE PERIMETER amounts that can affect normal operation of the plant (Refer to Figure 4-A).</li> <li>b. Normal operation of the plant is impeddent due to access restrictions implemented the Control Room within the PROTECTED AREA (Refer Figure 4-A)</li> <li>2. Report by local, county or State officials for potential evacuation of site personnel bass on an offsite event.</li> <li>Refer to AOP 1/2 44A.1 "Chlorine/toxic GRelease", Attachment 3 for a list of chemical</li> </ul>

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## TABLE 4-2 HAS BEEN DELETED

FIGURE 4-B HAS BEEN DELETED

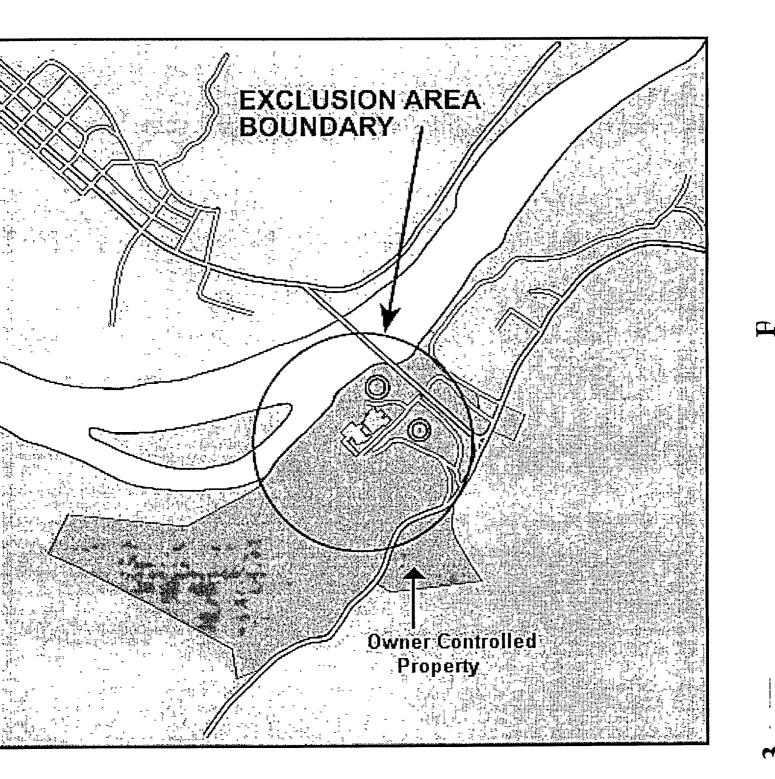
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**Revision 4** 

Figure 4-C

E

## **EXCLUSION AREA BOUNDARY**



4.5	Control Room Evacuation	4.6	Security		4.7 Mode	Criterion / Indicator
Mode	Criterion / Indicator	Mode	Criterion / Indicator         Security event resulting in loss of control of the systems necessary to establish or maintain cold shutdown [1 or 2]         1. Hostile armed force has taken control of the control room or the remote shutdown panel         2. Hostile armed force has taken control of plant equipment such that Ops personnel report the inability to operate equipment necessary to maintain the following functions [a or b or c]         a       Subcriticality         b.       Core cooling         c.       Heat Sink		All	Events are in process <u>or</u> have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA protective action guidelines exposure levels outside the EXCLUSION AREA BOUNDARY. (Refer to Figure 4-C on preceding page.)
All	<ul> <li>Evacuation of the control room has been initiated and control of all necessary equipment has not been established within 15 minutes of manning the Shutdown Panel [1 and 2]</li> <li>1. AOP 1.33.1 "Control Room Inaccessibility" has been entered</li> <li>2. Inability to transfer and operate any single component listed in Table 4-3 within 15 minutes of manning the shutdown panel</li> <li>Also refer to Tab 4.1 "Fire"</li> </ul>	All	<ul> <li>Security event has <u>or</u> is occurring which results in actual or likely failures of plant functions needed to protect the public [ 1 or 2]</li> <li>1. VITAL AREA, other than the control room, has been penetrated by a hostile armed force</li> <li>2. Suspected BOMB detonates within a VITAL AREA</li> </ul>	• • • • • • • • •	All	Events are in process or have occurred which involve actual or likely major failures of plant functions needed for the protection of the public. Any releases are NOT expected to result in exposure levels which exceed EPA protective action guideline exposure levels outside the EXCLUSION AREA BOUNDARY. (Refer to Figure 4-C on preceding page.)
All	Evacuation of the control room is required 1. AOP 1 33.1 "Control Room Inaccessibility" has been entered	All	<ul> <li>Credible Security event which indicates an actual or potential substantial degradation in the level of safety of the plant [1 or 2 or 3]</li> <li>BOMB discovered within a VITAL AREA</li> <li>CIVIL DISTURBANCE ongoing within the PROTECTED AREA</li> <li>PROTECTED AREA has been penetrated by a hostile armed force</li> <li>Refer to Figure 4-A for a drawing of the PROTECTED AREA</li> </ul>		All	Events are in process <u>or</u> have occurred which involve an actual <u>or</u> potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA protective action guideline exposure levels.
	Not Applicable	All	<ul> <li>Credible Security event which indicates a potential degradation in the level of safety of the plant [1 or 2]</li> <li>1. BOMB discovered within the PROTECTED AREA</li> <li>2. Security Shift Supervisor reports one or more of the events listed in Table 4-4</li> <li>Refer to Figure 4-A for a drawing of the PROTECTED AREA</li> </ul>		All	Unusual events are in process <u>or</u> have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response <u>or</u> monitoring are expected unless further degradation of safety systems occurs.

### Table 4-3 EQUIPMENT REQUIRED AT SHUTDOWN PANEL

One Auxiliary Feedwater Pump One Atmospheric Steam Dump One Charging Pump One Boric Acid Pump 1FCV-CH-122

**UNUSUAL EVENT** 

### Table 4-4 SECURITY EVENTS

- a. SABOTAGE/INTRUSION has <u>or</u> is Occurring Within the PROTECTED AREA (Figure 4-A)
- b. HOSTAGE/EXTORTION Situation That Threatens to Interrupt Plant Operations
- c. CIVIL DISTURBANCE Ongoing Between the SITE PERIMETER and PROTECTED AREA (Figure 4-A)
- d. Hostile STRIKE ACTION Within the PROTECTED AREA Which Threatens to Interrupt Normal Plant Operations (Judgement Based on Behavior of Strikers and/or Intelligence Received) (Figure 4-A)
- e. A credible site-specific security threat notification.

### **FISSION PRODUCT BARRIER MATRIX (Modes 1-4)**

- 1.1 Fuel Clad (RCS activity, corecooling, heat sink)
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation 2.5
- Loss of Function/Comm's 2.2
- **RCS** Unident Leakage 2.6 RCS Ident. Leakage

  - Failure of Rx Prot.-ATWS 2.7 Technical Specification S/D Safety Limit Exceeded 2.8
- Fuel Clad Degradation 2.4
- LOSS OF POWER
- Loss of AC (Power Ops) (Modes 1-4) 3.1
- 3.2 Loss of AC (Shutdown) (Modes 5 & 6)
- Loss of DC 3.3

2.3

1

### **HAZARDS and ED JUDGEMENT**

4.1 Fire Explosion 4.2 Table 4-1

Figure 4-A

- 4.3 Flammable Gas 4.4 Toxic Gas Table 4-2
  - Figure 4-B/Figure 4-C
- DESTRUCTIVE PHENOMENA
- 5.1 Earthquake
- 5.2 Tornado/High Winds Table 5-1 Figure 5-A

- 5.3 Aircraft Crash/Projectile 5.4 **River Level High**
- 5.5 River Level Low
- Watercraft Crash (RW/SWS Loss) 5.6

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 6.2
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- **RCS** Inventory-Shutdown
- 6.4 Loss of DC (Shutdown) (Modes 5 & 6) Fuel Handling (All Modes) 6.5
  - 6.6 Inadvertent Criticality

### RADIOLOGICAL

Gaseous Effluent 7.1 Liquid Effluent 7.2 Table 7-1 Figure 7-A

Radiation Levels 7.3 Fuel Handling (All Modes) 7.4 Table 7-2

4.5 **Control Room Evacuation** 4.6

**Turbine Failure** 

2.10 Stm/Feed Line Break

Security

2.9

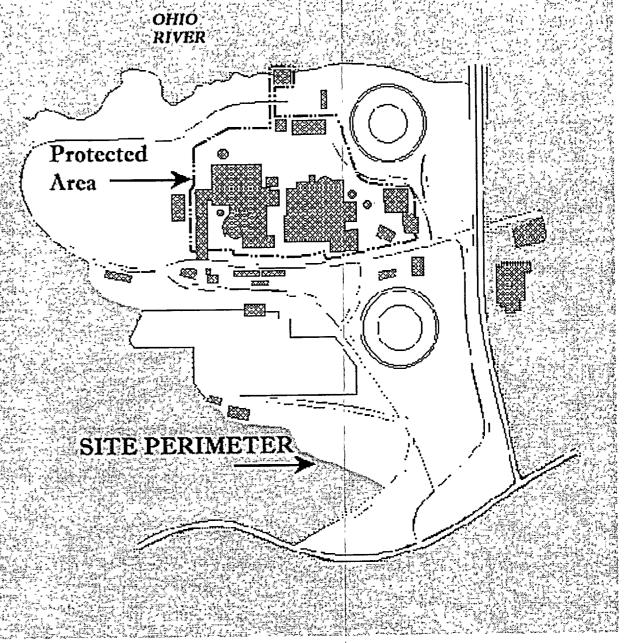
- ED Judgement 4.7 Table 4-3/Table 4-4



5 - Destructive

Phenomena

Earthquake       5.2       Tornado         e       Criterion / Indicator       Mode       Criterion / Indicator         Refer to Tab 1 "Fission Product Barrier Matrix"       Refer to Tab 1 "Fission Product Barrier Matrix"       Refer to Tab 1 "Fission Product Barrier Matrix"         Refer to Tab 1 "Fission Product Barrier Matrix"       Refer to Tab 1 "Fission Product Barrier Matrix"       Refer to Tab 1 "Fission Product Barrier Matrix"
Forthousing ansater than 0.06g acceleration Tornado or high wind strikes any structure
Earthquake greater than 0.06g acceleration occurs       Tornado or high wind strikes any structure listed in Table 5-1 and results in structural damage [1 and 2]         1       Analysis of Accelerograph Recording System data indicate ground acceleration >0 06g in accordance with AOP 1/2 75 3 "Acts of Nature - Earthquake"       1. Tornado or high wind strikes any structure listed in Table 5-1         1       Analysis of Accelerograph Recording System data indicate ground acceleration >0 06g in accordance with AOP 1/2 75 3 "Acts of Nature - Earthquake"       1. Tornado or high wind strikes any structure listed in Table 5-1         1       All       a. Confirmed report of any VISIBLE DAMAGE to specified structures
Earthquake detected by site seismic instrumentation, >0.01g acceleration [1 and 2]       b. Control room indications of degraded safety system or component response within listed structures due to event         I. Ann. A11-59 "Seismic Accelerograph Operation" indicates initiation of the Accelerograph Recording System       I. Plant personnel report a tornado has been sighted within the SITE PERIMETER (refer to Figure 5-A)         II       a Ground motion sensed by plant personnel       All         b. Unit 2 reports seismic event detected on       All



Plant Structures Associated With Tornado/Hi Wind and Aircraft EALs

> Containment Building Safeguards Building Primary Aux. Building Fuel Handling Building RWST (1QS-TK-1) CO2 Storage/PG Pp Rm Service Building (incl. FW Reg Vlv Rm) Diesel Generator Building Main Intake Structure Main Intake Structure Demin. Water Sto. (1WT-TK-10)

### Figure 5-A Site Perimeter

### Table 5-1

ЕРР/І-1а

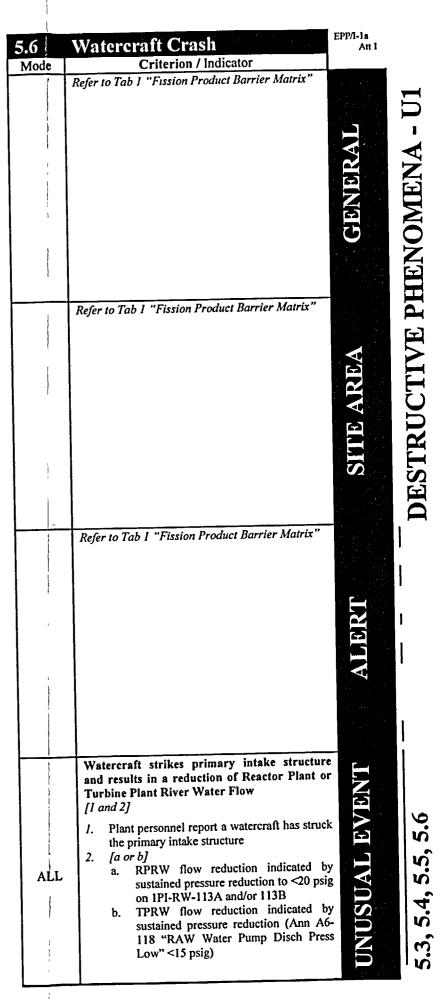
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**DESTRUCTIVE PHENOMENA** 

Attachment 1

	12	Aircraft/Projectile Crash	5.4	River Level HIGH			River Level LOW
	5.3 Mode	Criterion / Indicator	Mode	Criterion / Indicator		Mode	Criterion / Indicator Refer to Tab 1 "Fission Product Barrier Matrix"
		Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"			
SITE AREA	-	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"			Refer to Tab 1 "Fission Product Barrier Matrix"
<b>SHE</b>		Aircraft or PROJECTILE impacts (strikes) any plant structure listed in Table 5-1 resulting in structural damage [1 and 2]		River water level > 705 Ft mean sea level [1 or 2] 1 ILR-CW-101, if accessible, indicates >705			River water level <650 Ft Mean Sea Level [1 or 2] 1. 1LR-CW-101 indicates < 650 Ft Mean Sea
ALERT	ALL	<ol> <li>Plant personnel report aircraft or PROJECTILE has impacted any structure listed in Table 5-1 on previous page</li> <li>[a or b]         <ul> <li>a Confirmed report of any VISIBLE DAMAGE to specified structures</li> <li>b Control Room indications of degraded safety system or component response (within listed structures) due to event</li> </ul> </li> </ol>	ALL	<ul> <li>mean sea level</li> <li>2. National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400) reports Montgomery Lower Pool Lower Gauge Reading &gt;52 48 Ft</li> <li>Note Mean Sea Level = Lower Gauge Reading + 652.52 Ft</li> </ul>		ALL	Level 2. National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400) Reports Montgomery Lower Pool Lower Gauge Reading < -2.52 Note: Mean Sea Level = Lower Gauge Reading
UNUSUAL EVENT	ALL	<ul> <li>Aircraft crash or PROJECTILE impact within the SITE PERIMETER</li> <li>1. Plant personnel report aircraft crash or PROJECTILE impact within the SITE PERIMETER (refer to Figure 5-A on previous page)</li> </ul>	ALL	<ul> <li>River water level &gt;700 Ft Mean Sea Level [1 or 2]</li> <li>1. 1LR-CW-101 indicates &gt; 700 Ft Mean Sea Level</li> <li>2 National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400) reports Montgomery Lower Pool Lower Gauge Reading &gt;47.48 Ft</li> </ul>		ALL	<ul> <li>+ 652.52 Ft</li> <li>River water level &lt; 654° Ft Mean Sea Level</li> <li>[1 or 2]</li> <li>1. 1LR-CW-101 indicates &lt; 654 Ft Mean Sea Level</li> <li>2. National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400) Reports Montgomery Lower Pool Lower Gauge Reading &lt;+1.48 Ft</li> </ul>
DNI				Note: Mean Sea Level = Lower Gauge Reading + 652 52 Ft	· <b> </b>		Note: Mean Sea Level = Lower Gauge Reading + 652.52 Ft

1



### FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

- 1.1 Fuel Clad (RCS activity, corecooling, heat sink)
- 1.2 RCS (Integrity, SGTR, heat sink)
- 1.3 Containment (CNMT Red Path, CNMT bypass)

### SYSTEM DEGRADATION

### 2.1 Loss of Instrumentation 2.5

Loss of Function/Comm's 2.2 2.3

Fuel Clad Degradation

- **RCS** Unident Leakage 2.6 **RCS** Ident. Leakage
- Failure of Rx Prot.-ATWS 2.7
  - Technical Specification S/D
  - 2.8 Safety Limit Exceeded
- LOSS OF POWER
- 3.1 Loss of AC (Power Ops) (Modes 1-4)
- 3.2 Loss of AC (Shutdown) (Modes 5 & 6)
- 3.3 Loss of DC

