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Davis-Besse Nuclear Power Station

EMERGENCY PLAN IMPLEMENTING PROCEDURE

RA-EP-01500

EMERGENCY CLASSIFICATION

REVISION 16

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Procedure Owner: Emergency Response Manager

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LEVEL OF USE:

IN-FIELD REFERENCE

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1.0 PURPOSE

This procedure provides guidelines for conditions at which specific emergency classifications must be declared.

2.0 REFERENCES

2.1 Developmental

- Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels", Revision 6
- DBNPS, Unit 1, Safety Evaluation for Emergency Action Levels (CAC NO. MF7364).
- Updated Safety Analysis Report, DBNPS
- Davis-Besse Nuclear Power Station Emergency Plan
- Davis-Besse Offsite Dose Calculation Manual
- NRC Information Notice 97-45 Supplement 1 - Environmental Qualification Deficiency for Cables and Containment Penetration Pigtails
- DBNPS Physical Security Plan, Training And Qualification Plan, and Safeguards Contingency Plan

2.2 Implementation

- DBRM-EMER-1500A, Davis-Besse Emergency Action Level Basis Document
- DBRM-EMER-1500B, Davis-Besse EAL Wallboards
- RA-EP-01600, Unusual Event
- RA-EP-01700, Alert
- RA-EP-01800, Site Area Emergency
- RA-EP-01900, General Emergency
- RA-EP-02720, Recovery Organization
- RA-EP-02810, Tornado or High Winds
- RA-EP-02820, Earthquake

- RA-EP-02830, Flooding
- RA-EP-02840, Explosion
- RA-EP-02850, Hazardous Chemical and Oil Spills
- RA-EP-02880, Internal Flooding
- NOP-OP-1015, Event Notifications
- DB-OP-02000, RPS, SFAS, SFRCS Trip, or SG Tube Rupture
- DB-OP-02544, *Restricted* Security Events or Threats
- Davis-Besse Improved Technical Specifications
- Davis-Besse Offsite Dose Calculation Manual

3.0 DEFINITIONS

- 3.1 ALERT: Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guide exposure levels.
- 3.2 COMPENSATORY INDICATIONS: Plant Process Computer, SPDS, and PI Data (Process Book).
- 3.3 CONFINEMENT BOUNDARY: The barrier(s) between spent fuel and the environment once the spent fuel is processed for dry storage. As related to the DBNPS Dry Fuel Storage Facility, CONFINEMENT BOUNDARY is defined as the Dry Shielded Canister (DSC)
- 3.4 CONTAINMENT CLOSURE: The procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions.
- 3.5 CREDIBLE SOURCE: The NRC or other governmental agency such as Federal Bureau of Investigation (FBI), Federal Aviation Administration (FAA), North American Aerospace Defense Command (NORAD), Military Authorities, Law enforcement agencies.
- 3.6 EMERGENCY CLASSIFICATION LEVEL (ECL): One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

Unusual Event (UE)
Alert (A)
Site Area Emergency (SAE)
General Emergency (GE)

- 3.7 EMERGENCY ACTION LEVELS (EALs): A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.
- 3.8 EPA PROTECTIVE ACTION GUIDELINES: Environment Protection Agency Protective Action Guidelines. The EPA PAGs are expressed in terms of dose commitment: 1 Rem TEDE or 5 Rem CDE Thyroid. Actual or projected offsite exposures in excess of the EPA PAGs requires DBNPS to recommend protective actions for the general public to offsite planning agencies
- 3.9 EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an EXPLOSION. Such events may require a post-event inspection to determine if the attributes of an EXPLOSION are present.
- 3.10 FAULTED: The term applied to a steam generator that has a steam leak on the secondary side of sufficient size to cause an uncontrolled drop in steam generator pressure or the steam generator to become completely depressurized.
- 3.11 FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRE. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed.
- 3.12 FISSION PRODUCT BARRIER THRESHOLD: A pre-determined, site-specific, observable threshold indicating the loss or potential loss of a fission product barrier.
- 3.13 FLOODING: A condition where water is entering a room or area faster than installed equipment is capable of removal, resulting in a rise of water level within the room or area.
- 3.14 GENERAL EMERGENCY: Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guide exposure levels offsite for more than the immediate site area. A state or phase called Recovery may be entered prior to returning to a normal organization and operation. Recovery provides dedicated resources and organizational structure in support of restoration and communication activities following the termination of the emergency event.

- 3.15 HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.
- 3.16 HOSTILE ACTION: An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the OWNER CONTROLLED AREA).
- 3.17 HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.
- 3.18 IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.
- 3.19 IMPEDE(D): Personnel access to a room or area is hindered to an extent that extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., requiring use of protective equipment, such as SCBAs, that is not routinely employed).
- 3.20 MAINTAIN: Take appropriate action to hold the value of an identified parameter within specified limits
- 3.21 NORMAL LEVELS: The highest reading in the past twenty-four hours excluding the current peak value.
- 3.22 OWNER CONTROLLED AREA: The property associated with the station and owned by the company. Access is normally limited to persons entering for official business.
- 3.23 PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.
- 3.24 PROTECTED AREA: An area that normally encompasses all controlled areas within the secured protected area fence.
- 3.25 RCS INTACT: The RCS should be considered intact when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams).

- 3.26 REFUELING PATHWAY: The reactor refueling canal, spent fuel pool and fuel transfer canal comprise the REFUELING PATHWAY
- 3.27 RESTORE: Take the appropriate action required to return the value of an identified parameter to the applicable limits
- 3.28 RUPTURED: The condition of a steam generator in which primary-to-secondary leakage is of sufficient magnitude to require a safety injection”.
- 3.29 SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These are typically systems classified as safety-related (as defined in 10CFR50.2):
- Those structures, systems and components that are relied upon to remain functional during and following design basis events to assure:
- (1) The integrity of the reactor coolant pressure boundary;
 - (2) The capability to shut down the reactor and maintain it in a safe shutdown condition;
 - (3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures
- 3.30 SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.
- 3.31 SHORT DURATION EVENT – A classifiable event that mitigating actions have been taken AND no further plant damage is expected to occur, AND entry conditions for an emergency action level no longer exists prior to the initial offsite notification commencing.
- 3.32 SITE AREA EMERGENCY: Events are in progress or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious act: 1) toward site personnel or equipment that could lead to the likely failure of or, 2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guide exposure levels beyond the site boundary.
- 3.33 SITE BOUNDARY: Area as depicted in UFSAR Figure 1.2-12 Site Plan. The SITE BOUNDARY is defined at a minimum exclusion distance of 0.75 miles. This is the nearest distance from potential release points at which protective actions would be required for members of the public.
- 3.34 UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

- 3.35 UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.
- 3.36 UNUSUAL EVENT: Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
- 3.37 VALID: An indication, report, or condition, is considered to be VALID when it is verified by 1) an instrument channel check, 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.
- 3.38 VISIBLE DAMAGE: Damage to a component or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected component or structure.
- 4.0 RESPONSIBILITIES
- 4.1 The Shift Manager is responsible for the initial implementation of this procedure (i.e., when no emergency classification exists upon procedure entry).
- 4.2 The Shift Manager becomes the Emergency Director during activation of the Davis-Besse Emergency Plan as outlined in this procedure and is then responsible for coordinating the actions of the Emergency Response Organization until relieved.
- 4.3 The Unit Supervisor may assume the Emergency Director duties only if the Shift Manager is not in the Control Room or is incapable of performing those duties.
- 4.4 The Shift Engineer (Shift Technical Advisor) may assume the Emergency Director duties only if neither the Shift Manager nor the Unit Supervisor is in the Control Room or neither is capable of performing those duties.
- 4.5 Upon arrival in the Control Room, the Emergency Assistant Plant Manager should relieve the Shift Manager of the Emergency Director duties as soon as practical.
- 4.6 The individual having formal control as Emergency Director is the final authority on upgrading or downgrading the emergency classification. This responsibility to classify an event may not be delegated.

5.0 INITIATING CONDITIONS

5.1 Initial Classification of an Emergency (steps are in Section 6.1):

- a. Station personnel (or another CREDIBLE SOURCE) report an abnormal or unusual situation to the operating shift crew, or members of the operating shift crew observe indications of an abnormal or unusual situation, of an event that may be classifiable under the Davis-Besse Emergency Plan.
- b. A supplementary action step in a plant procedure (e.g., the Emergency Operating Procedure, Alarm Procedure, Abnormal Procedures, etc.) refers operators to this procedure for possible emergency classification of the indicated plant conditions.
- c. Personnel performing a review of plant logs or other records report to the operating crew or station management that they found indications of a condition that may have been classifiable under the Davis-Besse Emergency Plan but that no longer exist.