2.4

### **HAZARDS and ED JUDGEMENT**

4.1 Fire 4.2 Explosion Table 4-1

Figure 4-A

4.3 Flammable Gas Toxic Gas 4.4 Table 4-2

Figure 4-B/Figure 4-C

### **DESTRUCTIVE PHENOMENA**

- 5.1 Earthquake
- 5.2 Tornado/High Winds Table 5-1 Figure 5-A

Aircraft Crash/Projectile

Security

Table 4-3/Table 4-4

**ED** Judgement

2.9

5.4 **River Level High** 5.5

4.5

4.6

4.7

- **River Level Low**
- Watercraft Crash (RW/SWS Loss)

**Control Room Evacuation** 

### SHUTDOWN SYSTEM DEGRADATION

- 6.1 Loss of Shutdown Systems 6.2
  - **RCS** Inventory-Shutdown 6.4
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
  - Loss of DC (Shutdown) (Modes 5 & 6)
  - 6.5
  - 6.6

5.3

5.6

### RADIOLOGICAL

Gaseous Effluent 7.1 7.2 Liquid Effluent Table 7-1 Figure 7-A

7.3 Radiation Levels 7.4 Fuel Handling (All Modes) Table 7-2

Fuel Handling (All Modes) Inadvertent Criticality

- **Turbine** Failure 2.10 Stm/Feed Line Break
  - 2





6.1	Loss of Shutdown Systems	6.2	<b>RCS Inventory - Shutdown</b>		5.3	Loss of AC (Shutdown)
Mode	Criterion / Indicator	Mode	Criterion / Indicator		Mode	Criterion / Indicator Refer to Tab 7.1 "Gaseous Effluents"
	Refer to Tab 7.1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"			
	Refer to Tab 7.1 "Gaseous Effluents"	5 6	<ul> <li>Loss of water level in the reactor vessel that has or will uncover fuel in the reactor vessel.</li> <li>[1 and 2]</li> <li>1. [a or b] <ul> <li>a. Loss of RHR or CCR or RPRW</li> <li>b. Loss of RCS Inventory with inadequate makeup</li> </ul> </li> <li>2. [a and b] <ul> <li>a Ops personnel report LI-1RC-480, or LI-1RC-482C RCS level instrumentation (if available) in the Control Room indicates a level drop to 0 inches</li> </ul> </li> </ul>			Refer to Tab 7.1 "Gaseous Effluents"
5 6	<ul> <li>Inability to maintain unit in cold shutdown [1 and 2]</li> <li>1. UNPLANNED Loss of RHR or CCR or RPRW</li> <li>2. [a or b or c] <ul> <li>a Core exit thermocouples (CETC) (if available) indicate the temperature has increased &gt;10 F and has exceeded 200F.</li> <li>b. (w/ RHR in service) RHR inlet</li> </ul> </li> </ul>		b. Other confirmed indications of fuel uncovery Not Applicable		5 6 De-	<ul> <li>UNPLANNED loss of offsite and onsite a power for &gt;15 minutes]</li> <li>1. AE and DF 4KV emergency buses energized from Unit 1 sources for &gt; minutes</li> </ul>
	<ul> <li>temperature has increased &gt;10 F and has exceeded 200 F.</li> <li>c. (w/o CETCs or RHR), loss has exceeded 30 minutes or there is evidence of boiling in the Rx vessel.</li> </ul>		Loss of Reactor Coolant System Inventory with		Fuel	Also refer to Tab 6.1 "Loss of Shutdown System UNPLANNED loss of all offsite power sup
56	<ul> <li>UNPLANNED loss of any function needed for cold shutdown that results in a core exit temperature increase of more than 10 F [1 and 2]</li> <li>1. UNPLANNED Loss of RHR or CCR or RPRW</li> <li>2. [a or b or c] <ul> <li>a. Core exit thermocouples (CETC) (if available) indicate the temperature has increased &gt;10F</li> <li>b. (W/ RHR in service) RHR inlet temperature has increased &gt;10 F</li> <li>c. (w/o CETCs or RHR), loss has exceeded</li> </ul> </li> </ul>	56	<ul> <li>inadequate make-up [1 and 2]</li> <li>1. Ops personnel report LI-1RC-480, or LI-1RC-482C RCS level instrumentation in the Control Room indicates a level drop to less than 14 5 inches</li> <li>2. Ops personnel report inability to make-up RCS inventory</li> </ul>	-	5 6 De- Fuel	<ul> <li>for &gt;15 minutes [1 and 2]</li> <li>1. Offsite power supply to AE and DF 4 buses unavailable for &gt;15 minutes.</li> <li>2. Either diesel generator is supplying powe its respective emergency bus</li> </ul>

1

6.4	Loss of DC (Shutdown)	EPP/I-1a Att 1	
Mode	Criterion / Indicator		
	Refer to Tab 7.1 "Gaseous Effluents"	GENERAL	<b>RADATION - U1</b>
	Refer to Tab 7 1 "Gaseous Effluents""	SITE AREA	UTDOWN SYSTEMS DEGRADATION - UI
	Refer to Tab 6 1 "Loss of Shutdown Systems"	ALERT	SHUTDOW
5 6 De- Fuel	<ul> <li>UNPLANNED loss of the required train of DC power for &gt;15 minutes [1 or 2]</li> <li>1. Voltage &lt;110 4 VDC on DC buses 1-1 and 1-3 for &gt;15 minutes if train A is the priority train</li> <li>2. Voltage &lt;110 4 VDC on DC buses 1-2 and 1-4 for &gt;15 minutes if train B is the priority train</li> </ul>	L EVENT	6.1, 6.2, 6.3, 6.4

	6.5	Fuel Handling	6.6	Inadvertent Criticality
	Mode	Criterion / Indicator	Mode	e Criterion / Indicator
GENERAL		Refer to Tab 7.1 Gaseous Effluents"		Refer to Tab 7.1 Gaseous Effluents"
SITE AREA		Refer to Tab 7.1 Gaseous Effluents"		Refer to Tab 7.1 Gaseous Effluents"
ALERT	ALL	<ul> <li>Major damage to irradiated fuel; or loss of water level that has or will uncover irradiated fuel outside the reactor vessel [1 and 2]</li> <li>1. VALID Hi-Hi alarm on RM-RM-203 or RM-RM-207 or RM-VS-103 A/B or RM-VS-104 A/B</li> <li>2. [a or b] <ul> <li>a Plant personnel report damage of irradiated fuel sufficient to rupture fuel rods</li> <li>b. Plant personnel report water level drop has or will exceed available makeup capacity such that irradiated fuel will be uncovered</li> </ul> </li> </ul>	3 4 5 6	
<b>UNUSUAL EVENT</b>	ALL	<ul> <li><i>Refer to Tab 0.2 for In-vesset Oncovery</i></li> <li>UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with fuel remaining covered [1 and 2 and 3]</li> <li>Plant personnel report water level drop in spent fuel pool or reactor cavity, or transfer canal</li> <li>VALID HI-Hi alarm on RM-RM-203 or RM-RM-207</li> <li>Fuel remains covered with water</li> </ul>		Not Applicable

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### EPP/I-1a Attachment 1

# SHUTDOWN SYSTEMS DEGRADATION - U1

6.5, 6.6

### **FISSION PRODUCT BARRIER MATRIX (Modes 1-4)**

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

### Loss of Instrumentation 2.1 2.5

- 2.2 Loss of Function/Comm's 2.6
  - Failure of Rx Prot.-ATWS 2.7
- 2.3 Fuel Clad Degradation 2.8 2.4

### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

### HAZARDS and ED JUDGEMENT

4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A

Flammable Gas 4.3 Toxic Gas 4.4 Table 4-2 Figure 4-B/Figure 4-C

### ED Judgement 4.7 Table 4-3/Table 4-4

Security

2.9

**RCS** Unident Leakage

Safety Limit Exceeded

Technical Specification S/D

RCS Ident. Leakage

Turbine Failure

2.10 Stm/Feed Line Break

### DESTRUCTIVE PHENOMENA

Earthquake 5.1

5.2 Tornado/High Winds Table 5-1 Figure 5-A

- Aircraft Crash/Projectile
- **River Level High**
- River Level Low
- Watercraft Crash (RW/SWS Loss)

**Control Room Evacuation** 

### SHUTDOWN SYSTEM DEGRADATION

- 6.1 Loss of Shutdown Systems **RCS** Inventory-Shutdown 6.2
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- Loss of DC (Shutdown) (Modes 5 & 6) 6.4

4.5

4.6

- Fuel Handling (All Modes) 6.5
- Inadvertent Criticality 6.6

5.3

5.4

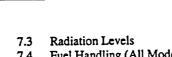
5.5

5.6

### RADIOLOGICAL

Gaseous Effluent 7.1 Liquid Effluent 7.2 Table 7-1 Figure 7-A

7.4 Fuel Handling (All Modes) Table 7-2





2

7.1	Gaseous Effluents	7.2	Liquid Effluents			'ABLE t radia	7-1 AITON MONI	TOR EAL'S	5		EPP/ Attac	/I-1a chment 1
	<b>Criterion / Indicator</b> EAB dose resulting from an actual <u>or</u> imminent Release of gaseous radioactivity that exceeds 1000 mR TEDE <u>or</u> 5000 mR child thyroid CDE for the actual <u>or</u> projected duration of the release [1 or 2 or 3]	Mode	Criterion / Indicator Not Applicable	NOTE: The values below, if exceeded, indic column. If the assessment can not b VALID reading. * NOTE: These monitors have the a	ate the need to p e completed wit	perform tl hin 15 mi	he specified do nutes (60 minu	se projection ites per UE),	lassessment, a the declaration	n shall be	made based	on the
	1. A VALID gas effluent rad monitor reading exceeds the values in Column 4 of Table 7-1 for				Column UE	1	Colur Ale		Colum		Colum	
All	<ul> <li>&gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Field survey results indicate EAB dose &gt;1000 mR β-γ for the actual or projected duration of the release</li> <li>3. EPP dose projection results indicate EAB dose &gt;1000 mR TEDE or &gt;5000 mR child thyroid CDE for the actual or projected duration of the release</li> </ul>			If a RWDA (Batch Release) is Applicable * RM-1LW-104 * RM-1LW-116 RM-1VS-101B (RBC Purge) RM-1VS-109 Channel 5 (RBC Purge) RM-1VS-110 Channel 5 (RBC Purge) * RM-1GW-108B (GWDT) RM-1GW-109 Channel 5 (GWDT) For All Other Unplanned Releases	2x the ODCN 7.06E+5 n/a 2.40E+03 2.86E+03 1 33E+04 7.86E+05 n/a 2x the ODCN	cpm cpm cpm cpm cpm cpm cpm	200x the OD n/a n/a 2.40E+05 2.86E+05 n/a n/a n/a n/a 2.00x the OD	OCM Limit cpm cpm cpm cpm cpm cpm cpm	n/a n/a n/a n/a n/a n/a n/a	cpm cpm cpm cpm cpm cpm cpm	n/a n/a n/a n/a n/a n/a	cpm cpm cpm cpm cpm cpm cpm
All	<ul> <li>EAB dose resulting from an actual <u>or</u> imminent release of gaseous radioactivity that exceeds 100 mR TEDE <u>or</u> 500 mR child thyroid CDE for the actual <u>or</u> projected duration of the release [1 or 2 or 3]</li> <li>A VALID gas effluent rad monitor reading exceeds the values in Column 3 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is <u>NOT</u> exceeded</li> <li>Field survey results indicate EAB dose &gt;100 mR β-γ for the actual or projected duration of the release</li> <li>EPP dose projection results indicate EAB dose &gt;100 mR TEDE or &gt;500 mR child thyroid CDE for the actual or projected duration of the release</li> </ul>		Not Applicable	Auxiliary Building Ventilation System (also called Ventilation Vent) RM-1VS-101B RM-1VS-109 Channel 5 RM-1VS-109 Channel 7 RM-1VS-109 Channel 9 RM-1VS-111 HR (SA-9) RM-1VS-111 LR (SA-10) Reactor Building/SLCRS Vent System (also called Elevated Release) RM-1VS-107B RM-1VS-110 Channel 5 RM-1VS-110 Channel 7 RM-1VS-110 Channel 9	6 00E+03 2.94E+03 n/a n/a n/a 1.29E+04 6 76E+03 n/a n/a	cpm cpm cpm cpm cpm cpm cpm cpm cpm	6 00E+05 2.94E+05 n/a n/a n/a 'n/a 'n/a 6.76E+05 'n/a n/a n/a	cpm cpm cpm cpm cpm cpm cpm cpm cpm	n/a 6 01E+05 6 69E+01 n/a 7.32E+03 n/a 9.08E+05 7.98E+01 n/a n/a	cpm cpm cpm cpm cpm cpm cpm cpm cpm cpm	n/a n/a 6.69E+02 1.32E+01 n/a 7.32E+04 n/a 7.98E+02 2.28E+02 1.53E+01	cpm cpm cpm
All	<ul> <li>Any UNPLANNED release of gaseous radioactivity that exceeds 200 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 15 minutes [1 or 2 or 3]</li> <li>1. A VALID gas effluent rad monitor reading exceeds the values in Column 2 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Field survey results indicate &gt;10 mR/hr β-γ at the EAB for &gt;15 minutes</li> <li>3. EPP dose projection results indicate EAB dose &gt;10 mR TEDE for the duration of the release</li> </ul>	All	<ul> <li>Any UNPLANNED release of liquid radioactivity that exceeds 200 times Technical Specifications 6.8.6a/Offsite Dose Calculation Manual Limit for 15 minutes [1 or 2]</li> <li>1. A VALID liquid effluent rad monitor reading exceeds the values in Column 2 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Sample results exceed 200 times the Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for an unmonitored release of liquid radioactivity &gt;15 minutes in duration</li> </ul>	RM-1VS-112 HR (SA-9) RM-1VS-112 LR (SA-10) Gaseous Waste/Process Vent System * RM-1GW-108B RM-1GW-109 Channel 5 RM-1GW-109 Channel 7 RM-1GW-109 Channel 9 RM-1GW-110 HR (SA-9) RM-1GW-110 LR (SA-10) Main Steam Reliefs RM-1MS-101 Liquid Effluent Pathways	n/a n/a n/a 4 80E+03 n/a n/a n/a n/a	cpm cpm cpm cpm cpm cpm cpm	n/a n/a n/a 4.80E+05 n/a n/a n/a n/a	cpm cpm cpm cpm cpm cpm cpm	n/a n/a n/a 7.90E+05 1 83E+04 1.59E+04 n/a n/a	cpm cpm cpm cpm cpm cpm cpm	1.19E+05 . n/a n/a 1.83E+05 1.59E+05 n/a 8 00E+01	cpm cpm cpm cpm cpm cpm cpm
	Any UNPLANNED release of gaseous radioactivity that exceeds 2 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 60 minutes		Any UNPLANNED release of liquid radioactivity to the environment that exceeds 2 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 60 minutes	* RM-1LW-104 * RM-1LW-116 RM-1RW-100 * RM-1DA-100	7.06E+5 n/a 5.14E+04 2.44E+04	cpm cpm cpm cpm	n/a n/a n/a n/a	cpm cpm cpm cpm	n/a n/a n/a n/a	cpm cpm cpm cpm	n/a n/a n/a n/a	cpm cpm cpm cpm
All	<ul> <li>[1 or 2 or 3]</li> <li>A VALID gas effluent rad monitor reading exceeds the values in Column 1 of Table 7-1 for &gt;60 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> </ul>	All	<ol> <li>A VALID liquid effluent rad monitor reading exceeds the values in Column 1 of Table 7-1 for &gt;60 minutes, unless dose projections within this tume period confirms that the CRITERION is NOT exceeded</li> </ol>	Minimum Release Duration Assessment Method for Gaseous Release	60 mini 1/2-HPP-03 1/2-HPP-03	06 012	1/2-HPP-03 1/2-HPP-03 EPP/IP-2.6.	06 013	EPP/IP-2 6		EPP/IP-2	
	<ol> <li>Field survey results indicate &gt;0 1 mR/hr β-γ at the EAB for &gt;60 minutes</li> <li>EPP dose projection results indicate EAB dose</li> </ol>		<ol> <li>Sample results exceed 2 times Technical Specification 6 8 6a/Offsite Dose Calculation Manual Limit for an unmonitored release of liquid radioactivity &gt;60 minutes in duration</li> </ol>	Assessment Method for Liquid Release	EPP/IP-2.7 EPP/IP-2.7.1	 l	EPP/IP-2.7 EPP/IP-2.7.					
	>0 1 mR TEDE for the duration of the release								x			Revis

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RADIOLOGICAL / FUEL HANDLING - U1

7.1, 7.2, Table 7-1

1	7.3	Radiation Levels	7.4	Fuel Handling
	Mode	Criterion / Indicator	Mode	Criterion / Indicator
GENERAL	Mode	Refer to Tab 1 "Fission Product Barrier Matrix" or Tab 7 1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"
SITE AREA		Refer to Tab 1 "Fission Product Barrier Matrix" or Tab 7.1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"
ALERT	All	<ul> <li>UNPLANNED increases in radiation levels within the facility that impedes safe operations or establishment or maintenance of cold shutdown [1 or 2]</li> <li>1. VALID area radiation monitor readings or survey results exceed 15 mR/hr in the Control Room or PAF (on U2 DRMS) for &gt;15 minutes</li> <li>2 [a and b]</li> <li>a. VALID area radiation monitor readings or survey results exceed values listed in Table 7-2</li> <li>b. Access restrictions impede operation of systems necessary for safe operation or the ability to establish or maintain cold shutdown See Note Below</li> </ul>	All	<ul> <li>b Plant personnel report water level drop has or will exceed available makeup capacity such that irradiated fuel will be uncovered</li> <li>Refer to Tab 6 "Shutdown Systems" for In-vessel Uncovery</li> </ul>
UNUSUAL EVENT	All	<ul> <li>UNPLANNED increase in radiation levels within the facility</li> <li>1. VALID area radiation monitor readings increase by a factor of 1000 over normal levels for &gt;15 minutes</li> <li>Note: In either the UE or ALERT EAL, the ED must determine the cause of increase in radiation levels and review other CRITERIA/INDICATORS for applicability (e g, a dose rate of 15 mR/hr in the Control Room could be caused by a release associated with a more significant event)</li> </ul>	ALI	<ul> <li>UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with fuel remaining covered [1 and 2 and 3]</li> <li>Plant personnel report water level drop in spent fuel pool or reactor cavity, or transfer canal</li> <li>VALID Hi-Hi alarm on RM-RM-203 or RM-RM-207 or</li> <li>Fuel remains covered with water</li> </ul>

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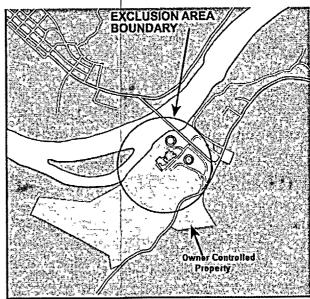
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### Table 7-2Areas Associated With EAL 7.3

LOCATION	INDICATOR	READING
Chem Sample Panel (735' PAB)	RM-RM-212	>100 mR/hr general area
PASS Sample Pnl (735' PAB)	Survey Results	>100 mR/hr general area
Manual Valve Chg. Pump	Survey Results	>100 mR/hr general area
Discharge (722' PAB)	Community Description	>100 mR/hr general area
Safeguards 752' Valves 1HY-110, 1HY-111, 1HY-196, 1HY-197	Survey Results	>100 mic/m general area
767' PAB SA9/SA10 Gas Monitors	Survey Results	>100 mR/hr general area
752' PAB SPING Monitor	RM-RM-210	>100 mR/hr general area
752' Safeguards Valves 1RS-157, 1RS-159	Survey Results	>100 mR/hr general area
735' West Cable Vault Valves, 11A-90, 1HY-101, 1HY-102, 1HY-103, 1HY-104	Survey Results	>100 mR/hr general area
735' Safeguards (1QSS, AFW)	Survey Results	>100 mR/hr general area
Main Steam Valve Room (752' Safeguards)	Survey Results	>100 mR/hr general area
A Penetrations (722' Safeguards)	Survey Results	>5 R/hr general area
East Cable Vault (735' Safeguards)	Survey Results	>100 mR/hr general area
Normal 4kV Switchgear	Survey Results	>100 mR/hr general area
Process Instrm. Room	Survey Results	>100 mR/hr general area
AE/DF Switchgear	Survey Results	>100 mR/hr general area
EDG 1-1, 1-2	Survey Results	>100 mR/hr general area
	}	

Figure 7-A EXCLUSION AREA BOUNDARY

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5 RADIOLOGICAL / FUEL HANDLING -7.3, 7.4, Table 7-2, Figure 7-A

EPP/I-1b Unit 2 A5.735B

### **RECOGNITION AND CLASSIFICATION**

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### **OF EMERGENCY CONDITIONS**



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**Revision 4** 

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EPP/I-1b Unit 2

### **EFFECTIVE INDEX**

Issue 8 Rev.	0 1 2 3 4 5 6 7	OSC Approved OSC Approved OSC Approved OSC Approved OSC Approved Non-Safety Related OSC Approved OSC Approved	3-12-87 8-13-87 10-8-87 2-9-88 2-9-89 3-15-89 4-18-89 4-12-90
Issue 9 Rev.	0 1 2 3	Non-Intent Revision OSC Approved Non-Intent Revision OSC Approved	10-9-90 4-4-91 12-29-92 1-27-93
Rev.	5 6 7 8	OSC Approved OSC Approved OSC Approved Non-Intent Revision	12-9-93 10-7-94 7-22-98 12-31-99
Rev.	0	OSC Approved	4-17-01
Rev.	1	Non-Intent Revision	12-12-01
Rev.	2	Simple Change	8-28-02
Rev.	3	Simple Change	11-8-02
Rev.	4	Simple Change	2-25-03

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EPP/I-1b Unit 2

### **TABLE OF CONTENTS**

- A. Purpose
- B. References
- C. Responsibilities
- D. Action Levels/Precautions
- E. Procedure
- F. Final Condition
- G. Attachments

### A. <u>PURPOSE</u>

- 1.0 This procedure describes the immediate actions to be taken to recognize and classify an emergency condition.
- 2.0 This procedure identifies the four emergency classifications and emergency action levels.
- 3.0 Reporting requirements for non-emergency abnormal events are provided.

### B. <u>REFERENCES</u>

- 1.0 Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
- 2.0 Title 10, Code of Federal Regulations Part 50, Appendix E.
- 3.0 NUREG-0654/FEMA-REP-1, <u>Criteria for Preparation and Evaluation of</u> <u>Radiological Emergency Response Plans and Preparedness in Support of Nuclear</u> <u>Power Plants</u>
- 4.0 Beaver Valley Power Station Operating Manual
- 5.0 NUMARC/NESP-007, <u>Methodology for Development of Emergency Action</u> Levels
- 6.0 ERS-SFL-91-041-REV 1 (U1/U2 Containment Monitor Readings due to LOCA's with various Source Terms).
- 7.0 Condition Report #992522
- 8.0 Condition Report #991327-1
- 9.0 Unit 1 Technical Specification Amendment 204 and Unit 2 Technical Specification Amendment 101.
- 10.0 EPPOS #2 "Emergency Preparedness Position (EPPOS) on Timeliness of Classification of Emergency Conditions".
- 11.0 NEI 99-02 "Regulatory Assessment Performance Indicator Guideline"
- 12.0 Condition Report #00-3939

### EPP/Implementing Procedure

### **Recognition and Classification of Emergency Conditions**

- 13.0 Condition Report #99-1234
- 14.0 Condition Report #02-02125-02
- 15.0 Calculation Package No. ERS-ATL-93-021
- 16.0 Calculation Package No. ERS-HHM-87-014
- 17.0 Calculation Package No. ERS-SFL-86-005
- 18.0 Calculation Package No. ERS-SFL-99-014
- 19.0 Condition Report #02-08649
- 20.0 Condition Report #02-09224<sup>+</sup>

### C. <u>RESPONSIBILITY</u>

The Emergency Director (Shift Manager, until properly relieved by a designated alternate) has the responsibility and authority for the performance of the actions prescribed in this procedure.

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### D. <u>ACTION LEVELS/PRECAUTIONS/GUIDANCE</u>

- 1.0 ACTION LEVELS
  - 1.1 An off-normal event has occurred.
    - 1.2 An action step in a plant operating or emergency operating procedure refers to this procedure for classification of the indicated plant condition.

### 2.0 PRECAUTIONS

- 2.1 The Emergency Director must review all applicable EALs to ensure that the event is properly classified since a given INDICATOR may be associated with more than one CRITERION. A particular INDICATOR omitted from the fission product barrier matrix may be addressed as an event-based EAL in one of the other tabs. Event-based EALs may escalate to the fission product barrier matrix. The Emergency Director may need to consider related events (*e.g., fire and explosion*) or the possible consequences of the event (*e.g., fire in an MCC resulting in loss of AC*) in classifying an event.
- 2.2 Continued surveillance and assessment of plant conditions are necessary to ensure that the emergency classification is appropriately revised as conditions change, or as more definitive information is obtained.

EPP/I-1b Unit 2 £

- 2.3 If there is any doubt with regard to assessment of a particular EAL, the EAL Basis Document (*i.e.*, *Chapter 4 of the EPP*) entry for that EAL can be reviewed. Classifications shall be consistent with the fundamental definitions of the four emergency classifications (tabulated in Tab 4.7).
- 2.4 The Emergency Director shall take whatever mitigative or restoration actions are necessary to protect public health and safety. The Emergency Director shall not reject courses of action solely on the basis that the action would result in escalation of the emergency classification.

### 3.0 GUIDANCE

- 3.1 Structure of the EALs
  - 3.1.1 There are two types of Emergency Action Levels included in this procedure:
    - 3.1.1.1 <u>Barrier-Based EALs:</u> These EALs address conditions that represent potential losses, or losses, of one or more of the Fuel Clad, RCS, or Containment fission product barriers. INDICATORs of these conditions include CRITICAL SAFETY FUNCTION status, fundamental indications such as subcooling or reactor vessel water level, or auxiliary indications such as containment radiation monitor readings. Classifications are based on the number of barriers lost or potentially lost.
    - 3.1.1.2 <u>Event-Based EALs</u>: These EALs address discrete conditions or events that are generally precursors to fission product barrier degradation, or are otherwise degradations in the level of safety of the plant. Events may be external (*e.g., severe weather, earthquakes, loss* of offsite power) internal (*e.g., fires, explosions, instrumentation failure*) or may involve radioactivity releases.

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3.1.2 The EALs are grouped by recognition category as follows:

- Tab 1Fission Product Barrier Matrix
- Tab 2System Degradation
- Tab 3 Loss of Power
- Tab 4 Hazards and ED Judgement
- Tab 5Destructive Phenomena
- Tab 6Shutdown Systems Degradation
- Tab 7 Radiological
- 3.1.3 Each of the EAL tabs includes one or more columns that address one initiating condition (*e.g., fires*). Each column provides EALs for each of the four emergency classifications, as applicable. A notation adjacent to each EAL identifies the plant operating mode(s) for which the EAL is applicable.
- 3.1.4 Each EAL is comprised of a CRITERION, printed in bold type, and one or more INDICATORs. The purpose of each is as follows:
  - 3.1.4.1 CRITERION: identifies the emergency condition and any numeric values which define that condition (*i.e., the basis of the declaration*) All classifications are based on an assessment (*i.e., determination that the condition is VALID*) by the Emergency Director that the CRITERION has been met or exceeded. Implicit in this protocol is the necessity for these assessments to be completed within 15 minutes (unless otherwise noted) of indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.
  - 3.1.4.2 **INDICATOR:** is available via instrumentation, calculations, procedure Entry (AOPs, EOPs, etc.), operator knowledge of plant conditions (pressure, temperatures, etc.) in the Control Room, or reports received from plant personnel, whichever is most limiting, or other evidence that the associated criterion may be exceeded. Upon occurrence of one or more indicators, the Emergency Director performs an assessment against the criterion. Depending on the particular condition, this assessment may be as simple as a review of the criterion, an instrument channel check, or a detailed calculation as in the case of a radioactivity release.

- 3.1.4.3 Inherent in this protocol is the necessity for these assessments to be completed within 15 minutes (unless otherwise noted) of sufficient indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.
- 3.1.4.4 The INDICATORs were selected with the objective of providing unambiguous guidance to assist with assessment of the CRITERION. There may be other INDICATORs not envisioned by the writers of this procedure that, in the judgment of the Emergency Director, correspond to the CRITERION. In these cases, the Emergency Director should base the declaration on engineering judgment, using the supplied INDICATORs as examples of the severity of the condition.
- 3.2 Common Plant Conditions
  - 3.2.1 IF an event occurs such that both reactor units are affected, e.g., tornado, toxic gas offsite, etc., <u>THEN</u> the senior Shift Manager shall make the appropriate classification and assume the role of Emergency Director.
  - 3.2.2 IF the common plant condition results in a higher emergency classification at one reactor unit, <u>THEN</u> the Shift Manager from that unit shall make the appropriate classification and assume the role of Emergency Director.
- 3.3 Mode Applicability
  - 3.3.1 The plant operating mode that existed at the time that the event occurred, prior to any protective system or operator action initiated in response to the condition, is compared to the mode applicability of the EALs.
  - 3.3.2 IF an event occurs, and a lower or higher plant operating mode is reached before the classification can be made, <u>THEN</u> the classification shall be based on the mode that existed at the time that the event occurred.

- 3.3.3 The fission product barrier matrix is applicable only to those events that occur at mode 4 or higher. An event that occurs in modes 5 or 6 shall not be classified using the fission product barrier matrix, even if mode 4 is entered due to subsequent heatup. In these cases, Tab 6, Shutdown Systems Degradation, shall be used for classification.
- 3.4 Transient Events
  - 3.4.1 For some EALs the existence of the event, without regard to duration, is sufficient to warrant classification. In these cases, the appropriate emergency classification is declared as soon as the Emergency Director assessment concludes that the CRITERION is met.
  - 3.4.2 Some EALs specify a duration of occurrence. For these EALs the classification is made when Emergency Director assessment concludes that the specified duration is exceeded or will be exceeded (*i.e., condition can not be reasonably rectified before the duration elapses*), whichever is sooner.
  - 3.4.3 <u>IF</u> a plant condition meeting an EAL CRITERION is rectified before the specified duration time is exceeded, <u>THEN</u> the event is <u>NOT</u> classified by that EAL. Lower severity EALs, if any, shall be reviewed for possible applicability in these cases.
  - 3.4.4 IF a plant condition meeting an EAL CRITERION is <u>NOT</u> classified at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) <u>AND</u> the condition no longer exists, <u>THEN</u> an emergency shall <u>NOT</u> be declared. However, reporting under 10 CFR 50.72 may be required. Such a condition could occur, for example, if a followup evaluation of an abnormal condition uncovers evidence that the condition was more severe than earlier believed.

- 3.4.5 IF an emergency classification was warranted, but the plant condition has been rectified (such that the CRITERION is no longer met) prior to declaration and notification, <u>THEN</u> the following guidance applies:
  - 3.4.5.1 For transient events that would have been declared as UNUSUAL EVENTS, no emergency is declared. However, the event shall be reported to those local, state, and Federal agencies designated to receive the initial notification form. These agencies shall be told that the UNUSUAL EVENT condition was rectified upon detection and no emergency is being declared.
  - 3.4.5.2 For transient events that would have been declared as an ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY, the event shall be declared and the emergency response organization activated. The EAL CRITERIA for these events has been set at a threshold that warrants declaration even if the initiating condition has been rectified. Termination can occur when the criteria of EPP/IP-6.2, *Termination of the Emergency and Recovery* can be satisified.
- 3.5 Declaration Timing and Assessment

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Emergency conditions shall be classified as soon as the Emergency Director assessment of the INDICATORs shows that the CRITERION is met. <u>IF</u> the EAL specifies a duration, <u>THEN</u> the event shall be declared as soon as it is determined that the condition cannot be corrected within the specified period. In either case, the assessment time starts from the indications being available to Control Room operators that an Emergency Action Level (EAL) has been exceeded.

3.5.1 The assessment time is limited to 15 minutes, except as follows:

- 3.5.1.1 <u>IF</u> the EAL specifies a duration (*e.g., release exceeds 2x T/S for one hour*), <u>THEN</u> the assessment time runs concurrently with the required duration <u>AND</u> is the same length (*e.g., in this example, one hour*).
- 3.5.1.2 The assessment time and any required duration are <u>NOT</u> additive.

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- 3.5.2 IF the assessment cannot be completed within the specified period, <u>THEN</u> the event must be declared on the basis of INDICATORs that cannot be reasonably discounted.
- 3.6 Bases
  - 3.6.1 Chapter 4 of the BVPS EPP provides the bases for these EALs. The bases can be used for guidance to assist the Emergency Director in classifying events for which the classification is not immediately apparent.
- 3.7 Defined Terms

3.7.1 In the EALs, words written in bold uppercase letters are defined terms having specific meanings as they relate to this procedure. Definitions of these terms are provided on the reverse side of most pages in the EAL section of this procedure. Such terms shall be interpreted as provided in the definitions.

E. PROCEDURE

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1.0 DETERMINE OPERATING MODE THAT EXISTED AT THE TIME THAT THE EVENT OCCURRED PRIOR TO ANY PROTECTION SYSTEM OR OPERATOR ACTION INITIATED IN RESPONSE TO THE EVENT.