5.2 Subsequent Classification of an Emergency (steps are in Section 6.2):

- a. Once the Davis-Besse Emergency Plan has been initiated, either:
 1. Station personnel (or another CREDIBLE SOURCE) report an abnormal or unusual situation to the operating shift crew, or to other members of the Emergency Response Organization, of a subsequent event that may be classifiable under the Davis-Besse Emergency Plan.
 2. A supplementary action step in a plant procedure (e.g., the Emergency Operating Procedure, Alarm Procedure, Abnormal Procedures, etc.) refers operators to this procedure for possible emergency classification of the indicated plant conditions.

5.3 Use of this Procedure

The user should enter and implement only the section of this procedure (section 6.1 or 6.2) that is applicable to the existing Initiating Conditions.

6.0 PROCEDURE

6.1 Initial Classification of an Emergency

- 6.1.1 IF the operating crew receives a report of an abnormal or unusual situation, or they observe indications of an off-normal event, THEN record the time of the observation.

NOTES 6.1.2

The Unit Supervisor may perform steps in this section only if the Shift Manager is incapable of performing these duties.

The Shift Engineer (Shift Technical Advisor) may perform steps in this section only if neither the Shift Manager nor the Unit Supervisor are capable of performing these duties.

A timely declaration of an emergency is defined as a declaration within 15 minutes when plant instrumentation, plant alarms, computer displays, or incoming verbal reports that correspond to an EAL first become available to station personnel.

6.1.2 The Shift Manager shall, in a timely manner:

- a. Determine if the Control Room and/or plant indications of the abnormal or unusual situation, or the reported indications of the event are present at the current time AND are (or were) VALID.

NOTE 6.1.2.b

Procedure DB-OP-02544, Security Events or Threats, was written to implement the steps of this procedure and to implement the Davis-Besse Emergency Plan under SECURITY CONDITIONS and HOSTILE ACTION scenarios.

- b. IF any of the entry conditions for procedure DB-OP-02544, Security Events or Threats, are met, THEN exit this procedure AND GO TO and implement DB-OP-02544, Security Events or Threats, until it directs a return to this procedure.
- c. Verify the immediate actions (e.g., use of the Emergency Operating Procedure and Abnormal Procedures) that apply to the indicated event have been or are being taken as required to ensure the safe and proper operation of the plant.

- d. IF there are indications that conditions, which may have been classifiable under this procedure, existed at one time but the conditions no longer exist OR the timely classification of the emergency condition is NOT possible, (e.g., the condition was discovered during a subsequent review of logs, plant data, etc.), THEN a missed classification or a short duration condition exists; GO TO step 6.3.

NOTES 6.1.2.e and f

Steps 6.1.2.f and 6.1.2.g should be performed independently by two Senior Reactor Operators and may be performed in parallel to ensure timeliness.

Refer to DBRM-EMER-1500A, Davis-Besse Emergency Action Level Basis Document, as required, if clarification or interpretation of EAL wording or meaning is needed.

- e. Determine all of the Emergency Action Levels (EALs) that have been met during the event by comparing the available VALID indications with those listed in the Emergency Action Level thresholds using one of the following methods (listed in order of preference):
- The wallboard charts (DBRM-EMER-1500B) using applicable place keeping techniques.
 - The Index of Emergency Action Level Conditions (contained in this procedure).
- f. Direct the Shift Engineer (or another Senior Reactor Operator) to independently determine all of the Emergency Action Levels (EALs) that have been met based on the available VALID indications using the wallboard charts (DBRM-EMER-1500B).

NOTES 6.1.2.g

Emergency Action Levels described in this procedure are NOT intended to be used during maintenance and/or testing situations where abnormal temperature, pressure, equipment status, etc., may be expected.

The specific Emergency Action Levels described in this procedure and on the wallboards are NOT all inclusive. The Emergency Director shall declare an appropriate emergency classification whenever, in his judgment, VALID event conditions warrants such a declaration.

If more than one Emergency Action Level applies to the VALID event indications, then the highest emergency classification shall be declared.

Obtaining an independent check of the Emergency Action Level(s) met by the emergency is highly desirable but shall NOT delay the timely classification of the emergency or entry into the Davis-Besse Emergency Plan.

- g. Verify the classification of the event as follows:
 - 1. Compare all of the Emergency Action Levels (EALs) that have been met (if any) with those identified by the Shift Engineer (or other Senior Reactor Operator).
 - 2. Determine the correct emergency classification for the event by choosing one EAL that results in the highest applicable emergency classification (if applicable).
- h. IF it is verified that no Emergency Action Levels (EALs) have been met as a result of the event,
AND no classifiable conditions (EALs) currently exist,
THEN GO TO step 7.0 to exit this procedure.
- i. IF the condition that required an emergency classification has subsequently been mitigated,
AND the emergency classification has been terminated before being communicated to the offsite agencies,
THEN GO TO Step 6.3.

- j. IF at least one Emergency Action Level (EAL) is currently being met, THEN activate the Davis-Besse Emergency Plan as follows:
1. Declare the highest emergency classification that applies noting the exact time of the declaration (using either the Control Room clock or the plant computer clock) AND record the time.
 2. Immediately assume the Emergency Director position including all of the associated duties until properly relieved:
 - The Emergency Director shall remain in the Control Room until the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) have been activated.
 - Non-delegable Emergency Director Tasks such as making emergency classification and making offsite protective action recommendations shall NOT be delegated.
 - The Shift Manager shall delegate other discrete Emergency Director tasks as soon as practical to permit the resumption of the Shift Manager plant oversight role.
 3. (optional) Record the following information on the Control Room whiteboard/Smartboard or a crew briefing sheet:
 - The date and time of the emergency declaration
 - The declared emergency classification
 - The applicable EAL number
 - The radiological release status and source, if applicable
 - The emergency classification upgrade criteria, if applicable
 4. Conduct a crew update providing the information (on the whiteboard, Smartboard, or briefing sheet) associated with the declared emergency.
 5. (optional) Contact the designated control room communicator, (usually an Equipment Operator III) if available, and direct him or her to immediately come to the Control Room (to be available to make the initial notification of the state and county officials).
 6. Exit this procedure, AND GO TO and implement only the procedure listed below for the declared emergency classification:
 - RA-EP-01600, Unusual Event
 - RA-EP-01700, Alert

- RA-EP-01800, Site Area Emergency
- RA-EP-01900, General Emergency

End of Section

6.2 Classification of a Subsequent Emergency

- 6.2.1 IF the Emergency Director receives a report of an abnormal or unusual situation, or station personnel observe indications of an off-normal event, THEN record the time of the observation.

NOTES 6.2.2

This section assumes the Emergency Plan has already been initiated and also considers the Emergency Director may not be the Shift Manager and he or she may not be located in the Control Room.

A timely declaration of an emergency is defined as a declaration within 15 minutes of the classifiable condition being observed by or reported to station personnel.

- 6.2.2 The Emergency Director shall, in a timely manner:

- a. Determine if the Control Room and/or plant indications of the abnormal or unusual situation, or the reported indications of the event are VALID.

NOTE 6.2.2.b

Procedure DB-OP-02544, Security Events or Threats, was written to implement the steps of this procedure and to implement the Davis-Besse Emergency Plan under SECURITY CONDITIONS and HOSTILE ACTION scenarios.

- b. IF the conditions associated with the original or the new classifiable event meet the entry requirements for a security event or threat, THEN immediately exit this procedure AND GO TO and implement DB-OP-02544, Security Events or Threats until it directs a return to this procedure.

NOTES 6.2.2.c and d

Steps 6.2.2.c and 6.2.2.d should be performed independently by the Emergency Director and another knowledgeable individual and may be performed in parallel to ensure timeliness.

Refer to DBRM-EMER-1500A, Davis-Besse Emergency Action Level Basis Document, as required, if clarification or interpretation of EAL wording is needed.

- c. Determine all of the Emergency Action Levels (EALs) that have been met during the event by comparing the available VALID indications with those listed in the Emergency Action Level thresholds using one of the following methods (listed in order of preference):
 - The wallboard charts (DBRM-EMER-1500B) using applicable place keeping techniques.
 - The Index of Emergency Action Level Conditions (contained in this procedure).
- d. Direct the Emergency Director Advisor (or another knowledgeable individual) to independently determine all of the Emergency Action Levels (EALs) that have been met during the event by comparing the available VALID indications with those listed in the Emergency Action Level thresholds using one of the following methods (listed in order of preference):
 - The wallboard charts (DBRM-EMER-1500B) using applicable place keeping techniques.
 - The Index of Emergency Action Level Conditions (contained in this procedure).

NOTES 6.2.2.e

The specific Emergency Action Levels described in this procedure and on the wallboards are NOT all inclusive. The Emergency Director shall declare an appropriate emergency classification whenever, in his judgment, VALID event conditions warrants such a declaration.

If more than one Emergency Action Level applies to the VALID event indications, then the highest classification shall be declared.

Obtaining an independent check of the Emergency Action Level(s) met by the emergency is desirable but shall NOT delay the timely classification of the emergency or reentry into the Davis-Besse Emergency Plan.