2.0 DETERMINE IF THE CONDITION AFFECTS FISSION PRODUCT BARRIERS AND, IF SO, PROCEED TO TAB 1.

2.1 <u>IF</u> the condition involves any of the following <u>AND</u> the initial mode was 1-4 <u>THEN</u> proceed to Tab 1 and follow instructions provided <u>AND</u> continue with Step 2.2.

- 2.1.1 CSF status tree ORANGE PATH or RED PATH conditions
- 2.1.2 Core exit thermocouple readings above 729 F
- 2.1.3 Reactor vessel full range water level less than 40% (no RCPs)
- 2.1.4 Elevated RCS activity >300 µCi/gm
- 2.1.5 Elevated Containment High Range Area Radiation Monitor reading
- 2.1.6 RCS leakrate large enough to require a 2nd charging pump
- 2.1.7 Loss of RCS subcooling
  - 2.1.8 Steam Generator Tube Rupture
  - 2.1.9 Containment bypass or loss of integrity
- 2.1.10 Rise in containment pressure or hydrogen concentration

- 2.2 Consider other related event-based EALs. IF other EALs are applicable, THEN perform Steps 3.0 and 4.0 if necessary. Otherwise, go to Step 5.0
- 3.0 CATEGORIZE THE EVENT INTO ONE OF THE INITIATING CONDITIONS AND LOCATE THE TAB.
  - 3.1 Locate one of the EAL indices provided at the start of each tab.
  - 3.2 Review the index to identify the tab that addresses the event that has occurred.
  - 3.3 Turn to the appropriate tab.

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### NOTE:

The assessment of an emergency condition shall be completed as soon as possible and within 15 minutes of the occurance of one or more INDICATORs. IF the assessment cannot be completed within the specified period, <u>THEN</u> the event must be declared on the basis of INDICATORs that cannot be reasonably discounted.

### NOTE:

IF the EAL specifies a duration (e.g., release exceeds 2x T/S for one hour), THEN the assessment time runs concurrently with the required duration AND is the same length.

### 4.0 ASSESS THE EVENT AND COMPARE TO THE EALS

- 4.1 Locate the EAL for the highest severity emergency classification that is applicable for the initiating condition and operating mode
- 4.2 Review the INDICATORs and CRITERION for that EAL
- 4.3 IF the specified INDICATORs are not observed, <u>THEN</u>:
  - 4.3.1 Proceed to the next lower severity EAL and re-perform step 4.2 & 4.3.
  - 4.3.2 IF none of the EALs for an initiating condition are met, <u>THEN</u> reperform steps 3.0 and 4.0 for related initiating conditions.

- 4.3.3 IF the actions above do not identify an applicable EAL, THEN review the observed conditions against Tab 4.7, Hazards and Emergency Director Judgment.
  - 4.3.4 IF, after performing the above, no EAL is identified, THEN proceed to step 6.0.
- 4.4 IF the specified INDICATORs are observed, THEN:
  - 4.4.1 Perform necessary assessments to validate the instrument readings and/or confirm reported observations.
  - 4.4.2 Initiate any sampling, inspections, or dose assessments specified by the EAL.

IF the CRITERION specifies an event or condition duration, THEN the classification shall be made as soon as the duration is exceeded, OR when it is apparent that the duration will be exceeded, whichever is earlier.

**NOTE:** 

4.4.3 Compare the results of the assessments to the CRITERION.

### NOTE:

A given INDICATOR may apply to more than one CRITERION. The Emergency Director shall review other related EALs for applicability.

- 4.5 ' IF the assessment concludes that the CRITERION is met, <u>THEN</u> the classification shall be made. Proceed to Step 5.0
- 4.6 <u>IF</u> the assessment concludes that the CRITERION is not met, <u>THEN</u> reperform steps 3.0 and 4.0 for other related initiating conditions as applicable.

4.7 IF no classification results from the above, <u>THEN</u> proceed to step 6.0.

### NOTE

The declaration of the emergency classification shall be made as soon as the Emergency Director has assessed that the EAL has been met OR will be met, AND within 15 minutes of occurance of the INDICATOR. Once the emergency is classified, notifications to state and local governments shall be completed within 15 minutes of the declaration.

### 5.0 DECLARE THE EMERGENCY CLASSIFICATION AND TRANSITION TO RESPONSE PROCEDURES

- 5.1 IF an UNUSUAL EVENT is declared, THEN proceed to EPP/I-2
- 5.2 IF an ALERT is declared, <u>THEN</u> proceed to EPP/I-3
- 5.3 IF a SITE AREA EMERGENCY is declared, THEN proceed to EPP/I-4
- 5.4 IF a GENERAL EMERGENCY is declared, THEN proceed to EPP/I-5

### NOTE

The step below is implemented only if an emergency classification is NOT made. IF a classification is made, THEN the transition indicated in step 5.0 should have been made.

- 6.0 EVALUATE THE NEED FOR AND MAKE NON-EMERGENCY NOTIFICATIONS
  - 6.1 IF the abnormal condition is reportable to the NRC pursuant to 10 CFR 50.72 and 1/2-ADM-2202, THEN perform the following:
    - 6.1.1 Complete the NRC Reactor Plant Event Notification Worksheet (located on the Regulatory Affairs web page).
    - 6.1.2 Notify First Energy Communications of the event and provide the information on the NRC Reactor Plant Event Notification Worksheet.

6.2 <u>IF</u> directed by station management, <u>THEN</u> make courtesy calls to the following state and local agencies on a timely basis consistent with normal working hours.

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6.2.1 BCEMA
6.2.2 PEMA
6.2.3 CCEMA
6.2.4 HCOES

### F. <u>FINAL CONDITIONS</u>

1.0 For emergency events, the transition to the appropriate response procedure has been made and actions pursuant to that procedure are in progress.

2.0 For non-emergency events, required notifications have been completed.

### G. <u>ATTACHMENTS</u>

1.0 Tabs for Classification of Emergency Conditions

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### H. <u>FIGURES</u>

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1.0 Figures are identified on the EAL indices

### **FISSION PRODUCT BARRIER MATRIX (Modes 1-4)**

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation
- Loss of Function/Comm's 2.6 2.2
- 2.3 Failure of Rx Prot.-ATWS 2.7
- 2.9 2.5 **RCS** Unident Leakage 2.10 Stm/Feed Line Break RCS Ident. Leakage

Safety Limit Exceeded

- Technical Specification S/D
- 2.4 Fuel Clad Degradation 2.8

### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

### **HAZARDS and ED JUDGEMENT**

4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A

Flammable Gas 4.3 Toxic Gas 4.4 Table 4-2

Figure 4-B/Figure 4-C

4.5 Control Room Evacuation 4.6 Security ED Judgement 4.7 Table 4-3/Table 4-4

**Turbine Failure** 

### DESTRUCTIVE PHENOMENA

5.1 Earthquake 5.2 Tornado/High Winds Table 5-1 Figure 5-A

- Aircraft Crash/Projectile
- **River Level High** 5.4
- 5.5 **River Level Low** 
  - Watercraft Crash (RW/SWS Loss)

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 RCS Inventory-Shutdown 6.2
- Loss of AC (Shutdown) (Modes 5 & 6) 6.3 Loss of DC (Shutdown) (Modes 5 & 6) 6.4
- Fuel Handling (All Modes) 6.5
- Inadvertent Criticality 6.6

5.3

5.6

### RADIOLOGICAL

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Gaseous Effluent 7.1 7.2 Liquid Effluent Table 7-1 Figure 7-A

7.3 Radiation Levels Fuel Handling (All Modes) 7.4 Table 7-2

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1.1 Fuel C	
LOSS	Potential LOSS
Core Cooling CSF RED	
PATH	ORANGE PATH OR Hea
IAII	Sink CSF RED PATH
	R. MALL CREATER
1.1.2 Three Max CETCs	
LOSS	Potential LOSS
Greater than 1200F	Greater than 729F
0	R-
1.1.3 Reactor Vessel Water	Level
LOSS	Potential LOSS
Not Applicable	RVLIS Full Range <40
	(no RCPs running)
THE CELEBRATE STORE	
1.1.4 Primary Coolant Act	ivity Level
LOSS	Potential LOSS
RCS activity >300µCi/gm	
dose equivalent lodine-131	Not Applicable
ALL STORES	)R-
1.1.5 Letdown Monitor In	
LOSS	Potential LOSS
2CHS-RQ101 A/B [3051]	
VALID reading greater than	Not Applicable
300µCı/ml with letdown	
unisolated	
	R. The Cardy He
1.1.6. Containment Radia	Ion Monitors
LOSS	Potential LOSS
VALID reading exceeds:	Not Applicable
	1
2RMR-RQ206	* Due to streaming thru airlo
Time After 2RMR RQ207 2RMR-RQ20	
S/D, hrs R/hr mR/hr 0-0 5 340 1100	2RMR-RQ206 = chn 1029
0 5-4 190 560	2RMR-RQ207 = chn 1030
4-12 120 280	
	OR-
12-24 60 130	
12-24 60 130	or Judgement
12-24 60 130 1.1.7 Emergency Direct	or Judgement
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į		LOSS		Potential LOSS	
Way water	N	ot Applicab	ole	RCS Integrity CSF RED PATH OR Heat Sink CSF RED PATH	
Ļ	- MS		234 mil 01		
	1.2.2		•Ol essel Water	Level	
1		LOSS		Potential LOSS	鬻
1. 1. 1.	RVLIS F	Full Range	<40%		
	(no RCP	's running)		Not Applicable	5-K.
2			Je - 0	R-122	
7	1.2.3	RCS Leak	Rate		N.
		LOSS		Potential LOSS	
1	RCS les	k results in	n loss of	Unisolable RCS leak that	
			1033 01	requires an additional	1
2	RCS sub	coomg			<b>1</b>
ž.				charging pump be started with letdown isolated.	
					蠹
1.20				OR	
X.				RCS leak causes safety	
14				injection actuation indicated	· 2.
				by direct entry into EOP E-1	7 2
				required by EOP E-0	à9.
4.	19- 18	W your Same	*********	R. 2. 3. ALT THE AVE.	3. A.S.
	1 7 A	Delmary t	o Secondary	Tool	
	1.4.4		o Secondar j		٦×
105 103	1.11.1	LOSS		Potential LOSS	1.00
×2		hat results i	n a safety		3. 1927
***	injection	n actuation		Not Applicable	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		OR			2.2.
5.	Entry in	nto E-3 rec	quired by		
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ŝ.	FOPs				-34
Ž,	EOPs			<b>B</b> : 17 K- STAR (1963) 556	
		Conteinm	ent Radiati		
				on Monitors	
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	1.2.5 +VALI backgro Tume After 005 05.4 4.12 12-24 +Reading	LOSS D reading a und exceed 2RMR RQ201 mR/m 130 80 40 25 s based on T/S s based on T/S Emerger ondition these loss of	ent Radiation bove is: 2RMR-RQ202* mR/m 10 05 03 N/A RCS Activity Contemporation RCS Activity	Potential LOSS Not Applicable * Due to streaming thru aurlock 2RMR-RQ201 = chn 1026 2RMR RQ202 = chn 3020	
	1.2.5 +VALI backgro Tume After 005 05.4 4.12 12-24 +Reading	LOSS D reading a und exceed 2RMR RQ201 mR/m 130 80 40 25 s based on T/S s based on T/S Emerger ondition these loss of	ent Radiation bove is: 2RMR-RQ202* mR/m 10 05 03 N/A RCS Activity Contemporation RCS Activity	Potential LOSS Not Applicable * Due to streaming thru aurlock 2RMR-RQ201 = chn 1026 2RMR RQ202 = chn 3020	
	1.2.5 +VALI backgro Tume After 005 05.4 4.12 12-24 +Reading	LOSS D reading a und exceed 2RMR RQ201 mR/m 130 80 40 25 s based on T/S s based on T/S Emerger ondition these loss of	ent Radiation bove is: 2RMR-RQ202* mR/m 10 05 03 N/A RCS Activity Contemporation RCS Activity	Potential LOSS Not Applicable * Due to streaming thru aurlock 2RMR-RQ201 = chn 1026 2RMR RQ202 = chn 3020	
	1.2.5 +VALI backgro Tume After 005 05.4 4.12 12-24 +Reading	LOSS D reading a und exceed 2RMR RQ201 mR/m 130 80 40 25 s based on T/S s based on T/S Emerger ondition these loss of	ent Radiation bove is: 2RMR-RQ202* mR/m 10 05 03 N/A RCS Activity Contemporation RCS Activity	Potential LOSS Not Applicable * Due to streaming thru aurlock 2RMR-RQ201 = chn 1026 2RMR RQ202 = chn 3020	
	1.2.5 +VALI backgro Tume After 005 05.4 4.12 12-24 +Reading	LOSS D reading a und exceed 2RMR RQ201 mR/m 130 80 40 25 s based on T/S s based on T/S Emerger ondition these loss of	ent Radiation bove is: 2RMR-RQ202* mR/m 10 05 03 N/A RCS Activity Contemporation RCS Activity	Potential LOSS Not Applicable * Due to streaming thru aurlock 2RMR-RQ201 = chn 1026 2RMR RQ202 = chn 3020	

1.3 CNM	T Barrier
and the second	د او کو کو بر مدیند. او او موجود بر مدیند او با او می موجود با او می موجود با او می موجود با مراجع با او می موجود با او می ماد او او موجود او موجود او موجود با موجود با او می موجود با موجود با موجود با او می موجود با او می موجود با او می
1.3.1 Critical Safety Fund	ction Status
LOSS	Potential LOSS
Not Applicable	CNMT CSF RED PATH
24	OR
	Actions of FR-C.1
	(RED PATH) are INEF-
5	FECTIVE
-0	R
1.3.2 Containment Press	
LOSS	Potential LOSS
Rapid unexplained drop in	CNMT pressure >45 PSIG
CNMT pressure following	OR
initial rise	CNMT H2 rises >4%
OR	OR
CNMT pressure or sump	
level response NOT	
consistent with LOCA	of CNMT spray
conditions	or or or or oping
-0	B. C. M. San 24 5 Val Same Sales
133 Containment Isolat	
7.53	
LOSS	Potential LOSS
CNMT isolation is	Not Applicable
incomplete creating a direct	Not Applicable
release path to the	
environment when required	The division delated in the Storm Start on 12
-0	
1.3.4 Containment Bypa	
LOSS	Potential LOSS
RUPTURED S/G is also	Unexplained VALID rise
FAULTED Outside of	in reading on area or
CNMT	ventilation monitors in
<u>OR</u>	contiguous areas with
P-to-S leakrate >T/S with	known LOCA
approx. 4-8 hr. steam	<u>OR</u>
release from affected S/G	HIGH Alarm on 2SWS-
via nonisolable MSSV,	RQ100A,B,C, or D <u>AND</u>
SGADV, or from MSLB	affected HX 1s NOT
outside of CNMT	isolated
	)R-
A.3.	ctivity in Containment
LOSS	Potential LOSS
Not Applicable	VALID reading exceeds:
* Due to streaming thru airlock	
(25.8) ·	2RMR-RQ206 Time After 2RMR RQ207 2RMR RQ202*
2RMR-RQ202 = chn 3020	_S/D, hrsR/hrmR/hr
2RMR-RQ206 = chn 1029 2RMR-RQ207 = chn 1030	0-0 5 2 0E4 7 0E4 0 5-4 7 0E3 2 3E4
	4 12 2 9E3 9 0E3
	12-24 1 4E3 3 8E3
· · · · · · · · · · · · · · · · · · ·	
1.3.69 Emergency Direct	
Any condition that, in the	e judgement of the SM/ED,
	oss of the Containment barrier
comparable to the indicators	
·王子·云子·公子·汉代帝国子公	THE THE AVEL SECTION A WY SEALARY STREAM STREAM
A THE REPORT OF A PARTY OF A	
LOSS	Potential LOSS
LOSS	Potential LOSS

### Modes: 1,2,3,4 INSTRUCTIONS

IOTE:       An INDICATOR is considered to be MET if the stated threshold has been, or is, reached or exceeded, on the basis of confirmed observation or VALID instrumen readings The Emergency Director must use judgemen when classifying parameters that may be transitory (e.g. containment pressure).         IOTE:       The INDICATOR should be considered MET if th parameter is indeterminate due to instruments that are no available or out of range and the existence of the conditio can not be reasonably discounted.
parameter is indeterminate due to instruments that are no available or out of range and the existence of the conditio
cui noi de reasonador ascoantea.
IOTE: An INDICATOR is considered to be MET if, in the judgement of the Emergency Director, the INDICATOR with be MET imminently (i.e., within 1 to 2 hours in the absence of a viable success path). The classification shall be made as soon as this determination is made.
1. In the matrix to the left, review the LOSS INDICATORS each barrier column. If one or more INDICATORS are me check the LOSS block at the bottom of the column.
<ol> <li>If no LOSS is identified for a particular barrier, review th potential LOSS INDICATORS for that barrier. If one or mo INDICATORS are met, check the potential LOSS block at th bottom of the barrier column.</li> </ol>
3. Compare the blocks checked to the <b>CRITERIA</b> below ar make the appropriate declaration.
GENERAL EMERGENCY
LOSS of any Two (2) barriers and Potential loss of third barrier. OR LOSS of all three (3) barriers.
SITE AREA EMERGENCY
LOSS or Potential LOSS of any two (2) barriers.
LOSS of one (1) barrier and a Potential LOSS of a second barrier.
ALERT
Any LOSS <u>or</u> Potential LOSS of Fuel Clad barrier. OR
Any LOSS or Potential LOSS of RCS barrier.
UNUSUAL EVENT LOSS or Potential Loss of CNMT barrier.
SEE ALSO EAL'S
<ul> <li>Fuel Clad Degradation (RCS Specific Activity &gt;LCO)</li> <li>RCS Unidentified or Pressure Boundry Leakage &gt; 10 gpm</li> </ul>
2.6 RCS Identified Leakage > 25 gpm.

**Revision** 4

1.1.1.2.1.3

### FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

2.8

- 1.1 Fuel Clad (RCS activity, corecooling, heat sink)
- RCS (Integrity, SGTR, heat sink) 1.2
- 1.3 Containment (CNMT Red Path, CNMT bypass)

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation 2.2 Loss of Function/Comm's
- 2.5 **RCS** Unident Leakage 2.6

Safety Limit Exceeded

- 2.9 RCS Ident. Leakage 2.10 Stm/Feed Line Break
- Technical Specification S/D
- Failure of Rx Prot.-ATWS 2.7 2.4 Fuel Clad Degradation
- LOSS OF POWER
- 3.1 Loss of AC (Power Ops) (Modes 1-4)
- 3.2 Loss of AC (Shutdown) (Modes 5 & 6)
- 3.3 Loss of DC

2.3

### **HAZARDS and ED JUDGEMENT**

- 4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A
- 4.3 Flammable Gas 4.4 Toxic Gas Table 4-2 Figure 4-B/Figure 4-C
- 4.5 Control Room Evacuation 4.6
  - Security
- 4.7 ED Judgement Table 4-3/Table 4-4

### **DESTRUCTIVE PHENOMENA**

- 5.1 Earthquake
- 5.2 Tornado/High Winds Table 5-1 Figure 5-A
- 5.3 Aircraft Crash/Projectile 5.4 **River Level High** 
  - River Level Low
  - Watercraft Crash (RW/SWS Loss)
- SHUTDOWN SYSTEM DEGRADATION
- 6.1 Loss of Shutdown Systems

**RCS** Inventory-Shutdown

- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- 6.4 Loss of DC (Shutdown) (Modes 5 & 6)

5.5

5.6

- 6.5 Fuel Handling (All Modes)
- 6.6 Inadvertent Criticality

### RADIOLOGICAL

- Gaseous Effluent 7.1 Liquid Effluent 7.2 Table 7-1
- Figure 7-A

6.2

- Radiation Levels 7.3 7.4 Fuel Handling (All Modes)
- Table 7-2

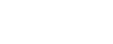






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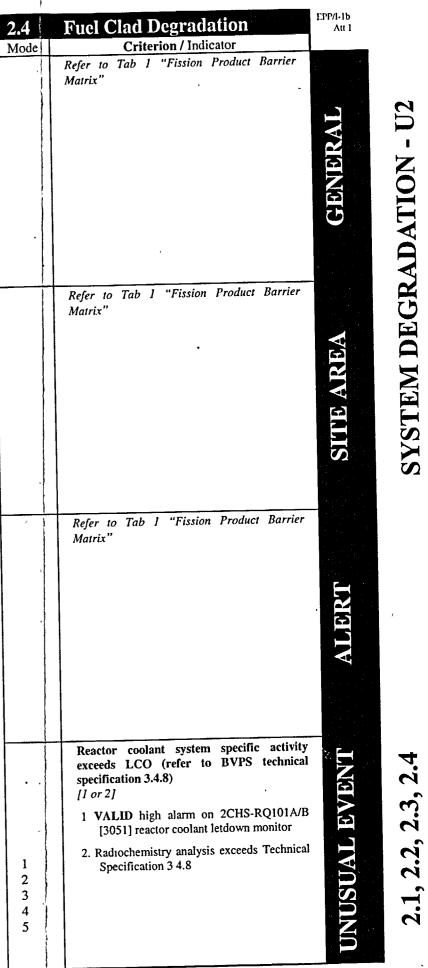
**Turbine Failure** 

2.1	Loss of Instrumentation	2.2	Loss of Function		2.3	Failure of Rx Protection
Mode	Criterion / Indicator	Mode	Criterion / Indicator	,	Mode	Criterion / Indicator Reactor power >5% after VALID trip
	Refer to Tab 1 "Fission Product Barrier Matrix" and Tab 7 "Radiological Effluents"	1 2 3 4	<ul> <li>Inability to cool the core <ul> <li>[1 or 2]</li> </ul> </li> <li>Actions of FR-C.1 (RED PATH) are <ul> <li>INEFFECTIVE</li> </ul> </li> <li>2. [a and b] <ul> <li>a, Three max core exit thermocouples &gt;1200 F; or three max core exit thermocouples &gt;729 F with NO RCPs running and RVLIS full range level &lt;40%</li> <li>b Actions taken have NOT resulted in a rising trend in RVLIS full range level or a dropping trend in core exit thermocouple temperatures within 15 minutes of initiation of restoration actions</li> </ul> </li> </ul>		1 2	<ul> <li>signal(s) and loss of core cooling capability [1 and 2]</li> <li>1. Ops personnel report FR-S.1 has been entered and subsequent actions do NOT result in reduction of power to &lt;5% and decreasing</li> <li>2. [a or b]</li> <li>a Ops personnel report CSF status tree RED PATH terminus exists for core cooling or heat sink</li> <li>b. Three max core exit thermocouples &gt;1200 F; or three max core exit thermocouples &gt;729 F with NO RCPs running and RVLIS full range level &lt;40%</li> </ul>
1 2 3 4	Inability to monitor a SIGNIFICANT TRANSIENT in progress [1 and 2 and 3]         1. Loss of most (>75%) annunciators <u>Or</u> indications         2. SIGNIFICANT TRANSIENT in progress         3. Inability to directly monitor any of the following CSFs:         Subcriticality       Vessel Integrity Core Cooling         Containment Heat Sink	1 2 3 4	<ul> <li>Loss of function needed to achieve or maintain hot shutdown [1 or 2]</li> <li>1. Ops personnel report a CSF status tree RED PATH terminus for core cooling or heat sink exists</li> <li>2. Three max core exit thermocouples &gt;1200 F; or three max core exit thermocouples &gt;1200 F; or three max core exit thermocouples &gt;729 F with NO RCPs running and RVLIS full range level &lt;40%</li> <li>Also Refer to Tab 2.3 "Failure of Reactor Protection" and Tab 1 "Fission Product Barrier Matrix"</li> </ul>		1 2	<ul> <li>Reactor trip failure after VALID Trip signal(s) with reactor power &gt;5% and attempts to cause a manual trip from the control room are unsuccessful.</li> <li>1. Ops personnel report FR-S 1 has been entered and manual reactor trip from control room did NOT result in reduction of power to &lt;5% and decreasing</li> </ul>
1 2 3 4	<ul> <li>UNPLANNED loss of most annunciators or indications for &gt;15 minutes with either a SIGNIFICANT TRANSIENT in progress or a loss of non-alarming compensatory indications [1 and 2 and 3]</li> <li>1. UNPLANNED loss of most (&gt;75%) annunciators or indications for &gt;15 minutes</li> <li>2. SM judgement that additional personnel (beyond normal shift complement) are required to monitor the safe operation of the unit</li> <li>3. [a or b] a. SIGNIFICANT TRANSIENT in progress b. Loss of SPDS</li> </ul>	1 2 3 4	<ul> <li>Complete loss of function needed to achieve Cold Shutdown when Shutdown required by Tech Specs [1 and 2 and 3]</li> <li>Loss of decay heat removal capability (RHR, CCR, or RPRW) / (RHS, CCP, SWS)</li> <li>Inability to remove heat via the condenser</li> <li>Shutdown to mode 5 required by T/S</li> </ul>		12	<ul> <li>Automatic reactor trip did not occur after VALID trip signal and manual trip from control room was successful [1 and 2]</li> <li>1. VALID reactor trip signal received or required.</li> <li>2 Manual reactor trip from control roo was successful and power is &lt;5% ard decreasing</li> </ul>
UNUSUAL EVENT	<ul> <li>b. Loss of SPDS</li> <li>UNPLANNED loss of most annunciators or indications for &gt;15 minutes [1 and 2]</li> <li>1. UNPLANNED loss of most (&gt;75%) annunciators or indications for &gt;15 minutes</li> <li>2 SM judgement that additional personnel (beyond normal shift complement) are required to monitor the safe operation of the unit</li> </ul>	ALL	<ul> <li>UNPLANNED Loss of communications [1 or 2]</li> <li>1. In-plant [a and b and c] <ul> <li>a. UNPLANNED Loss of All Pax Phones</li> <li>b. UNPLANNED Loss of All Gaitronics (Page/Party)</li> <li>c UNPLANNED Loss of All Radios (Handie-Talkies)</li> </ul> </li> <li>2. Offsite [a and b and c] <ul> <li>a UNPLANNED Loss of ENS</li> <li>b. UNPLANNED Loss of Bell Lines</li> <li>c. UNPLANNED Loss of Radios to Offsite</li> </ul> </li> </ul>	a general de la constante de la		in Applicable

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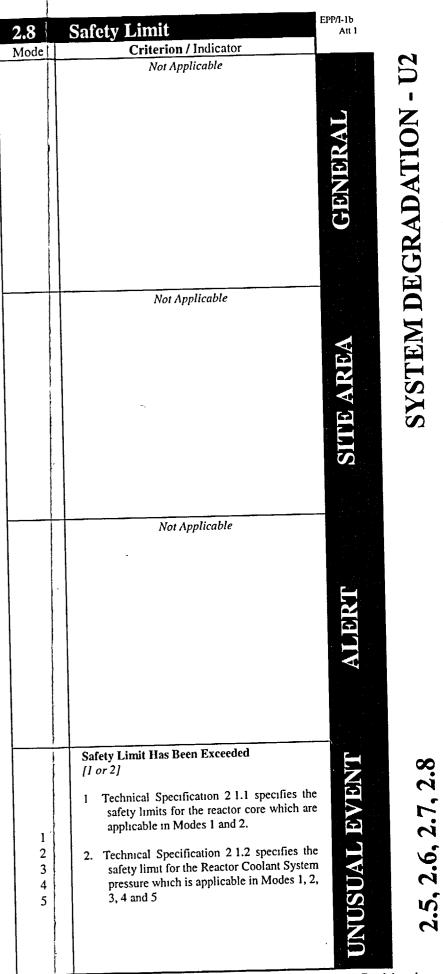
2.5	<b>RCS</b> Unidentified Leakage	2.6	RCS Identified Leakage		2.7 Mode	Technical Specification Criterion / Indicator
Mode	Criterion / Indicator	Mode	Criterion / Indicator	·  -		Not Applicable
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"	ь 		
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab I "Fission Product Barrier Matrix"			Not Applicable
	•			-		
	Refer to Tab I "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"			Refer to Tab 2.2, "Loss of Function"
1 2 3 4 5*	Unidentified or pressure boundary RCS leakage >10 GPM 1. Unidentified or pressure boundary leakage (as defined by Technical Specifications) >10 GPM as indicated below [a or b] a OST 2 6.2A results b. With RCS temp. and PZR level stable, VCT level dropping at a rate >10 GPM (>1%/min indicated on 2CHS- LI-115 with no VCT makeup in progress)	1 2 3 4 5*	Identified RCS leakage >25 GPM         1. Identified RCS leakage (as defined by Technical Specifications) >25 GPM as indicated below [a or b or c]         a. OST 2 6.2 or 2 6.2A Results         b. UNPLANNED level rise in excess of 25 GPM total into PRT, 2DGS-TK-21, and 2DGS-TK-22         c. Indication of Steam Generator Tube leakage >25 GPM         *Applies to Mode 5 if RCS Pressurized		1 2 3 4	<ul> <li>Inability to Reach Required Shutdown Mod Within Technical Specification Time Limits [1 and 2]</li> <li>1. A Technical Specification action statement, requiring a mode reduction, he been entered</li> <li>2. The unit has NOT been placed in the required mode within the time prescribes by the action statement</li> </ul>

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	2.9	Turbine Failure	2.10	Steam/Feed Line Break
	Mode	Criterion / Indicator	Mode	Criterion / Indicator
GENERAL		Refer to Tab I "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrıer Matrix"
		Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
SITE AREA			,	•
ALERT	1 2 3	<ul> <li>Turbine failure generated missiles cause penetration of a missile shield wall of any area containing safety related equipment</li> <li>Plant personnel report missiles generated by turbine failure with casing penetration also results in a through-wall penetration of a missile shield wall listed in Table 2-1</li> </ul>		Refer to Tab I "Fission Product Barrier Matrix"
<b>UNUSUAL EVENT</b>	1 2 3	<ol> <li>Turbine failure results in casing penetration</li> <li>Plant personnel report a turbine failure which results in penetration of the turbine casing or damage to main generator seals with evidence of significant hydrogen or seal oil leakage</li> </ol>	1 2 3 4	<ul> <li>UNPLANNED rapid depressurization of the Main Steam System resulting in a rapid RCS cooldown and Safety Injection actuation [1 and 2]</li> <li>1. Ops personnel report rapid depressurization of Main Steam System that causes SLI (&lt;500 psig)</li> <li>2 Ops personnel report Safety Injection has actuated</li> </ul>

### Table 2-1Plant Areas Associated With Shield WallPenetration EAL

Diesel Generator Bldg. Electrical Switchgear 730' Main Steam Valve Room 2FWE-TK210 Service Bldg 745' and 760' Containment Primary Aux. Building

2.9, 2.10, Table 2-1

### **FISSION PRODUCT BARRIER MATRIX (Modes 1-4)**

- Fuel Clad (RCS activity,-corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation
- 2.5 2.2 Loss of Function/Comm's 2.6

2.8

- **RCS** Unident Leakage
  - RCS Ident. Leakage

Safety Limit Exceeded

- 2.10 Stm/Feed Line Break Technical Specification S/D
- 2.3 Failure of Rx Prot.-ATWS 2.7 2.4 Fuel Clad Degradation

### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

### **HAZARDS and ED JUDGEMENT**

- 4.1 Fire
- 4.3 Flammable Gas **Toxic Gas** 4.4

Table 4-1 Figure 4-A

4.2 Explosion

Table 4-2 Figure 4-B/Figure 4-C 4.5 4.6 Security ED Judgement 4.7 Table 4-3/Table 4-4

2.9

**Turbine Failure** 

- DESTRUCTIVE PHENOMENA
- Earthquake 5.1 5.2 Tornado/High Winds Table 5-1 Figure 5-A

- Aircraft Crash/Projectile
- **River Level High**
- River Level Low
- Watercraft Crash (RW/SWS Loss)

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 **RCS** Inventory-Shutdown 6.2
- Loss of AC (Shutdown) (Modes 5 & 6) 6.3
- Loss of DC (Shutdown) (Modes 5 & 6) 6.4
  - Fuel Handling (All Modes) 6.5
  - Inadvertent Criticality 6.6