- e. Verify the classification of the event as follows:
1. Compare all of the Emergency Action Levels (EALs) that have been met (if any) with those independently identified by the Emergency Director Advisor (or other assigned knowledgeable individual).
 2. Determine the correct emergency classification for the event by choosing one EAL that results in the highest applicable emergency classification (if applicable).
- f. IF it is verified that no new Emergency Action Levels (EALs) have been met as a result of the event,
AND no new classifiable conditions (EALs) currently exist,
THEN GO TO step 7.0 to exit this procedure.
- g. IF it is verified that one or more new Emergency Action Levels (EALs) have been met but these EALs do NOT require an upgrade to the current emergency classification,
THEN GO TO step 7.0 to exit this procedure.
- h. IF it is verified that at least one new Emergency Action Level (EAL) has been met that is associated with an emergency classification higher than the currently declared emergency classification,
THEN an upgrade to the emergency classification is required; proceed as follows:
1. Declare the emergency classification that applies noting the exact time of the declaration (using either the Control Room clock, the EOF digital clock, or the plant computer clock).

2. (optional) Record the following on the Control Room whiteboard, Smartboard, a crew briefing sheet, or the EOF status board:
 - The date and time of the new emergency declaration
 - The new declared emergency classification
 - The applicable new EAL number
 - The radiological release status and source, if applicable
 - The emergency classification upgrade criteria, if applicable
3. Conduct a crew (or facility) update providing the information on the whiteboard/Smartboard, crew briefing sheet or EOF status board associated with the declared emergency.
4. IF the station is NOT responding to a security condition in accordance with DB-OP-02544, Security Events or Threats, THEN immediately GO TO and implement only the procedure listed below for the declared upgraded emergency classification:
 - RA-EP-01700, Alert
 - RA-EP-01800, Site Area Emergency
 - RA-EP-01900, General Emergency
- i. IF the station is responding to a security condition in accordance with procedure DB-OP-02544, Security Events or Threats, THEN contact the Control Room crew and:
 1. Inform them of the upgraded emergency conditions including:
 - The date and time of the new emergency declaration
 - The new declared emergency classification
 - The applicable new EAL number
 - The radiological release status and source, if applicable
 - The emergency classification upgrade criteria, if applicable
 2. WHEN informed by the Control Room operators that procedure DB-OP-02544, Security Events or Threats, has directed implementation of the Davis-Besse Emergency Plan, THEN exit this procedure AND GO TO and implement only the procedure listed below for the declared applicable upgraded emergency classification:
 - RA-EP-01700, Alert
 - RA-EP-01800, Site Area Emergency

- RA-EP-01900, General Emergency

End of Section

6.3 Short Duration or Missed Emergency Classification

- 6.3.1 IF the event that required emergency classification is rapidly concluded, AND the emergency classification is terminated before offsite notifications are made, OR it is discovered that one or more Emergency Action Levels (EALs) was met after the fact (such as during a subsequent review of logs, data, etc.), THEN the Shift Manager shall immediately perform the following steps:
- a. Complete, and have independently checked as soon as practical AND within 1 hour of the emergency classification or determination of the missed classification, a Reactor Plant Event Notification Worksheet (NOP-OP-1015-01). Refer to RA-EP-02110, Emergency Notification, and/or NOP-OP-1015, Event Notifications as required.
 - b. Notify the Nuclear Regulatory Commission (NRC) as soon as practical AND within 1 hour of the short duration event or determination of the missed classification using the independently checked Reactor Plant Event Notification Worksheet (NOP-OP-1015-01) AND record the time of notification (using either the Control Room clock, the EOF digital clock, or the plant computer clock).
 - c. Contact the on-call Emergency Response Manager and:
 1. Update the on-call Emergency Response Manager on the sequence of events associated with the short duration event or missed classification.
 2. Direct the on-call Emergency Response Manager to notify the Ottawa County, Lucas County and the State of Ohio Emergency Management Agencies of the short duration event or missed classification within four hours of declaration of the event.
 3. Request the on-call Emergency Response Manager to inform the Control Room of the time of the notification of offsite agencies so that an entry documenting this fact can be made in the Unit Log.
 - d. Notify the Duty Team of the sequence of events associated with the short duration event or missed classification.
 - e. WHEN steps 6.3.1 a through d are complete, THEN GOTO step 7.0 to exit this procedure.

End of Section

7.0 FINAL CONDITIONS

7.1 WHEN any one of the following conditions exists,
THEN exit this procedure:

- a. The plant event has been verified to be properly classified, AND actions are being taken in accordance with RA-EP-01600, Unusual Event, or RA-EP-01700, Alert, or RA-EP-01800, Site Area Emergency, or RA-EP-01900, General Emergency.

OR

- b. A missed classification situation or short duration event, was discovered AND the classifiable conditions no longer exist, AND the Nuclear Regulatory Commission, the on-call Emergency Response Manager, and the duty team have been notified.

OR

- c. The plant conditions have been compared to applicable Emergency Action Levels, and it has been verified that there are no classifiable conditions currently existing AND none were met as a result of the event.

8.0 RECORDS

8.1 The following records that are completed by this procedure shall be processed and retained as part of the Event Package in accordance with RA-EP-02720, Recovery Organization.

- a. Reactor Plant Event Notification Worksheet, NOP-OP-1015-01

COMMITMENTS

<u>Section</u>	<u>Reference</u>	<u>Comments</u>
4.5	CR 08-43101	Wording added to clarify the expectation that the Shift Manager should return to his/her role as plant oversight as soon as practical.

INDEX OF EMERGENCY ACTION LEVEL CONDITIONS

EAL Group/Category	EAL Subcategory
<u>ANY Operating Mode:</u>	
H – Hazards and Other Conditions Affecting Plant Safety	1 – Security 2 – Seismic Event 3 – Natural or Technological Hazard 4 – Fire 5 – Hazardous Gas 6 – Control Room Evacuation 7 – Emergency Director Judgment
R – Abnormal Rad Levels / Rad Effluent	1 – Radiological Effluent 2 – Irradiated Fuel Event 3 – Area Radiation Levels
E – Dry Fuel Storage Facility (DFSF)	1 – Confinement Boundary
<u>Hot Conditions:</u>	
S – System Malfunction	1 – Loss of Essential AC Power 2 – Loss of Essential DC Power 3 – Loss of Control Room Indications 4 – RCS Activity 5 – RCS Leakage 6 – RPS Failure 7 – Loss of Communications 8 – Containment Failure 9 – Hazardous Event Affecting Safety Systems
F – Fission Product Barrier Degradation	None
<u>Cold Conditions:</u>	
C – Cold Shutdown / Refueling System Malfunction	1 – RCS Level 2 – Loss of Essential AC Power 3 – RCS Temperature 4 – Loss of Essential DC Power 5 – Loss of Communications 6 – Hazardous Event Affecting Safety Systems



HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

		GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		UNUSUAL EVENT	
H Hazards	1 Security	None	<div>HS1 HOSTILE ACTION within the PROTECTED AREA</div> <div><div>123456DEF</div></div> <div>HS1.1</div> <div>A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor.</div>	<div>HA1 HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes</div> <div><div>123456DEF</div></div> <div>HA1.1</div> <div>A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.</div> <div>HA1.2</div> <div>A validated notification from NRC of an aircraft attack threat within 30 min. of the site.</div>	<div>HU1 Confirmed SECURITY CONDITION or threat</div> <div><div>123456DEF</div></div> <div>HU1.1</div> <div>A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor.</div> <div>HU1.2</div> <div>Notification of a credible security threat directed at the site.</div> <div>HU1.3</div> <div>A validated notification from the NRC providing information of an aircraft threat.</div>				
	2 Seismic Event	None	None	None	<div>HU2 Seismic event greater than OBE levels</div> <div><div>123456DEF</div></div> <div>HU2.1</div> <div>Seismic event > OBE as indicated by OBE alarm on seismic alarm panel C5764A.</div>				
	3 Natural or Tech. Hazard	<div>None</div> <div><div>NOTES:</div><div>NOTE 7: This EAL does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.</div></div>	None	None	<div>HU3 Hazardous event</div> <div><div>123456DEF</div></div> <div>HU3.1</div> <div>A tornado strike within the PROTECTED AREA.</div> <div>HU3.2</div> <div>Internal room or area FLOODING of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode.</div> <div>HU3.3</div> <div>Movement of personnel within the PROTECTED AREA is IMPEDED due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release).</div> <div>HU3.4</div> <div>A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles (Note 7).</div>				



HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT														
H Hazards	4 Fire	<div>None</div> <div><div>NOTES:</div><div><div>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</div><div>Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.</div></div></div>	None	<div>None</div> <div><div>Table H-1 Safe Shutdown Fire Areas</div><div><div><div>• Containment</div><div>• Control Room</div><div>• Auxiliary Building</div><div>• Intake Structure</div><div>• Borated Water Storage Tank</div></div></div></div>	<div>HU4 FIRE potentially degrading the level of safety of the plant</div> <div><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table></div> <div>HU4.1</div> <div>A FIRE is not extinguished within 15 min. of ANY of the following FIRE detection indications (Note 1):</div> <div><div><div>• Report from the field (i.e., visual observation)</div><div>• Receipt of multiple (more than 1) fire alarms or indications</div><div>• Field verification of a single fire alarm</div></div><div>AND</div><div>The FIRE is located within ANY Table H-1 area.</div></div> <div>HU4.2</div> <div>Receipt of a single fire alarm (i.e., no other indications of a FIRE).</div> <div>AND</div> <div>The fire alarm is indicating a FIRE within ANY Table H-1 area.</div> <div>AND</div> <div>The existence of a FIRE is not verified within 30 min. of alarm receipt (Note 1).</div> <div>HU4.3</div> <div>A FIRE within the plant PROTECTED AREA not extinguished within 60 min. of the initial report, alarm, or indication (Note 1).</div> <div>HU4.4</div> <div>A FIRE within the plant PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish.</div>	1	2	3	4	5	6	DEF							
	1	2	3	4	5	6	DEF												
5 Hazardous Gas	None	None	<div>HA5 Gaseous release IMPEDING access to equipment necessary for normal plant operations, cooldown or shutdown</div> <div><table><tr><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td></td></tr></table></div> <div>HA5.1</div> <div>Release of a toxic, corrosive, asphyxiant, or flammable gas into ANY Table H-2 Safe Shutdown Rooms or Areas</div> <div>AND</div> <div>Entry into the room or area is prohibited or IMPEDED (Note 5).</div>	1	2	3					<div>None</div> <div><div>Table H-2 Safe Shutdown Rooms/Areas</div><div><table><tr><th>Area</th><th>Mode</th></tr><tr><td>Aux Bldg. 565' ele. Room 236 #2 Mechanical Penetration Room</td><td>1, 2, 3</td></tr><tr><td>Aux Bldg. 585' ele. Room 304 coridor outside #3 Mechanical Penetration Room</td><td>1, 2, 3</td></tr><tr><td>Aux Bldg. 603' ele. Room 427 - #2 Electrical Penetration Room</td><td>1, 2, 3</td></tr></table></div></div>	Area	Mode	Aux Bldg. 565' ele. Room 236 #2 Mechanical Penetration Room	1, 2, 3	Aux Bldg. 585' ele. Room 304 coridor outside #3 Mechanical Penetration Room	1, 2, 3	Aux Bldg. 603' ele. Room 427 - #2 Electrical Penetration Room	1, 2, 3
1	2	3																	
Area	Mode																		
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Aux Bldg. 603' ele. Room 427 - #2 Electrical Penetration Room	1, 2, 3																		



HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT																											
H Hazards	6 Control Room Evacuation	<div>None</div> <div>NOTES: Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</div>	HS6 Inability to control a key safety function from outside the Control Room <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td></td></tr></table> HS6.1 An event has resulted in plant control being transferred from the Control Room to the Auxiliary Shutdown Panel. AND Control of ANY of the following key safety functions is not reestablished within 15 min.(Note 1): <ul style="list-style-type: none">• Reactivity (modes 1, 2, and 3 only)• Core cooling (RCS inventory)• RCS heat removal (ability to maintain heat sink)	1	2	3	4	5	6		HA6 Control Room evacuation resulting in transfer of plant control to alternate locations <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> HA6.1 An event has resulted in plant control being transferred from the Control Room to the Auxiliary Shutdown Panel.	1	2	3	4	5	6	DEF	None													
	1	2	3	4	5	6																										
1	2	3	4	5	6	DEF																										
7 Emergency Director Judgment	HG7 Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> HG7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.	1	2	3	4	5	6	DEF	HS7 Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> HS7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment 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 beyond the SITE BOUNDARY.	1	2	3	4	5	6	DEF	HA7 Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> HA7.1 Other conditions exist which, in the judgment of the Emergency Director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of the safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. ANY releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.	1	2	3	4	5	6	DEF	HU7 Other conditions exist which in the judgment of the Emergency Director warrant declaration of a UE <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> HU7.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of the safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of SAFETY SYSTEMS occurs.	1	2	3	4	5	6	DEF
1	2	3	4	5	6	DEF																										
1	2	3	4	5	6	DEF																										
1	2	3	4	5	6	DEF																										
1	2	3	4	5	6	DEF																										



ABNORMAL RAD LEVELS / RAD EFFLUENT

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT	UNUSUAL EVENT																												
R Abnormal Rad Release / Rad Effluent	1 Rad Effluent	RG1 Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE. <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table>	1	2	3	4	5	6	DEF	RS1 Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE. <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table>	1	2	3	4	5	6	DEF	RA1 Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE. <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table>	1	2	3	4	5	6	DEF	RU1 Release of gaseous or liquid radioactivity > 2 times the ODCM limits for 60 minutes or longer. <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table>	1	2	3	4	5	6	DEF
		1	2	3	4	5	6	DEF																									
		1	2	3	4	5	6	DEF																									
1	2	3	4	5	6	DEF																											
1	2	3	4	5	6	DEF																											
RG1.1 Station Vent Channel 1 Noble Gas (RE 4598 AB/BB) > 8.4E+00 µCi/cc for 15 minutes or longer. (Notes 1, 2, 3, 4)	RS1.1 Station Vent Channel 1 Noble Gas (RE 4598 AB/BB) > 8.4E-01 µCi/cc for 15 minutes or longer. (Notes 1, 2, 3, 4)	RA1.1 Station Vent Channel 1 Noble Gas (RE 4598 AB/BB) > 8.4E-02 µCi/cc for 15 minutes or longer. (Notes 1, 2, 3, 4)	RU1.1 Station Vent Channel 1 Noble Gas (RE 4598 AA/BA) > 5.72E-03 µCi/cc for 60 minutes or longer																														
RG1.2 Dose assessment using actual meteorology indicates doses > 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond the SITE BOUNDARY. (Note 4)	RS1.2 Dose assessment using actual meteorology indicates doses > 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the SITE BOUNDARY. (Note 4)	RA1.2 Dose assessment using actual meteorology indicates doses > 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the SITE BOUNDARY. (Note 4)	OR ANY of the following effluent monitors > 2 times the high alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer: <ul style="list-style-type: none">Waste Gas System Outlet (RE 1822A or B).Clean Waste System Outlet (RE 1770A or B).Miscellaneous Waste System Outlet (RE 1878A or B).Discharge permit specified monitor. (Notes 1, 2, 3)																														
RG1.3 Field survey results indicate EITHER of the following at or beyond the SITE BOUNDARY: <ul style="list-style-type: none">Closed window dose rates > 1000 mR/hr expected to continue for ≥ 60 min.Analysis of field survey samples indicate thyroid CDE > 5000 mrem for 60 min. of inhalation. (Notes 1, 2)	RS1.3 Field survey results indicate EITHER of the following at or beyond the SITE BOUNDARY: <ul style="list-style-type: none">Closed window dose rates > 100 mR/hr expected to continue for ≥ 60 min.Analysis of field survey samples indicate thyroid CDE > 500 mrem for 60 min. of inhalation. (Notes 1, 2)	RA1.3 Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses > 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the SITE BOUNDARY for 60 min. of exposure. (Notes 1, 2)	RU1.2 Sample analyses for a gaseous or liquid release indicates concentration or release rate > 2 x ODCM limits for ≥ 60 min. (Notes 1, 2)																														
		RA1.4 Field survey results indicate EITHER of the following at or beyond the SITE BOUNDARY: <ul style="list-style-type: none">Closed window dose rates > 10 mR/hr expected to continue for ≥ 60 min.Analysis of field survey samples indicate thyroid CDE > 50 mrem for 60 min. of inhalation. (Notes 1, 2)																															

NOTES:

Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.

Note 2: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.

Note 3: If the effluent flow past an effluent monitor is known to have stopped, indicating that the release path is isolated, the effluent monitor reading is no longer VALID for classification purposes.

Note 4: The pre-calculated effluent monitor values presented in EALs RA1.1, RS1.1, and RG1.1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.



ABNORMAL RAD LEVELS / RAD EFFLUENT

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT	UNUSUAL EVENT																												
R Abnormal Rad Release / Rad Effluent	2 Irradiated Fuel Event	<p>RG2 Spent fuel pool level cannot be restored to at least the top of the fuel racks for 60 minutes or longer.</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> <p>RG2.1 Spent fuel pool level cannot be restored to at least 1 ft. for ≥ 60 min. (Note 1)</p>	1	2	3	4	5	6	DEF	<p>RS2 Spent fuel pool level at the top of the fuel racks.</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> <p>RS2.1 Lowering of spent fuel pool level to 1 ft.</p>	1	2	3	4	5	6	DEF	<p>RA2 Significant lowering of water level above, or damage to, irradiated fuel.</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> <p>RA2.1 Uncovery of irradiated fuel in the REFUELING PATHWAY</p> <p>RA2.2 Damage to irradiated fuel resulting in a release of radioactivity as indicated by a high radiation alarm on ANY of the following radiation monitor indications:</p> <ul style="list-style-type: none">RE 8426 SFP AreaRE 8427 SFP AreaRE 8417 Fuel Handling AreaRE 8418 Fuel Handling AreaRE 8425 Equipment Hatch AreaRE 8446/8447 Fuel Handling ExhaustRE 4598AA/BA Station Vent <p>RA2.3 Lowering of spent fuel pool level to 10 ft.</p>	1	2	3	4	5	6	DEF	<p>RU2 UNPLANNED loss of water level above irradiated fuel.</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> <p>RU2.1 UNPLANNED water level drop in the REFUELING PATHWAY as indicated by ANY of the following:</p> <ul style="list-style-type: none">SFP level alarm or indication (LI 1600)SFP level indication (LI 4801 A/B)Refueling Canal low water level alarm or indication (LI 1627)Visual observation <p>AND UNPLANNED rise in corresponding area radiation levels as indicated by ANY of the following radiation monitors:</p> <ul style="list-style-type: none">RE 8426 SFP AreaRE 8427 SFP AreaRE 8417 Fuel Handling AreaRE 8418 Fuel Handling AreaRE 8425 Equipment Hatch Area	1	2	3	4	5	6	DEF
	1	2	3	4	5	6	DEF																										
1	2	3	4	5	6	DEF																											
1	2	3	4	5	6	DEF																											
1	2	3	4	5	6	DEF																											
3 Area Radiation Levels	None	<p>NOTES:</p> <p>Note 5: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.</p>	None	<p>RA3 Radiation levels that IMPEDE access to equipment necessary for normal plant operations, cooldown, or shutdown.</p> <p>RA3.1</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table> <p>Dose rate > 15 mR/hr in EITHER of the following areas:</p> <ul style="list-style-type: none">Control Room (RE 8430 or 8431)Central Alarm Station (RE 8435 or 8436) <p>RA3.2</p> <table><tr><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td></td></tr></table> <p>An UNPLANNED event results in radiation levels that prohibit or IMPEDE access to ANY Table R-2 Safe Shutdown Rooms or Areas. (Note 5)</p>	1	2	3	4	5	6	DEF	1	2	3					<table><tr><th colspan="2">Table R-2 Safe Shutdown Rooms/Areas</th></tr><tr><th>Room/Area</th><th>Mode Applicability</th></tr><tr><td>Aux Bldg. 565' ele. Room 236 #2 Mechanical Penetration Room</td><td>1, 2, 3</td></tr><tr><td>Aux Bldg. 585' ele. Room 304 corridor outside #3 Mechanical Penetration Room</td><td>1, 2, 3</td></tr><tr><td>Aux Bldg. 603' ele. Room 427 - #2 Electrical Penetration Room</td><td>1, 2, 3</td></tr></table>	Table R-2 Safe Shutdown Rooms/Areas		Room/Area	Mode Applicability	Aux Bldg. 565' ele. Room 236 #2 Mechanical Penetration Room	1, 2, 3	Aux Bldg. 585' ele. Room 304 corridor outside #3 Mechanical Penetration Room	1, 2, 3	Aux Bldg. 603' ele. Room 427 - #2 Electrical Penetration Room	1, 2, 3				
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DRY FUEL STORAGE FACILITY (DFSF)

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT							
E	1	None	None	None	EU1 Damage to a loaded cask CONFINEMENT BOUNDARY							
					<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>DEF</td></tr></table>	1	2	3	4	5	6	DEF
					1	2	3	4	5	6	DEF	
EU1.1												
DFSF	Confinement Boundary				Damage to a loaded canister CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading on the surface of a loaded spent fuel HSM cask > EITHER of the following: <ul style="list-style-type: none">100 mrem/hr (neutron + gamma) on the HSM cask wall or roof100 mrem/hr (neutron + gamma) on the center of the HSM cask door							



SYSTEM MALFUNCTION

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
S	1	<p>SG1a Prolonged loss of ALL offsite and ALL onsite AC power to essential buses</p> <div>1 2 3 4</div> <p>SG1.1 Loss of ALL offsite and ALL onsite AC power capability to essential 4160V buses C1 and D1 AND EITHER:</p> <ul style="list-style-type: none"> Restoration of at least one essential bus in <4 hours is not likely (Note 1) Calculated Clad Temperature in Region 3 (DB-OP-02000 Figure 2) <p>SG1b Loss of ALL essential AC and DC power sources for 15 minutes or longer</p> <div>1 2 3 4</div> <p>SG1.2 Loss of ALL offsite and ALL onsite AC power capability to essential 4160V buses C1 and D1 for ≥ 15 min. AND: Loss of ALL 125 VDC power based on battery bus voltage indications < 105 VDC on ALL essential DC distribution panels D1P, D1N, D2P, and D2N for ≥ 15 min. (Note 1)</p>	<p>SS1 Loss of ALL offsite power and ALL onsite AC power to essential buses for 15 minutes or longer</p> <div>1 2 3 4</div> <p>SS1.1 Loss of ALL offsite and ALL onsite AC power capability to essential 4160V buses C1 and D1 ≥ 15 min. (Note 1)</p>	<p>SA1 Loss of ALL but one AC power source to essential buses for 15 minutes or longer</p> <div>1 2 3 4</div> <p>SA1.1 AC power capability, Table S-1, to essential 4160V buses C1 and D1 reduced to a single power source for ≥ 15 min. (Note 1) AND ANY additional single power source failure will result in loss of ALL AC power to SAFETY SYSTEMS</p>	<p>SU1 Loss of ALL offsite AC power capability to essential buses for 15 minutes or longer</p> <div>1 2 3 4</div> <p>SU1.1 Loss of ALL offsite AC power capability, Table S-1, to essential 4160V buses C1 and D1 for ≥ 15 min. (Note 1)</p> <div> <p>Table S-1 Offsite/Onsite AC Power Sources</p> <p>Offsite:</p> <ul style="list-style-type: none"> X11 X11 (back-fed via Main Transformer if already aligned) X01 X02 <p>Onsite:</p> <ul style="list-style-type: none"> EDG1 EDG2 SBODG </div>
	2	<p>None</p> <div> <p>NOTES:</p> <p>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</p> </div>	<p>SS2 Loss of ALL essential DC power for 15 minutes or longer</p> <div>1 2 3 4</div> <p>SS2.1 Loss of ALL 125 VDC power based on battery bus voltage indications < 105 VDC on ALL essential DC distribution panels D1P, D1N, D2P, and D2N for ≥ 15 min. (Note 1)</p>	None	None



SYSTEM MALFUNCTION

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
S System Malfunc.	3 Loss of Control Room Indications	None	<p>Table S-2 Safety System Parameters</p> <ul style="list-style-type: none"> Reactor power Pressurizer level RCS pressure In-core T/C temperature Level in at least one S/G Auxiliary or emergency feed flow <p>Table S-3 Significant Transients</p> <ul style="list-style-type: none"> Reactor trip Runback > 25% thermal power Electrical load rejection > 25% electrical load Safety injection actuation 	<p>SA3 UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress</p> <p>1 2 3 4</p> <p>SA3.1 An UNPLANNED event results in the inability to monitor one or more Table S-2 SAFETY SYSTEM parameters from within the Control Room for ≥ 15 min. (Note 1) AND ANY Significant Transient is in progress, Table S-3</p>	<p>SU3 UNPLANNED loss of Control Room indications for 15 minutes or longer</p> <p>1 2 3 4</p> <p>SU3.1 An UNPLANNED event results in the inability to monitor one or more Table S-2 SAFETY SYSTEM parameters from within the Control Room for ≥ 15 min. (Note 1)</p>
	4 RCS Activity	None	None	None	<p>SU4 Reactor coolant activity greater than Technical Specification allowable limits</p> <p>1 2 3 4</p> <p>SU4.1 RCS activity > Technical Specification LCO 3.4.16 as indicated by ANY of the following:</p> <ul style="list-style-type: none"> Dose Equivalent I-131 in the unacceptable region of Figure 3.4.16-1 > 1 µCi/gm dose equivalent I-131 for > 48 hrs. > 100/E µCi/gm gross specific coolant activity
	5 RCS Leakage	None	None	None	<p>SU5 RCS leakage for 15 minutes or longer</p> <p>1 2 3 4</p> <p>SU5.1 RCS unidentified or pressure boundary leakage > 10 gpm for ≥ 15 min. OR RCS identified leakage > 25 gpm for ≥ 15 min. OR Leakage from the RCS to a location outside containment > 25 gpm for ≥ 15 min. (Note 1)</p>

NOTES:

Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.