5.3

5.4 5.5

5.6

### RADIOLOGICAL

7.1 Gaseous Effluent Liquid Effluent 7.2 Table 7-1 Figure 7-A

Radiation Levels 7.3 7.4 Fuel Handling (All Modes) Table 7-2

- **Control Room Evacuation**











3.1	Loss of AC (Power Ops)	3.2	Loss of AC (Shutdown)	3.3	
Mode	Criterion / Indicator	Mode	Criterion / Indicator	Mod	le Criterion / Indicator Refer to Tab 1 "Fission Product Barrier Matrix"
1 2 3 4	<ul> <li>Prolonged loss of offsite and onsite AC power [1 and 2]</li> <li>1. AE and DF 4KV emergency buses NOT energized from Unit 2 sources for &gt;15 minutes</li> <li>2. [a or b or c]</li> <li>a. Ops personnel report CSF status tree RED PATH or ORANGE PATH terminus exists for core cooling</li> <li>b. Restoration of either AE or DF 4KV emergency bus is NOT likely from any source within 4 hours of loss</li> <li>c. Three max core exit thermocouples &gt;1200 F or three max core exit</li> </ul>		Refer to Tab 6 "Shutdown System Degradation"		and Tab 2.2 "Loss of Function", and Tab 6.1 "Loss of Shutdown Systems"
Ŧ	thermocouples >729 F with no RCPs			·	Loss of all vital DC power for >15 minutes
	running and RVLIS full range <40%		Refer to Tab 6 "Shutdown System Degradation"	, 1	<ol> <li>Voltage &lt;110 4 VDC on DC buses 2-1 and 2-2 and 2-3 and 2-4 for &gt;15 minutes</li> <li>Also Refer to Tab 1 "Fission Product Barrier</li> </ol>
1	energized from Unit 2 sources for >15 minutes			2 3 4	Matrix", Tab 2.2 "Loss of Function", and Tab
2 3 4					
8					Refer to Tab 1 "Fission Product Barrier
1 2 3 4	<ul> <li>AC power to emergency buses reduced to a single source of power such that any additional failure will result in the deenergization of both buses [1 and 2]</li> <li>1. Either AE or DF 4KV emergency bus is de-energized for &gt;15 minutes</li> <li>2. The energized AE or DF 4KV emergency bus has only one source of power [a or b]</li> </ul>	5 6 De- fuel	<ul> <li>UNPLANNED loss of offsite and onsite AC power for &gt;15 minutes</li> <li>1. AE and DF 4KV emergency buses NOT energized from Unit 2 sources for &gt;15 minutes</li> <li>Also Refer to Tab 6 "Shutdown System Degradation"</li> </ul>		Matrix", Tab 2 2 "Loss of Function", and Tab 2.1 "Loss of Instrumentation" and Tab 6.1 "Loss of Shutdown Systems"
	a. Emergency diesel generator				
	b. 2A or 2D 4KV normal bus Loss of offsite power supply for >15 minutes [1 and 2]		UNPLANNED loss of offsite power supply for >15 minutes [1 and 2]		UNPLANNED loss of one train of DC power for >15 minutes [1 or 2]
	1. Offsite power supply to AE and DF 4KV buses unavailable for >15 minutes		1. Offsite power supply to AE and DF 4KV buses unavailable for >15 minutes		$2-3101 \ge 1.5$ minutes
1 2 3 4	2 Each diesel generator is supplying power to its respective emergency bus	5 6 De- fuel	<ol> <li>Either diesel generator is supplying power to its respective emergency bus</li> </ol>	. 4	
			•		<ul> <li>Refer to Tab 6.4 "Loss of DC (Shutdown)" for modes 5, 6, and defueled</li> </ul>

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### EPP/I-1b<sup>,</sup> Attachment 1<sup>°</sup>

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3.1, 3.2, 3.3

Revision 4

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### FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2 1.3
- Containment (CNMT Red Path, CNMT bypass)

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation 2.5
- Loss of Function/Comm's 2.2

Fuel Clad Degradation

- **RCS** Unident Leakage 2.6 RCS Ident. Leakage Failure of Rx Prot.-ATWS 2.7

  - Technical Specification S/D 2.8
    - Safety Limit Exceeded

### LOSS OF POWER

- 3.1 Loss of AC (Power Ops) (Modes 1-4)
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

### HAZARDS and ED JUDGEMENT

4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A

1

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2.3

2.4

- 4.3 Flammable Gas 4.4 Toxic Gas Table 4-2 Figure 4-B/Figure 4-C
- 4.5 4.6
- 4.7
- Table 4-3/Table 4-4

### **DESTRUCTIVE PHENOMENA**

5.1 Earthquake

- Tornado/High Winds 5.2 Table 5-1
- Figure 5-A

- 5.3 5.4
  - 5.5 River Level Low

**River Level High** 

5.6 Watercraft Crash (RW/SWS Loss)

Aircraft Crash/Projectile

### SHUTDOWN SYSTEM DEGRADATION

- 6.1 Loss of Shutdown Systems 6.2 RCS Inventory-Shutdown
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- 64 Loss of DC (Shutdown) (Modes 5 & 6)
- 6.5 Fuel Handling (All Modes)
- 6.6 Inadvertent Criticality

### RADIOLOGICAL

7.1 Gaseous Effluent 7.2 Liquid Effluent Table 7-1 Figure 7-A

Radiation Levels 7.3 7.4 Fuel Handling (All Modes) Table 7-2

**ED** Judgement 4 - Hazards



2 2.10 Stm/Feed Line Break

**Turbine Failure** 

Control Room Evacuation Security ED Judgement

2.9





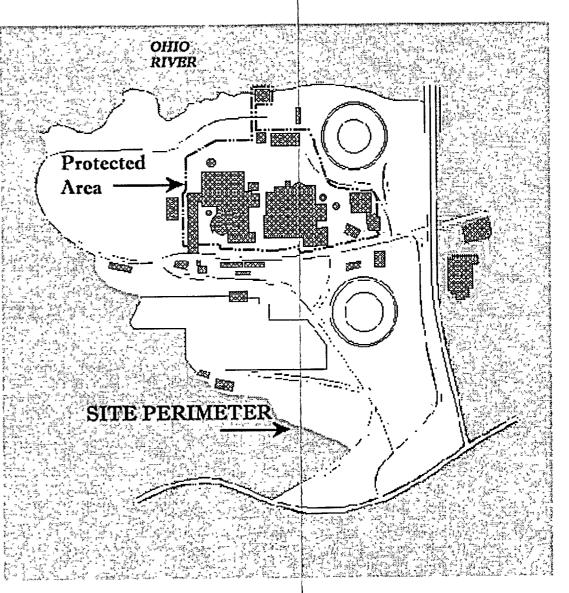
	4.1	Fire	4.2	Explosions
	Mode	Criterion / Indicator	Mode	Criterion / Indicator
GENERAL	1 2 3 4	<ul> <li>FIRE in the Instrument and Relay Room (CB-1), Cable Spreading Room (CB-2), Control Room (CB-3), West Communications Room (CB-6), or Cable Tunnel (CB-1) resulting in an evacuation of the control room per 2.56C.4 "Alternate Safe Shutdown" and loss of any required equipment results in an uncontrolled RCS Heatup [1 and 2 and 3]</li> <li>1. 2.56C.4 "Alternate Safe Shutdown" entered</li> <li>2. Ops personnel report inability to operate any of the following equipment required by 2.56C.4 "Alternate Safe Shutdown"</li> <li>2CHS-P21A 2SWS-P21A 2FWE-P23A &amp; 2FWE-P22 EGS-EG2-1 Black DG Alternate S/D Panel 2SAS-C21A 2CCP-P21A 2RHS-P21A</li> <li>3. Uncontrolled RCS heatup lasting longer than</li> </ul>		Refer to Tab 4.1"Fire" or Tab 1 "Fission Product Barrier Matrix" -
SITTE AREA	1 2 3 4	15 minutes         15 minutes         FIRE in the Instrument and Relay Room (CB-1), Cable Spreading Room (CB-2), Control Room (CB-3), West Communications Room (CB-6), or Cable Tunnel (CB-1) resulting in an evacuation of the control room per 2.56C.4         "Alternate Safe Shutdown"         1.       2.56C 4 "Alternate Safe Shutdown" entered		Refer to Tab 4.1 "Fire" or Tab 1 "Fission Product Barrier Matrix"
ALERT	All	<ul> <li>FIRE in any of the areas listed in Table 4-1 that is affecting safety related equipment [1 and 2]</li> <li>1. FIRE in any of the listed areas in Table 4-1</li> <li>2. [a or b] <ul> <li>a Ops personnel report VISIBLE DAMAGE to permanent structure or equipment in listed area due to FIRE</li> <li>b. Control room indication of degraded system or component (within listed areas) response due to FIRE</li> </ul> </li> </ul>	All	<ul> <li>EXPLOSION in any of the areas listed in Table 4-1 that is affecting safety related equipment [1 and 2]</li> <li>1. EXPLOSION in any of the listed areas in Table 4-1</li> <li>2. [a or b] <ul> <li>a. Ops personnel report VISIBLE DAMAGE to permanent structure or equipment in listed area</li> <li>b. Control room indication of degraded system or component (within listed areas) response due to EXPLOSION Refer to Tab 4 6 "Security"</li> </ul> </li> </ul>
UNUSUAL EVENT	All	FIRE in <u>or</u> adjacent to those areas listed in Table 4-1 not extinguished within 15 minutes from the time of control room notification <u>or</u> verification of control room alarm	All	<ul> <li>UNPLANNED EXPLOSION in <u>or</u> adjacent to those areas listed in Table 4-1</li> <li>1. UNPLANNED EXPLOSION in <u>or</u> adjacent to any of the listed areas in Table 4-1</li> <li>Refer to Tab 4.1, "Fire" or Tab 1 "Fission Product Barrier Matrix"</li> <li>Refer to Tab 4.6 "Security"</li> </ul>

### TABLE 4-1 PLANT AREAS ASSOCIATED WITH FIRE AND EXPLOSION EALS

Control Room Inst & Relay Rm 707 Emerg. Switchgear Relay Room Main Steam Vlv Rm Penetrations Area Cable Tunnel 712

Diesel Gen. Bldgs Intake Str Cubicles U1/U2 Cable Tunnel ( $CV_{13}$ ) Safeguards Building Fuel Building Service Building Cable Tunnel 735

Figure 4-A PROTECTED AREA/SITE PERIMETER



EPP/I-1b Attachment 1

Containment Building Prim. Auxiliary Building Rod Control Cable Vault Bldg. Cable Spreading Room 725 West Communications Room 707 ERF Substa & ERF DG Bldg RWST 2QSS-TK21

**U2** E. JUDGEMENT HAZARDS / ED 4.1, 4.2 Table 4-1, Figurè 4-A

4.3	Flammable Gas	4.4	Toxic Gas
Mode	Criterion / Indicator	Mode	Criterion / Indicator
	Refer to Tab 4.1 "Fire", Tab 4.2 "Explosion, or Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
	í.		
	Refer to Tab 4.1 "Fire", Tab 4.2 "Explosion", or Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
All	<ul> <li>Release of flammable gas within, or contiguous to, a VITAL AREA which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown (Mode 5).</li> <li>1. Report or detection of a flammable gas within, or contiguous to, a VITAL AREA in concentrations greater than explosive concentrations.</li> </ul>	All	<ul> <li>Release of TOXIC GAS within, or contiguous to, a VITAL AREA which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown (Mode 5). (1 and 2)</li> <li>1. Report or detection of a TOXIC GAS within, or contiguous to, a VITAL AREA or an area required for continued safe operation in concentrations that will be life threatening to plant personnel.</li> </ul>
	Release of flammable gas affecting the		<ol> <li>Plant personnel would be unable to perform actions necessary for continued safe operation or to establish and maintain cold shutdown (Mode 5) while utilizing appropriate personnel protection equipment.</li> <li>Release of TOXIC GAS affecting the PROTECTED AREA deemed detrimental to</li> </ol>
All	<ul> <li>PROTECTED AREA deemed detrimental to the safe operation of the plant. (1 or 2)</li> <li>1. (a and b)</li> <li>a. Report or detection of flammable gas that</li> </ul>	All	<ul> <li>the safe operation of the plant.</li> <li>(1 or 2)</li> <li>1. (a and b)</li> <li>a. Report or detection of TOXIC GAS that could enter the SITE PERIMETER in</li> </ul>
All	<ul> <li>a. Report of detection of Maintain gap and could enter the SITE PERIMETER in amounts that can affect normal operation of the plant (Refer to Figure 4-A).</li> <li>b. Normal operation of the plant is impeded due to access restrictions implemented by the Control Room within the PROTECTED AREA (Refer to Figure 4-A).</li> <li>2. Report by local, county or State officials for a potential evacuation of site personnel based on an offsite event.</li> </ul>		<ul> <li>amounts that can affect normal operation of the plant (Refer to Figure 4-A).</li> <li>b. Normal operation of the plant is impeded due to access restrictions implemented by the Control Room within the <b>PROTECTED AREA</b> (Refer to Figure 4-A).</li> <li>2. Report by local, county or State officials for a potential evacuation of site personnel based on an offsite event.</li> <li>Refer to AOP 1/2 44A.1 "Chlorine/toxic Gal Release", Attachment 3 for a list of chemical</li> </ul>

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### TABLE 4.2 HAS BEEN DELETED

EPP/I-1b Attachment 1

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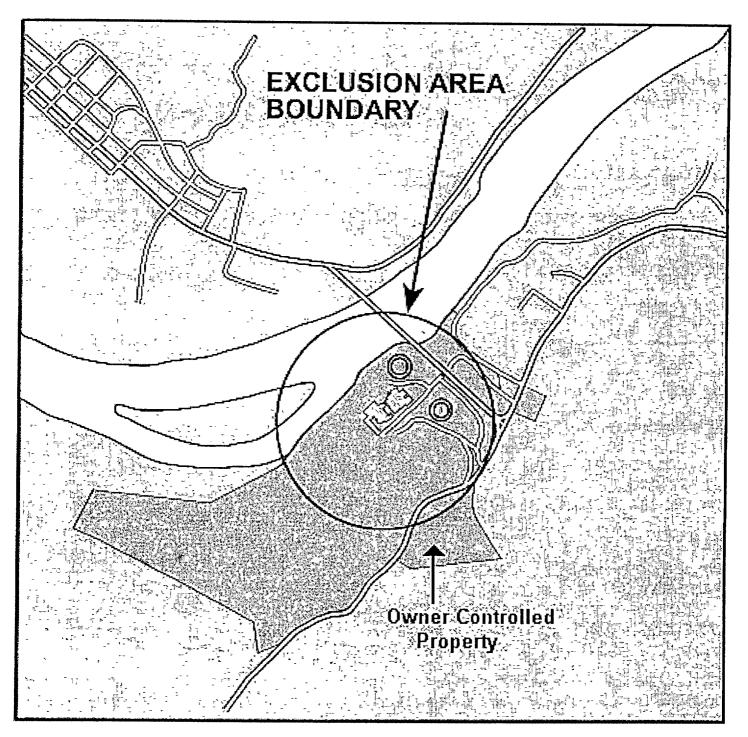
HAZARDS / ED JUDGEMENT

### FIGURE 4-B HAS BEEN DELETED

77 4.3.

### Figure 4-C

### **EXCLUSION AREA BOUNDARY**



	4.5	<b>Control Room Evacuation</b>	4.6	Security	,	4.7	<b>Emergency Director Judgement</b>	
	Mode	Criterion / Indicator	Mode	Criterion / Indicator		Mode	Criterion / Indicator	
GBNBRAL		Refer to Tab 4.1 "FIRE"	A11	<ul> <li>Security event resulting in loss of control of the systems necessary to establish or maintain cold shutdown [1 or 2]</li> <li>Hostile armed force has taken control of the control room or the remote shutdown panel</li> <li>Hostile armed force has taken control of plant equipment such that Ops personnel report the inability to operate equipment necessary to maintain the following functions [a or b or c].</li> <li>a Subcriticality</li> <li>b. Core cooling</li> </ul>	, } ;	All	Events are in process <u>or</u> have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA protective action guidelines exposure levels outside the EXCLUSION AREA BOUNDARY. (Refer to Figure 4-C on preceding page.)	GENERAL
SITTE AREA	All	<ul> <li>Evacuation of the control room has been initiated and control of all necessary equipment has not been established within 15 minutes of manning the Shutdown Panel [1 and 2]</li> <li>1. AOP 2.33.1A "Control Room Inaccessibility" has been entered</li> <li>2. Inability to transfer and operate any single component listed in Table 4-3 within 15 minutes of manning the shutdown panel</li> <li>Also refer to Tab 4 1 "Fire"</li> </ul>	All	<ul> <li>c. Heat Sink</li> <li>Security event has <u>or</u> is occurring which results in actual or likely failures of plant functions needed to protect the public</li> <li>[1 or 2]</li> <li>1. VITAL AREA, other than the control room, has been penetrated by a hostile armed force</li> <li>2. Suspected BOMB detonates within a VITAL AREA</li> </ul>	-	All	Events are in process <u>or</u> have occurred which involve actual <u>or</u> likely major failures of plant functions needed for the protection of the public. Any releases are NOT expected to result in exposure levels which exceed EPA protective action guideline exposure levels outside the EXCLUSION AREA BOUNDARY. (Refer to Figure 4-C on preceding page.)	SITTE AREA
ALBRT	All	Evacuation of the control room is required 1. AOP 2 33.1A "Control Room Inaccessibility" has been entered	All	<ul> <li>Credible Security event which indicates an actual or potential substantial degradation in the level of safety of the plant [1 or 2 or 3]</li> <li>BOMB discovered within a VITAL AREA</li> <li>CIVIL DISTURBANCE ongoing within the PROTECTED AREA</li> <li>PROTECTED AREA has been penetrated by a hostile armed force</li> <li>Refer to Figure 4-A for a drawing of the PROTECTED AREA</li> </ul>	<b>x</b> •	All	Events are in process <u>or</u> have occurred which involve an actual <u>or</u> potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA protective action guideline exposure levels.	AUBRI
UNUSUAL EVENT		Not Applicable	All	<ul> <li>Credible Security event which indicates a potential degradation in the level of safety of the plant [1 or 2]</li> <li>1. BOMB discovered within the PROTECTED AREA</li> <li>2. Security Shift Supervisor reports one or more of the events listed in Table 4-4 <ul> <li>.</li> <li>Refer to Figure 4-A for a drawing of the PROTECTED AREA</li> </ul> </li> </ul>		All	Unusual events are in process <u>or</u> have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response <u>or</u> monitoring are expected unless further degradation of safety systems occurs.	

### Table 4-3 EQUIPMENT REQUIRED AT SHUTDOWN PANEL

One Auxiliary Feedwater Pump One Atmospheric Steam Dump One Charging Pump One Boric Acid Pump and Boration Valve 2CHS\*FCV122

### Table 4-4 SECURITY EVENTS

- a. SABOTAGE/INTRUSION has or is Occurring Within the PROTECTED AREA (Figure 4-A)
- b. HOSTAGE/EXTORTION Situation That Threatens to Interrupt Plant Operations
- c. CIVIL DISTURBANCE Ongoing Between the SITE PERIMETER and PROTECTED AREA (Figure 4-A)
- d. Hostile STRIKE ACTION Within the PROTECTED AREA Which Threatens to Interrupt Normal Plant Operations (Judgement Based on Behavior of Strikers and/or Intelligence Received) (Figure 4-A)
- e. A credible site-specific security threat notification

### **FISSION PRODUCT BARRIER MATRIX (Modes 1-4)**

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- Loss of Instrumentation 2.1
- 2.5 RCS Unident Leakage Loss of Function/Comm's 2.6

  - RCS Ident. Leakage 2.10 Stm/Feed Line Break

2.9

**Turbine Failure** 

- Technical Specification S/D Failure of Rx Prot.-ATWS 2.7 Safety Limit Exceeded
- Fuel Clad Degradation 2.8

### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

2.2

2.3

2.4

### **HAZARDS and ED JUDGEMENT**

- 4.1 Fire 4.2 Explosion
- 4.3 Flammable Gas Toxic Gas 4.4 Table 4-2
- Table 4-1 Figure 4-A
- Figure 4-B/Figure 4-C
- DESTRUCTIVE PHENOMENA
- Earthquake 5.1
- Tornado/High Winds 5.2
- Table 5-1 Figure 5-A

5.4 5.5

5.3

5.6

- **River Level High** River Level Low
  - Watercraft Crash (RW/SWS Loss)

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 RCS Inventory-Shutdown 6.2
- Loss of AC (Shutdown) (Modes 5 & 6) 6.3
- Loss of DC (Shutdown) (Modes 5 & 6) 6.4
- Fuel Handling (All Modes) 6.5
- Inadvertent Criticality 6.6

### RADIOLOGICAL

- Gaseous Effluent 7.1
- Liquid Effluent 7.2 Table 7-1
- Figure 7-A

- **Radiation Levels** 7.3
- Fuel Handling (All Modes) 7.4
- Table 7-2

- **Control Room Evacuation** 4.5 4.6 Security
- 4.7 ED Judgement Table 4-3/Table 4-4

Aircraft Crash/Projectile

5 - Destructive Phenomena

•

5.1	Earthquake	5.2	Tornado
Mode	Criterion / Indicator	Mode	Criterion / Indicator
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"
			Refer to Tab 1 "Fission Product Barrier Matrix"
	Refer to Tab 1 "Fission Product Barrier Matrix"		Kejer to Lab I Trission Product Barrier Mairix
	Earthquake greater than 0.06g acceleration occurs [1 and 2]		Tornado or high wind strikes any structure listed in Table 5-1 and results in structural damage [1 and 2]
All	<ol> <li>A seismic event has occurred as indicated by Ann A10-5H "Init of Seismic Exceed Preset and/or Spectral Accelerations"</li> <li>[a and b]         <ul> <li>a. One or more alarm lamps and horn energized on the Seismic Warning panel [2ERS-ANN-1]</li> <li>b Review of the printout on 2ERS-RSA-1 Response Spectrum Analyzer reveals an acceleration &gt;0 06g has occurred (see 20M-45.4F "Seismic Instrumentation Central Control Cabinet [2ERS-CCC-1] Running")</li> </ul> </li> </ol>	All	<ol> <li>Tornado <u>or</u> high wind strikes any structure listed in Table 5-1</li> <li>[a or b]         <ul> <li>a. Confirmed report of any VISIBLE DAMAGE to specified structures</li> <li>b. Control room indications of degraded safety system <u>or</u> component response within listed structures due to event</li> </ul> </li> </ol>
	Also refer to AOP 1/2 75 3 "Acts of Nature- Earthquake"		
All	<ul> <li>Earthquake detected by site seismic instrumentation &gt;0.01g acceleration [1 and 2]</li> <li>1. Ann A10-5H "Init of Seismic Exceed Preset and/or Spectral Accelerations" indicates initiation of the Accelerograph Recording System</li> <li>2. [a or b]</li> <li>a Ground motion sensed by plant</li> </ul>	All	<ul> <li>Tornado within the SITE PERIMETER</li> <li>Plant personnel report a tornado has beer sighted within the SITE PERIMETER (refer to Figure 5-A)</li> </ul>
	personnel b. Unit 1 reports seismic event detected on unit instrumentation		

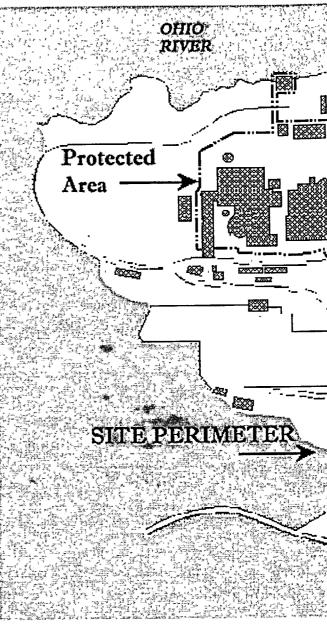


 Table 5-1

 Plant Structures Associated With

 Tornado/Hi Wind and Aircraft EALs

Containment BuildingControl BldgSafeguards BuildingCable Vault and Rod Control BldgPrimary Aux. BuildingMain Steam Valve RoomFuel Handling BuildingMain Intake StructureRWST (2QSS-TK21)Demin. Water Sto. (2FWE-TK-210)24 ton CO2 unitDiesel Generator BuildingService Building (incl. FW Reg Vlv Rm)

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Figure 5-A Site Perimeter EPP/I-1b

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Attachment 1

5.3	Aircraft/Projectile Crash	5.4	<b>River Level HIGH</b>	5.5 Mo	
Mode	Criterion / Indicator	Mode	Criterion / Indicator		Refer to Tab 1 "Fission Product Barrier Matrix
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrix"		
	Refer to Tab 1 "Fission Product Barrier Matrix"		Refer to Tab 1 "Fission Product Barrier Matrux"		Refer to Tab 1 "Fission Product Barrier Matri
					7
	Aircraft or PROJECTILE impacts (strikes) any plant structure listed in Table 5-1 resulting in structural damage [1 and 2]		River water level > 705 Ft mean sea level         [1 or 2]         1. ILR-CW-101, <u>if</u> accessible, indicates >705         mean sea level		River water level < 650 Ft Mean Sea Level [1 or 2] 1. 1LR-CW-101 indicates <650 Ft Mean Level
ALL	<ol> <li>Plant personnel report aircraft or PROJECTILE has impacted any structure listed in Table 5-1 on previous page</li> <li>[a or b] a. Confirmed report of any VISIBLE DAMAGE to specified structures</li> </ol>	ALL	<ol> <li>National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400) reports Montgomery Lower Pool Lower Gauge Reading &gt;52 48 Ft</li> </ol>		2. National Weather Bureau (412-262-188 or Montgomery Lock (724-643-840 Reports Montgomery Lower Pool Low Gauge Reading < -2.52 Ft Note Mean Sea Level = Lower Gauge Rea + 652.52 Ft
	<ul> <li>b. Control Room indications of degraded safety system or component response (within listed structures) due to event</li> <li>Aircraft crash or PROJECTILE impact within</li> </ul>		Note Mean Sea Level = Lower Gauge Reading + 652.52Ft River water level >700 Ft Mean Sea Level		River water level < 654' Ft Mean Sea Level
ALL	the SITE PERIMETER         1       Plant personnel report aircraft crash or PROJECTILE impact within the SITE PERIMETER (refer to Figure 5-A on previous page)	ALL	<ul> <li>[1 or 2]</li> <li>1 1LR-CW-101 indicates &gt; 700 Ft Mean Sea Level</li> <li>2. National Weather Bureau (412-262-1882) or Montgomery Lock (724-643-8400)</li> </ul>	[A	LL [1 or 2] 1. 1LR-CW-101 indicates < 654 Ft Mean Level 2. National Weather Bureau (412-262-1882 Montgomery Lock (724-643-8400) Re
			reports Montgomery Lower Pool Lower Gauge Reading >47 48 Ft Note: Mean Sea Level = Lower Gauge Reading + 652.52 Ft		Montgomery Lower Pool Lower G Reading <+1.48 Ft Note: Mean Sea Level = Lower Gauge Read + 652.52 Ft

5.6	Watercraft Crash	EPP/1-1b
Mode		Att 1
	Refer to Tab 1 "Fission Product Barrier Matrix"	GENERAL HENOMENA - U2
-	Refer to Tab 1 "Fission Product Barrier Matrix"	SITE AREA GENERAL DESTRUCTIVE PHENOMENA - U2
	Refer to Tab 1 "Fission Product Barrier Matrix"	ALBRI
ALL	<ul> <li>Watercraft strikes primary intake structure and results in a reduction of Service Water flow [1 and 2]</li> <li>Plant personnel report a watercraft has struck the primary intake structure</li> <li>SWS flow reduction indicated by sustained pressure reduction to &lt;30 psig on 2SWS-PI-113A and/or 113B</li> </ul>	<b>JEVIENT</b> 5, 5.6
	Refer to AOP 2.30.1 "Loss of Service Water"	Revision 4

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## 6 - Shutdown System Degradation

### FISSION PRODUCT BARRIER MATRIX (Modes 1-4) Fuel Clad (RCS activity, corecooling, heat sink)

- 1.2 RCS (Integrity, SGTR, heat sink)
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

- 2.1 Loss of Instrumentation 2.2
- 2.5 RCS Unident Leakage
- Loss of Function/Comm's 2.6 2.3 Failure of Rx Prot.-ATWS 2.7
  - RCS Ident. Leakage
- 2.4 Fuel Clad Degradation
- Technical Specification S/D
- 2.8 Safety Limit Exceeded

### LOSS OF POWER

- 3.1 Loss of AC (Power Ops) (Modes 1-4)
- 3.2 Loss of AC (Shutdown) (Modes 5 & 6)
- 3.3 Loss of DC

1.1

### HAZARDS and ED JUDGEMENT

4.1 Fire 4.2 Explosion Table 4-1 Figure 4-A

1

4.3 Flammable Gas 4.4 Toxic Gas Table 4-2 Figure 4-B/Figure 4-C

4.5 **Control Room Evacuation** 4.6 Security 4.7 ED Judgement Table 4-3/Table 4-4

2.9

**Turbine Failure** 

2.10 Stm/Feed Line Break

### **DESTRUCTIVE PHENOMENA**

5.1 Earthquake 5.2

- Tornado/High Winds Table 5-1
- Figure 5-A

- 5.3 Aircraft Crash/Projectile 5.4
  - River Level High
- 5.5 River Level Low 5.6
  - Watercraft Crash (RW/SWS Loss)

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 6.2 **RCS** Inventory-Shutdown
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6) 6.4 Loss of DC (Shutdown) (Modes 5 & 6)
- Fuel Handling (All Modes) 6.5
- 6.6 Inadvertent Criticality

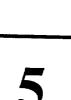
### RADIOLOGICAL

7.1 Gaseous Effluent 7.2 Liquid Effluent

Table 7-1 Figure 7-A 7.3 Radiation Levels

7.4 Fuel Handling (All Modes) Table 7-2

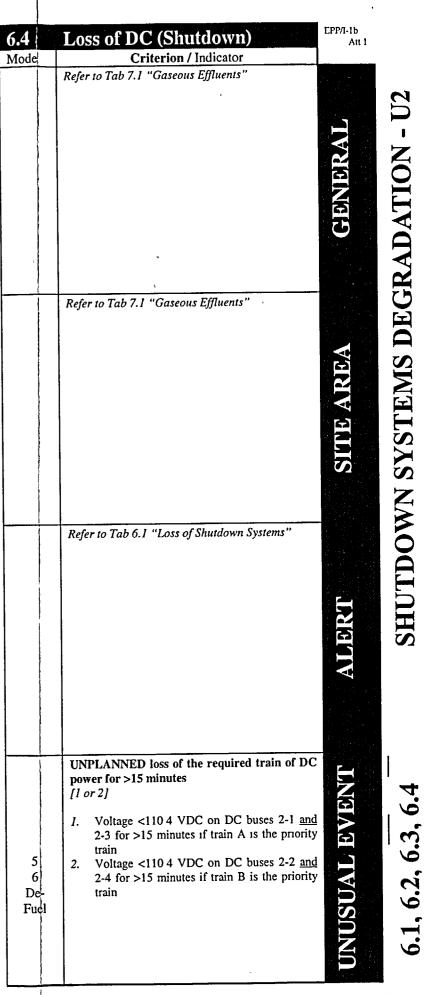
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	6.1	Loss of Shutdown Systems	6.2	RCS Inventory - Shutdown	•	6.3	Loss of AC (Shutdown)
	Mode	Criterion / Indicator	Mode	Criterion / Indicator	:	Mode	Criterion / Indicator
<b>ERAL</b> *		Refer to Tab 7.1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"			Refer to Tab 7.1 "Gaseous Effluents"
GENER		Refer to Tab 7.1 "Gaseous Effluents"		Loss of water level in the reactor vessel that has	a maga anna a tura .		Refer to Tab 7.1 "Gaseous Effluents"
E AREA			5 6	<ul> <li>or will uncover fuel in the reactor vessel</li> <li>[1 and 2]</li> <li>1. [a or b] <ul> <li>a. Loss of RHS or CCP or SWS</li> <li>b. Loss of RCS Inventory with inadequate makeup</li> </ul> </li> <li>2. [a and b]</li> </ul>			L
SITTE		Inability to maintain unit in cold shutdown [1 and 2]		a. Ops personnel report 2RCS-LI-102, LR-102 RCS level instrumentation (if available) in the Control Room indicates a level drop to 0 inches b. Other confirmed indications of fuel uncovery Not Applicable			UNPLANNED loss of offsite and onsite AC power for >15 minutes
ALBRU	5 6	<ol> <li>UNPLANNED Loss of RHS or CCP or SWS</li> <li>[a or b or c]         <ol> <li>Core exit thermocouples (CETC) (if available) indicate the temperature has increased &gt;10 F and has exceeded 200F.</li> </ol> </li> </ol>			-	5 6 De-	1. AE and DF 4KV emergency buses not energized from Unit 2 sources for >15 minutes
		<ul> <li>b. (w/RHS in service) RHS inlet temperature has increased &gt;10 F and has exceeded 200 F.</li> <li>c. (w/o CETCs or RHS), loss has exceeded 30 minutes or there is evidence of boiling in the Rx vessel.</li> <li>UNPLANNED loss of any function needed for</li> </ul>		Loss of Reactor Coolant System Inventory with		Fuel	Also refer to Tab 6.1 "Loss of Shutdown Systems" UNPLANNED loss of all offsite power supply
UNUSUAL EVENT	5 6	<ul> <li>cold shutdown that results in a core exit temperature increase of more than 10 F [1 and 2]</li> <li>1. UNPLANNED Loss of RHS or CCP or SWS</li> <li>2. [a or b or c] <ul> <li>a Core exit thermocouples (CETC) (if available) indicate the temperature has increased &gt;10 F</li> <li>b. (W/RHS in service) RHS inlet temperature has increased &gt;10 F</li> <li>c. (w/o CETCs or RHS), loss has exceeded 15 minutes</li> </ul> </li> </ul>	5 6	<ul> <li>inadequate make-up [1 and 2]</li> <li>1. Ops personnel report 2RCS-LI-102, LR-102 RCS level instrumentation in the Control Room indicates a level drop to less than 14.5 inches</li> <li>2 Ops personnel report inability to make-up RCS inventory</li> </ul>	, como o como de laboración de la desense des comoções en	5 6 De- Fuel	<ul> <li>for &gt;15 minutes <ul> <li>[1 and 2]</li> </ul> </li> <li>1. Offsite power supply to AE and DF 4KV buses unavailable for &gt;15 minutes.</li> </ul> <li>2. Either diesel generator is supplying power to its respective emergency bus</li>