SYSTEM MALFUNCTION

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT																											
S System Malfunc.	6 RPS Failure	<div>NOTES:</div> <div>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</div> <div>Note 8: A manual trip action is ANY operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.</div> <div>None</div>	<div>SS6 Inability to shut down the reactor causing a challenge to core cooling or RCS heat removal</div> <div>1</div> <div>SS6.1</div> <div>An automatic or manual trip fails to shut down the reactor as indicated by reactor power ≥ 5% AND</div> <div>ALL actions to shut down the reactor are not successful as indicated by reactor power ≥ 5% AND EITHER:</div> <div><ul style="list-style-type: none">Calculated Clad Temperature in Region 3 (DB-OP-02000 Figure 2)MFV, AFW, and MU-HPI PORV Cooling are all unavailable</div>	<div>SA6 Automatic or manual trip fails to shut down the reactor AND subsequent manual actions taken at the Controls Area are not successful in shutting down the reactor</div> <div>1</div> <div>SA6.1</div> <div>An automatic or manual trip fails to shut down the reactor as indicated by reactor power ≥ 5% AND</div> <div>Manual trip actions taken at the Controls Area (manual RPS trip pushbuttons and de-energizing E2 and F2) are not successful in shutting down the reactor as indicated by reactor power ≥ 5% (Note 8)</div>	<div>SU6 Automatic or manual trip fails to shut down the reactor</div> <div>1</div> <div>SU6.1</div> <div>An automatic trip did not shut down the reactor as indicated by reactor power ≥ 5% after ANY RPS setpoint is exceeded AND</div> <div>A subsequent manual trip action taken at the Controls Area (manual RPS trip pushbuttons or de-energizing E2 and F2) is successful in shutting down the reactor as indicated by reactor power < 5% (Note 8)</div> <div>SU6.2</div> <div>A manual trip did not shut down the reactor as indicated by reactor power ≥ 5% after ANY manual trip action was initiated AND</div> <div>A subsequent automatic trip or manual trip action taken at the Controls Area (manual RPS trip pushbuttons or de-energizing E2 and F2) is successful in shutting down the reactor as indicated by reactor power < 5% (Note 8)</div>																											
	7 Loss of Comm.	<div>None</div>	<div>Table S-4 Communication Methods</div> <table><tr><th>System</th><th>Onsite</th><th>ORO</th><th>NRC</th></tr><tr><td>Public Address (Gaitronics)</td><td>X</td><td></td><td></td></tr><tr><td>Onsite Radios</td><td>X</td><td></td><td></td></tr><tr><td>Plant Telephones</td><td>X</td><td>X</td><td>X</td></tr><tr><td>Commercial Telephones</td><td>X</td><td>X</td><td>X</td></tr><tr><td>4-Way Ringdown Circuit</td><td></td><td>X</td><td></td></tr><tr><td>NRC Emergency Telephone System</td><td></td><td></td><td>X</td></tr></table>			System	Onsite	ORO	NRC	Public Address (Gaitronics)	X			Onsite Radios	X			Plant Telephones	X	X	X	Commercial Telephones	X	X	X	4-Way Ringdown Circuit		X		NRC Emergency Telephone System		
System	Onsite	ORO	NRC																													
Public Address (Gaitronics)	X																															
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4-Way Ringdown Circuit		X																														
NRC Emergency Telephone System			X																													



SYSTEM MALFUNCTION

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT															
S System Malfunc.	8 CMT Failure	<div><p>NOTES:</p><p>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</p></div> <div>None</div>		<div><p>Table S-6 Containment Cooling Full Train</p><table><tr><th>CT Spray Pumps</th><th>CT Cooling Fans</th></tr><tr><td>2</td><td>0</td></tr><tr><td>1</td><td>1</td></tr><tr><td>0</td><td>2</td></tr></table></div>	CT Spray Pumps	CT Cooling Fans	2	0	1	1	0	2	<p>SU8 Failure to isolate containment or loss of containment pressure control</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td></tr></table> <p>SU8.1</p> <p>ANY penetration is not closed within 15 min. of a VALID containment isolation signal (Note 1)</p> <p>SU8.2</p> <p>Containment pressure > 40 psia with < one full train of containment cooling, Table S-6, operating per design for > 15 min. (Note 1)</p>	1	2	3	4			
	CT Spray Pumps	CT Cooling Fans																		
2	0																			
1	1																			
0	2																			
1	2	3	4																	
	9 Hazardous Event Affecting Safety Systems	<div>None</div>	<div><p>Table S-5 Hazardous Events</p><ul style="list-style-type: none">Seismic event (earthquake)Internal or external FLOODING eventHigh winds or tornado strikeFIREEXPLOSIONOther events with similar hazard characteristics as determined by the Emergency Director</div>	<p>SA9 Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td></tr></table> <p>SA9.1</p> <p>The occurrence of ANY Table S-5 Hazardous Event AND EITHER:</p> <ul style="list-style-type: none">Event has caused indications of degraded performance in at least one train of SAFETY SYSTEM required for the current operating modeThe event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure required for the current operating mode	1	2	3	4				<div>None</div>								
1	2	3	4																	



Cold Shutdown / Refueling System Malfunction

		GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
C Cold SD/ Refueling System Malfunct.	1 RCS Level	<p>CG1 Loss of RCS inventory affecting fuel clad integrity with containment integrity challenged</p> <p>5 6</p> <p>CG1.1 RCS level cannot be monitored for ≥ 30 min. (Note 1) AND Core uncover is indicated by ANY of the following:</p> <ul style="list-style-type: none"> UNPLANNED increase in Containment Sumps, Auxiliary Building Sumps, BWST or RCDT levels of sufficient magnitude to indicate core uncover Containment Radiation Monitor (RE 4596A or B) reading > 16 R/hr Refueling Bridge Portable Area Radiation Monitor reading > 30 R/hr (when installed) Erratic Source Range Monitor indication <p>AND ANY Containment Challenge indication, Table C-1</p> <p>Table C-1 Containment Challenge Indications</p> <ul style="list-style-type: none"> CONTAINMENT CLOSURE not established (Note 6) Containment Hydrogen concentration $> 4\%$ UNPLANNED rise in Containment pressure 	<p>CS1 Loss of RCS inventory affecting core decay heat removal capability</p> <p>5 6</p> <p>CS1.1 RCS level cannot be monitored for ≥ 30 min. (Note 1) AND Core uncover is indicated by ANY of the following:</p> <ul style="list-style-type: none"> UNPLANNED increase in Containment Sumps, Auxiliary Building Sumps, BWST or RCDT levels of sufficient magnitude to indicate core uncover Containment Radiation Monitor (RE 4596A or B) reading > 16 R/hr Refueling Bridge Portable Area Radiation Monitor reading > 30 R/hr (when installed) Erratic Source Range Monitor indication 	<p>CA1 Loss of RCS inventory</p> <p>5 6</p> <p>CA1.1 Loss of RCS inventory as indicated by RCS Level ≤ 0.4 ft. (LI 10596)</p> <p>CA1.2 RCS level cannot be monitored for ≥ 15 min. (Note 1) AND EITHER:</p> <ul style="list-style-type: none"> UNPLANNED increase in Containment Sumps, Auxiliary Building Sumps, BWST or RCDT due to a loss of RCS inventory Visual observation of UNISOLABLE RCS leakage 	<p>CU1 UNPLANNED loss of RCS inventory for 15 minutes or longer</p> <p>5 6</p> <p>CU1.1 UNPLANNED loss of reactor coolant results in RCS level less than a required lower limit for ≥ 15 min. (Note 1)</p> <p>CU1.2 RCS level cannot be monitored AND EITHER:</p> <ul style="list-style-type: none"> UNPLANNED increase in Containment Sumps, Auxiliary Building Sumps, BWST or RCDT due to a loss of RCS inventory Visual observation of UNISOLABLE RCS leakage
	2 Loss of Essential AC Power	<p>None</p> <p>NOTES:</p> <p>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</p>	<p>Table C-2 Offsite/Onsite AC Power Sources</p> <p>Offsite:</p> <ul style="list-style-type: none"> X01 X02 X11 (back-fed via Main Transformer if already aligned) <p>Onsite:</p> <ul style="list-style-type: none"> EDG1 EDG2 SBODG 	<p>CA2 Loss of ALL offsite and ALL onsite AC power to essential buses for 15 minutes or longer</p> <p>5 6 DEF</p> <p>CA2.1 Loss of ALL offsite and ALL onsite AC power capability to essential 4160V buses C1 and D1 for ≥ 15 min. (Note 1)</p>	<p>CU2 Loss of ALL but one AC power source to essential buses for 15 minutes or longer</p> <p>5 6 DEF</p> <p>CU2.1 AC power capability, Table C-2, to essential 4160V buses C1 and D1 reduced to a single power source for ≥ 15 min. (Note 1) AND ANY additional single power source failure will result in loss of ALL AC power to SAFETY SYSTEMS</p>