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	6.5	Fuel Handling	6.6	Inadvertent Criticality
	Mode	Criterion / Indicator	Mode	Criterion / Indicator
GUNDIAL		Refer to Tab 7.1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"
		Refer to Tab 7.1 "Gaseous Effluents"		Refer to Tab 7.1 "Gaseous Effluents"
SITE AKEA				
		Major damage to irradiated fuel; or loss of water level that has or will uncover irradiated fuel outside the reactor vessel [1 and 2]1. VALID HIGH alarm on 2RMF-RQ202 [1031], 2HVR-RQ104A/B [1024, 1028],	3	Inadvertent reactor criticality 1. Nuclear instrumentation indicat unanticipated sustained positive startup rate
ADBKI	ALL	<ul> <li>2RMF-RQ301A/B [1032, 2032], or 2RMR-RQ203 [1025]</li> <li>2. [a or b] <ul> <li>a Plant personnel report damage of urradiated fuel sufficient to rupture fuel rods</li> <li>b. Plant personnel report water level drop has or will exceed available makeup</li> </ul> </li> </ul>	456	
		capacity such that irradiated fuel will be uncovered <u>Refer to Tab 6.2 for In-vessel Uncovery</u> UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with		Not Applicable
NUSUAL EVENI	ALL	<ul> <li>fuel remaining covered</li> <li>[1 and 2 and 3]</li> <li>1. Plant personnel report water level drop in spent fuel pool or reactor cavity, or transfer canal</li> </ul>		
NUSUA		<ol> <li>VALID HIGH alarm on 2RMR-RQ203 [1025] or 2RMF-RQ-202 [1031]</li> <li>Fuel remains covered with water</li> </ol>		

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# **U2** I SHUTDOWN SYSTEMS DEGRADATION

6.5, 6.6

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### FISSION PRODUCT BARRIER MATRIX (Modes 1-4)

- Fuel Clad (RCS activity, corecooling, heat sink) 1.1
- RCS (Integrity, SGTR, heat sink) 1.2
- Containment (CNMT Red Path, CNMT bypass) 1.3

### SYSTEM DEGRADATION

### 2.1 Loss of Instrumentation

- 2.2 Loss of Function/Comm's 2.6
- 2.5
  - RCS Ident. Leakage 2.10 Stm/Feed Line Break Technical Specification S/D

**RCS** Unident Leakage

Safety Limit Exceeded

- 2.3 Failure of Rx Prot.-ATWS 2.7
- 2.4 Fuel Clad Degradation 2.8

### LOSS OF POWER

- Loss of AC (Power Ops) (Modes 1-4) 3.1
- Loss of AC (Shutdown) (Modes 5 & 6) 3.2
- 3.3 Loss of DC

1

### **HAZARDS and ED JUDGEMENT**

4.1 Fire 4.2 Explosion Table 4-1

Figure 4-A

Flammable Gas 4.3 Toxic Gas 4.4 Table 4-2 Figure 4-B/Figure 4-C

**Control Room Evacuation** 4.5 Security 4.6 4.7 ED Judgement Table 4-3/Table 4-4

2.9

**Turbine Failure** 

### DESTRUCTIVE PHENOMENA

- Earthquake 5.1
- 5.2 Tornado/High Winds Table 5-1
- Figure 5-A

6.2

- Aircraft Crash/Projectile
- **River Level High** 5.4 River Level Low 5.5
  - Watercraft Crash (RW/SWS Loss)

### SHUTDOWN SYSTEM DEGRADATION

- Loss of Shutdown Systems 6.1 **RCS** Inventory-Shutdown
- 6.3 Loss of AC (Shutdown) (Modes 5 & 6)
- Loss of DC (Shutdown) (Modes 5 & 6) 6.4
  - 6.5 Fuel Handling (All Modes)
  - Inadvertent Criticality 6.6

5.3

5.6

### RADIOLOGICAL

Gaseous Effluent 7.1 Liquid Effluent 7.2 Table 7-1 Figure 7-A

Radiation Levels 7.3 7.4 Fuel Handling (All Modes) Table 7-2



194

2

	7.1	Gaseous Effluents	7.2	Liquid I
	Mode	Criterion / Indicator	Mode	
GBNBRAL	All	<ul> <li>EAB dose resulting from an actual or imminent Release of gaseous radioactivity that exceeds 1000 mR TEDE or 5000 mR child thyroid CDE for the actual or projected duration of the release [1 or 2 or 3]</li> <li>A VALID gas effluent rad monitor reading exceeds the values in Column 4 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>Field survey results indicate EAB dose &gt;1000 mR β-γ for the actual or projected duration of the release</li> <li>EPP dose projection results indicate EAB dose &gt;1000 mR TEDE or &gt;5000 mR child thyroid CDE for the actual or projected duration of the release</li> </ul>		
SITE AREA	All	<ul> <li>EAB dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 100 mR TEDE or 500 mR child thyroid CDE for the actual or projected duration of the release [1 or 2 or 3]</li> <li>1. A VALID gas effluent rad monitor reading exceeds the values in Column 3 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Field survey results indicate EAB dose &gt;100 mR β-γ for the actual or projected duration of the release</li> <li>3. EPP dose projection results indicate EAB dose &gt;100 mR TEDE or &gt;500 mR child thyroid CDE for the actual or projected duration of the release</li> </ul>		
ALBRAT	All	<ul> <li>Any UNPLANNED release of gaseous radioactivity that exceeds 200 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 15 minutes [1 or 2 or 3]</li> <li>1. A VALID gas effluent rad monitor reading exceeds the values in Column 2 of Table 7-1 for &gt;15 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Field survey results indicate &gt;10 mR/hr β-γ at the EAB for &gt;15 minutes</li> <li>3. EPP dose projection results indicate EAB dose &gt;10 mR TEDE for the duration of the release</li> </ul>	All	Any UNPLA that exceeds 6.8.6a/Offsite minutes [1 or 2] 1. A VAL exceeds >15 min time pe NOT ex 2. Sample Specific Manual radioact
NUSUAL EVENT	All	<ul> <li>Any UNPLANNED release of gaseous radioactivity that exceeds 2 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 60 minutes [1 or 2 or 3]</li> <li>1. A VALID gas effluent rad monitor reading exceeds the values in Column 1 of Table 7-1 for &gt;60 minutes, unless dose projections within this time period confirms that the CRITERION is NOT exceeded</li> <li>2. Field survey results indicate &gt;0 1 mR/hr β-γ at the EAB for &gt;60 minutes</li> <li>3. EPP dose projection results indicate EAB dose</li> </ul>		Any UNPLA the environ Specification Limit for 60 [1 or 2] 1. A VAI exceeds >60 m time p <u>NOT</u> ex 2. Sample Specific Manual radioac

EPP dose projection results indicate EAB dose 3 >0.1 mR TEDE for the duration of the release

5

/lode	Liquid Effluents Criterion / Indicator
	Not Applicable
	Not Applicable
	r
	Any UNPLANNED release of liquid radioactivity
	that exceeds 200 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 15 minutes [1 or 2]
All	1. A VALID liquid effluent rad monitor reading exceeds the values in Column 2 of Table 7-1 for >15 minutes, unless dose projections within this time period confirms that the CRITERION is <u>NOT</u> exceeded
	<ol> <li>Sample results exceed 200 times Technical Specification 68 6a/Offsite Dose Calculation Manual Limit for an unmonitored release of liquid radioactivity &gt;15 minutes in duration</li> </ol>
	Any UNPLANNED release of liquid radioactivity to the environment that exceeds 2 times Technical Specification 6.8.6a/Offsite Dose Calculation Manual Limit for 60 minutes [1 or 2]
	1. A VALID liquid effluent rad monitor reading exceeds the values in Column 1 of Table 7-1 for >60 munutes, unless dose projectionswithin this

munutes, unless dose projections within period confirms that the CRITERION is exceeded ole results exceed 2 times the Technical

ification 6 8 6a/Offsite Dose Calculation ual Limit for an unmonitored release of liquid radioactivity >60 minutes in duration

### TABLE 7-1 EFFLUENT RADIATION MONITOR EALS

NOTE: The values below, if exceeded, indicate the need to perform the specified dose projection/assessment, as listed at the bottom of each column. If the assessment can not be completed within 15 minutes (60 minutes for UE), the declaration shall be made based on the VALID reading.

NOTE: These monitors have the ability to divert or terminate effluent flow. Ensure that a release is in progress prior \* to using the EAL's

to using the LAL 3			1						
-	Colum	n 1		Colun	2 nr	Colum	n 3	Colum	n 4
	UE			Alert		Site		General	
If a RWDA (Batch Release) is Applicable	2x the ODC		200x		CM Limit				
* 2SGC-RQ100 [1065]	2 28E-03	uCı/ml		/a	uCi/ml	n/a	uCı/ml	n/a	uCi/ml
2HVS-RQ101B [2039] RBC Purge	1.48E-04	uCı/cc	1 48	E-02	uCı/cc	n/a	uCi/cc	n/a	uCı/cc
2HVS-RQ109B LR [2040] RBC Purge	6 36E-04	uC1/cc	636	E-02	uC1/cc	- n/a	uCi/cc	n/a	uCi/cc
2HVS-RQ109B Eff [5040] RBC Purge	2.26E+03	uC1/sec		E+05	uC1/sec	n/a	uCi/sec	n/a	uC1/sec
* RM-1GW-108B (GWST)	7.86E+05	cpm	F 1	/a	cpm	n/a	cpm	n/a	cpm
RM-1GW-100B (GWST)	n/a	cpm		/a	cpm	n/a	cpm	n/a	cpm
For All Other Unplanned Releases	2x the ODC	CM Limit	200x	0x the ODCM Limit					
SLCRS Unfiltered Pathway									
(also called Ventilation Vent)							<i></i>	,	
2HVS-RQ101B [2039]	6.02E-04	uCı/cc	6 02E	E-02	uCi/cc	1.72E-01	uCı/cc	n/a	uCi/cc
SLCRS Filtered Pathway									
(also called Elevated Release)	0.105.04		1 21	2E-02	uCi/cc	n/a	uCi/cc	n/a	uCi/co
2HVS-RQ109B LR [2040]	2.12E-04	uCi/cc		2E-02 1/a	uCi/cc	3.88E-02	uCı/cc	3.88E-01	uCi/co
2HVS-RQ109B MR [3040]	n/a	uCi/cc	1 1	va √a	uCi/cc	3.88E-02	uCı/cc	3.94E-01	uCı/co
2HVS-RQ109B HR [4040]	n/a	uC1/cc uC1/sec	1 E	va 3E+05	uCi/sec	1.04E+06	uCi/sec	1.04E+07	uC1/se
2HVS-RQ109B Eff [5040]	5.88E+03	uCi/sec	3 00	E+03	ucusce	1.042100	ue#500	10.2.01	
Decontamination Building Vent								· ·	<u></u>
* 2RMQ-RQ301B [2033]	6 30E-03	uCi/cc		n/a	uCı/cc	n/a	uCı/cc	п/а	uCi/co
Waste Gas Storage Vault Vent							~		
* 2RMQ-RQ303B [2037]	5.16E-02	uCi/cc		n/a	uCi/cc	n/a	uCi/cc	n/a	uCi/co
Condensate Polishing Building Vent									~
* 2HVL-RQ112B [2013]	3.22E-03	uCı/cc	3.2	2E-01	uCı/cc	n/a	uCı/cc	n/a	uCi/co
Main Steam Reliefs							~	1 225 01	
2MSS-RQ101A/101B/101C	n/a	uC1/cc		n/a	uCi/cc	1.77E-01	uCi/cc	1.77E-01	uCı/c
[1005/3005/5005]		~			<b>C</b> :/	5.10E+05	uCi/sec	5.10E+06	uCi/se
2MSS-RQ101A/101B/101C Eff	n/a	uCi/sec		n/a	uCi/sec	5.100+05		J.10L+00	ue#st
[2005/4005/6005]									
Liquid Effluent Pathways					<b>.</b>	- 10	uCi/ml	n/a	uCı/n
* 2SGC-RQ100 [1065]	2.28E-03	uCi/ml	r 3	n/a	uCı/ml	n/a	uCi/ml uCi/ml	n/a n/a	uCi/n
2SWS-RQ101 [1068]	8.59E-05	uCi/ml		9E-03	uCi/ml	n/a		n/a	uCı/n
2SWS-RQ102 [1067]	8 59E-05	uCı/ml	8.5	9E-03	uCi/ml	n/a	uCi/ml		uCD1

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	7.3	Radiation Levels	C	7.4	Fuel Handling
	Mode	Criterion / Indicator		Mode	Criterion / Indicator
GENERAL		Refer to Tab 1 "Fission Product Barrier Matrix" or Tab 7 1 "Gaseous Effluents"			Refer to Tab 7.1 "Gaseous Effluents"
SINE AREA		Refer to Tab 1 "Fission Product Barrier Matrix" or Tab 7.1 "Gaseous Effluents"	_		Refer to Tab 7 1 "Gaseous Effluents"
AUBRT	All	<ul> <li>UNPLANNED increases in radiation levels within the facility that impedes safe operations or establishment or maintenance of cold shutdown [1 or 2]</li> <li>1. VALID area radiation monitor readings or survey results exceed 15 mR/hr in the Control Room 2RMC-RQ201/202 [1069/1072] or PAF 2RMS-RQ223 [1071] for &gt;15 minutes</li> <li>2. [a and b] <ul> <li>a VALID area radiation monitor readings or survey results exceed values listed in Table 7-2</li> <li>b Access restrictions impede operation of systems necessary for safe operation or the ability to establish or maintain cold shutdown</li> </ul> </li> </ul>		All	<ul> <li>Major damage to irradiated fuel; or loss of water level that has or will uncover irradiated fuel outside the reactor vessel [1 and 2]</li> <li>1. VALID HIGH alarm on 2RMR-RQ203 [1025] or 2RMF-RQ202 [1031] or 2RMF-RQ301 A/B [1032/2032] or 2HVR-RQ104A/B [1024/1028]</li> <li>2. [a or b] <ul> <li>a Plant personnel report damage of irradiated fuel sufficient to rupture fuel rods</li> <li>b Plant personnel report water level drop has or will exceed available makeup capacity such that irradiated fuel will be uncovered</li> </ul> </li> <li>Refer to Tab 6 "Shutdown Systems" for In-vessel Uncovery</li> </ul>
UNUSUAL EVENT	All	<ul> <li>UNPLANNED increase in radiation levels within the facility</li> <li>1. VALID area radiation monitor readings increase by a factor of 1000 over normal levels for &gt;15 minutes</li> <li>Note In either the UE or ALERT EAL, the ED must determine the cause of increase in radiation levels and review other CRITERIA/INDICATORS for applicability (eg, a dose rate of 15 mR/hr in the Control Room could be caused by a release associated with a more significant event)</li> </ul>		All ,	<ul> <li>UNPLANNED loss of water level in spent fuel pool or reactor cavity or transfer canal with fuel remaining covered [1 and 2 and 3]</li> <li>Plant personnel report water level drop in spent fuel pool or reactor cavity, or transfer canal</li> <li>VALID HIGH alarm on 2RMR-RQ203 [1025] or 2RMF-RQ202 [1031]</li> <li>Fuel remains covered with water</li> </ul>

LOCATION Sur 730' Service Bldg (H2 Analyzers) PASS Cubicle (735' PAB) RM Chem Sample Panel (718' PAB) RM RM 737' Safeguards (H2 Control System [104 Operations) 741' Safeguards (Safe Shutdown Valves) Sur Sur 738'Cable Vault (RHR Suction Valves) Sur Sur 773' PAB (WRGM Sampling) 788' Main Steam & Cable Vault Sur Sur Sur Alternate Shutdown Panel Room West Cable Vault (730') A Penetrations (713') Sur C&D Penetrations (718') Sur Cable Vault (755') Sur CNMT Instr Air Room (773') Sur AE/DF Switchgear Sur Turbine Bldg 735' West Sur EDG 2-1, 2-2

> Figure 7-A EXCLUSION AREA BOUNDARY

### EPP/I-1b Attachment 1

Table 7-2 Areas Associated With EAL 7.3

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l					
INDICATOR	READING				
rvey Results	>100 mR/hr general area				
AP-RQ-204 [1050]	>100 mR/hr general area				
MP-RQ-210 [1059]	>100 mR/hr general area				
MP-RQ-205A,B	>100 mR/hr general area				
049]					
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>5 R/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>100 mR/hr general area				
rvey Results	>5 R/hr general area				