Cold Shutdown / Refueling System Malfunction

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT	UNUSUAL EVENT												
<div>C</div> <div>Cold SD/ Refueling System Malfunc.</div>	<div>3</div> <div>RCS Temp.</div>	None	<div>Table C-3 RCS Heat-up Duration Thresholds</div> <div>*If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.</div> <table><tr><td>RCS Status</td><td>Containment Closure Status</td><td>Heat-up Duration</td></tr><tr><td>Intact (but not reduced inventory)</td><td>N/A</td><td>60 min. *</td></tr><tr><td>Not intact OR At reduced inventory</td><td>established</td><td>20 min. *</td></tr><tr><td></td><td>not established</td><td>0 min.</td></tr></table>	RCS Status	Containment Closure Status	Heat-up Duration	Intact (but not reduced inventory)	N/A	60 min. *	Not intact OR At reduced inventory	established	20 min. *		not established	0 min.	<div>CA3</div> <div>Inability to maintain plant in cold shutdown</div> <div><div><div></div><div>5</div><div>6</div><div></div></div></div> <div>CA3.1</div> <div>UNPLANNED increase in RCS temperature to > 200°F for > Table C-3 duration. (Note 1, 10)</div> <div>OR</div> <div>UNPLANNED RCS pressure increase > 10 psig due to a loss of RCS cooling (This EAL does not apply during water-solid conditions).</div>	<div>CU3</div> <div>UNPLANNED increase in RCS temperature</div> <div><div><div></div><div>5</div><div>6</div><div></div></div></div> <div>CU3.1</div> <div>UNPLANNED increase in RCS temperature to > 200°F due to a loss of decay heat removal capability</div> <div>CU3.2</div> <div>Loss of ALL RCS temperature and RCS level indication for > 15 min. (Note 1)</div>
	RCS Status	Containment Closure Status	Heat-up Duration														
Intact (but not reduced inventory)	N/A	60 min. *															
Not intact OR At reduced inventory	established	20 min. *															
	not established	0 min.															
<div>4</div> <div>Loss of Essential DC Power</div>	<div>NOTES:</div> <div>Note 1: The Emergency Director should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.</div> <div>Note 10: In the absence of reliable RCS temperature indication caused by the loss of decay heat removal capability, classification should be based on the RCS pressure increase criteria when the RCS is intact in Mode 5 or based on time to boil data when in Mode 6 or the RCS is not intact in Mode 5.</div>	None	None	<div>CU4</div> <div>Loss of essential DC power for 15 minutes or longer</div> <div><div><div></div><div>5</div><div>6</div><div></div></div></div> <div>CU4.1</div> <div>< 105 VDC voltage indications on Technical Specification required essential 125 VDC distribution panels for ≥ 15 min. (Note 1)</div>													



Cold Shutdown / Refueling System Malfunction

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		UNUSUAL EVENT																											
C Cold SD/ Refueling System Malfunct.	5 Loss of Comm.	None	None	<div>Table C-4 Communication Methods</div> <table><thead><tr><th>System</th><th>Onsite</th><th>ORO</th><th>NRC</th></tr></thead><tbody><tr><td>Public Address (Gaitronics)</td><td>X</td><td></td><td></td></tr><tr><td>Onsite Radios</td><td>X</td><td></td><td></td></tr><tr><td>Plant Telephones</td><td>X</td><td>X</td><td>X</td></tr><tr><td>Commercial Telephones</td><td>X</td><td>X</td><td>X</td></tr><tr><td>4-Way Ringdown Circuit</td><td></td><td>X</td><td></td></tr><tr><td>NRC Emergency Telephone System (ETS)</td><td></td><td></td><td>X</td></tr></tbody></table>	System	Onsite	ORO	NRC	Public Address (Gaitronics)	X			Onsite Radios	X			Plant Telephones	X	X	X	Commercial Telephones	X	X	X	4-Way Ringdown Circuit		X		NRC Emergency Telephone System (ETS)			X	<div><div></div><div></div><div></div><div></div><div></div><div>5</div><div>6</div><div>DEF</div></div> CU5.1 Loss of ALL Table C-4 onsite communication methods. CU5.2 Loss of ALL Table C-4 ORO communication methods. CU5.3 Loss of ALL Table C-4 NRC communication methods.
	System	Onsite	ORO	NRC																													
Public Address (Gaitronics)	X																																
Onsite Radios	X																																
Plant Telephones	X	X	X																														
Commercial Telephones	X	X	X																														
4-Way Ringdown Circuit		X																															
NRC Emergency Telephone System (ETS)			X																														
6 Hazardous Event Affecting Safety Systems	None	<div>Table C-5 Hazardous Events</div> <div><ul style="list-style-type: none">Seismic event (earthquake)Internal or external FLOODING eventHigh winds or tomado strikeFIREEXPLOSIONOther events with similar hazard characteristics as determined by the Emergency Director</div>	CA6 Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode <div><div></div><div></div><div></div><div></div><div></div><div>5</div><div>6</div><div></div></div> CA6.1 The occurrence of ANY Table C-5 Hazardous Event AND EITHER: <ul style="list-style-type: none">Event has caused indications of degraded performance in at least one train of a SAFETY SYSTEM required for the current operating modeThe event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure required for the current operating mode	None																													

Fission Product Barrier Degradation

GENERAL EMERGENCY										SITE AREA EMERGENCY										ALERT										UNUSUAL EVENT																																							
FG1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4							FS1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4							FA1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4																
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Loss of ANY two barriers AND Loss or Potential Loss of the third barrier (Table F-1).										Loss or Potential Loss of ANY two barriers (Table F-1)										ANY Loss or ANY Potential Loss of EITHER Fuel Clad or RCS (Table F-1)										None																																							

Table F-1 Fission Product Barrier Matrix

Category	Fuel Clad (FC) Barrier		Reactor Coolant System (RCS) Barrier		Containment (CT) Barrier	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
A RCS or SG Tube Leakage	None	None	1. An automatic or manual ECCS (SFAS) actuation required by EITHER : • UNISOLABLE RCS leakage • SG tube RUPTURE	1. Operation of a standby Makeup Pump (> 250 gpm) is required by EITHER : • UNISOLABLE RCS leakage • SG tube RUPTURE OR 2. PTS requirements invoked (SR5)	1. A leaking or RUPTURED SG is FAULTED outside of containment	None
B Inadequate Heat Removal	1. Calculated Clad Temperature in Region 3 or higher (DB-OP-02000 Figure 2).	1. Calculated Clad Temperature in Region 2 or higher (DB-OP-02000 Figure 2) OR 2. Loss of ALL feedwater AND SG cooling is required (In combination with RCS Potential Loss B.1, meeting this threshold would result in a Site Area Emergency)	None	1. Loss of ALL feedwater AND SG cooling is required (Meeting this threshold results in a Site Area Emergency because this threshold is identical to Fuel Clad Barrier Potential Loss threshold B.2; both will be met)	None	1. Calculated Clad Temperature in Region 3 or higher (DB-OP-02000 Figure 2). AND Restoration procedures not effective within 15 min. (Note 1)
C CT Radiation/ RCS Activity	1. RE 4596A or B > Table F-2 column "FC Loss" (Note 9) OR 2. Dose equivalent I-131 coolant activity > 300 µCi/gm	None	1. RE 4596A or B > Table F-2 column "RCS Loss" (Note 9)	None	None	1. RE 4596A or B > Table F-2 column "CT Potential Loss" (Note 9)

Table F-2 Containment Radiation
R/hr (RE 4596A or B)

Time After S/D (Hrs.)	RCS Loss	FC Loss	CT Pot. Loss
0-1	1.50E+01	3.03E+03	1.40E+04
1-2	1.50E+01	2.56E+03	1.18E+04
2-8	1.50E+01	1.61E+03	7.46E+03
8-16	1.50E+01	1.14E+03	5.28E+03
16-24	1.50E+01	8.66E+02	4.00E+03
>24	1.50E+01	3.94E+02	1.82E+03

Note 9

During a main steam line break in containment or LOCA with temperature >170F, there is a potential to induce transient errors into the output of RE4596A and B during the peak rate of temperature change. Consult alternate indications. If the main steam line break is accompanied by core damage this error is insignificant.

Fission Product Barrier Degradation

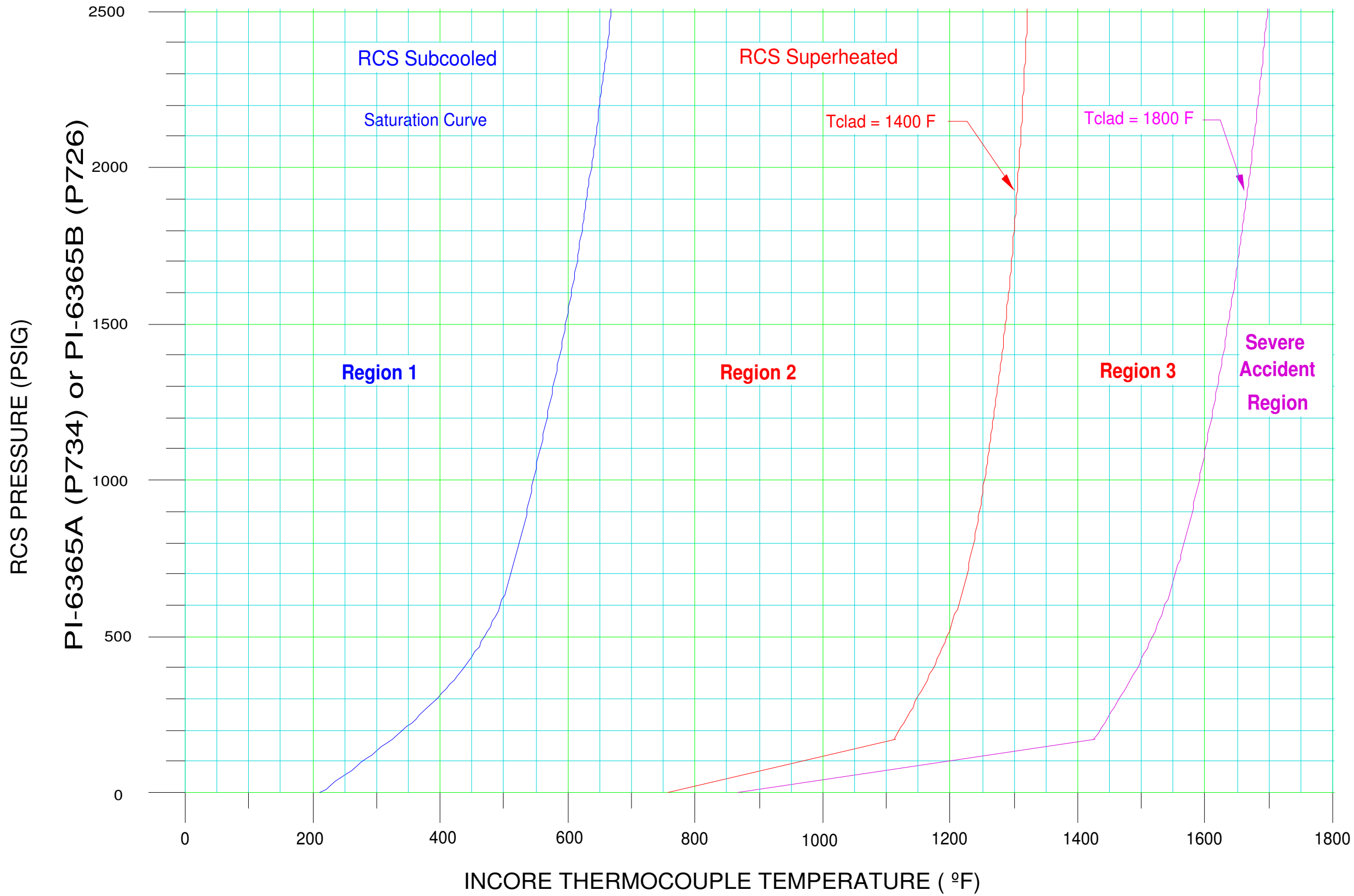
GENERAL EMERGENCY										SITE AREA EMERGENCY										ALERT										UNUSUAL EVENT																																							
FG1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4							FS1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4							FA1 <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										1	2	3	4																
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Table F-1 Fission Product Barrier Matrix

	Fuel Clad (FC) Barrier		Reactor Coolant System (RCS) Barrier		Containment (CT) Barrier									
Category	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss								
<div>D</div> <div>CT Integrity or Bypass</div>	None	None	<div>Table F-3 Containment Cooling Full Train</div> <table><tr><td>Spray</td><td>Coolers</td></tr><tr><td>2</td><td>0</td></tr><tr><td>1</td><td>1</td></tr><tr><td>0</td><td>2</td></tr></table>		Spray	Coolers	2	0	1	1	0	2	<div>1. Containment isolation is required AND EITHER:<ul style="list-style-type: none">Containment integrity has been lost based on Emergency Director JudgmentUNISOLABLE pathway from Containment to the environment existsOR</div> <div>2. Indications of RCS leakage outside of containment</div>	<div>1. Containment pressure > 50.4 psia OR</div> <div>2. Containment hydrogen concentration > 4% OR</div> <div>3. Containment pressure > 40 psia with < one full train, Table F-3, of containment cooling operating per design for ≥ 15 min. (Note 1)</div>
Spray	Coolers													
2	0													
1	1													
0	2													
<div>E</div> <div>ED Judgment</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier</div>	<div>1. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier</div>								

Figure 2

INCORE T/C TEMPERATURE VS RC PRESSURE FOR INADEQUATE CORE COOLING



3.2 POWER DISTRIBUTION LIMITS

3.2.1 Regulating Rod Insertion Limits

LCO 3.2.1 Regulating rod groups shall be within the physical insertion, sequence, and overlap limits specified in the COLR.

-----NOTE-----
Not required for any regulating rod repositioned to perform SR 3.1.4.2.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Regulating rod groups inserted in restricted operation region.	<p>A.1 -----NOTE----- Only required when THERMAL POWER is > 20% RTP. -----</p> <p>Perform SR 3.2.5.1.</p> <p><u>AND</u></p> <p>A.2 Restore regulating rod groups to within limits.</p>	<p>Once per 2 hours</p> <p>24 hours from discovery of failure to meet the LCO</p>
B. Required Action and associated Completion Time of Condition A not met.	<p>B.1 Reduce THERMAL POWER to less than or equal to THERMAL POWER allowed by regulating rod group insertion limits.</p>	<p>2 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Regulating rod groups sequence or overlap limits not met.	C.1 -----NOTE----- Only required when THERMAL POWER is > 20% RTP. ----- Perform SR 3.2.5.1. <u>AND</u>	2 hours
	C.2 Restore regulating rod groups to within limits.	4 hours
D. Regulating rod groups inserted in unacceptable operation region.	D.1 Initiate boration to restore SDM to within the limit.	15 minutes
	<u>AND</u> D.2.1 Restore regulating rod groups to within restricted operation region. <u>OR</u>	2 hours
	D.2.2 Reduce THERMAL POWER to less than or equal to the THERMAL POWER allowed by the restricted operation region of the regulating rod group insertion limits.	2 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify regulating rod groups are within the sequence and overlap limits as specified in the COLR.	12 hours
SR 3.2.1.2	Verify regulating rod groups meet the insertion limits as specified in the COLR.	12 hours
SR 3.2.1.3	Verify SDM is within the limit specified in the COLR.	Within 4 hours prior to achieving criticality

3.2 POWER DISTRIBUTION LIMITS

3.2.2 AXIAL POWER SHAPING ROD (APSR) Insertion Limits

LCO 3.2.2 APSRs shall be positioned within the limits specified in the COLR.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. APSRs not within limits.	A.1 -----NOTE----- Only required when THERMAL POWER is > 20% RTP. -----	Once per 2 hours
	Perform SR 3.2.5.1.	
	<u>AND</u> A.2 Restore APSRs to within limits.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify APSRs are within acceptable limits specified in the COLR.	12 hours

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL POWER IMBALANCE Operating Limits

LCO 3.2.3 AXIAL POWER IMBALANCE shall be maintained within the limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 40% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AXIAL POWER IMBALANCE not within limits.	A.1 Perform SR 3.2.5.1.	Once per 2 hours
	<u>AND</u> A.2 Reduce AXIAL POWER IMBALANCE within limits.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to \leq 40% RTP.	2 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.3.1 Verify AXIAL POWER IMBALANCE is within limits as specified in the COLR.	12 hours

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT (QPT)

LCO 3.2.4 QPT shall be maintained less than or equal to the steady state limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. QPT greater than the steady state limit and less than or equal to the transient limit.	A.1.1 Perform SR 3.2.5.1.	Once per 2 hours
	<u>OR</u>	
	A.1.2.1 Reduce THERMAL POWER \geq 2% RTP from the ALLOWABLE THERMAL POWER for each 1% of QPT greater than the steady state limit.	2 hours
	<u>OR</u>	
	2 hours after last performance of SR 3.2.5.1	
	<u>AND</u>	
	A.1.2.2 Reduce High Flux trip setpoint and Flux- Δ Flux-Flow trip setpoint \geq 2% RTP for each 1% of QPT greater than the steady state limit.	10 hours
	<u>AND</u>	
	A.2 Restore QPT to less than or equal to the steady state limit.	24 hours from discovery of failure to meet the LCO

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. QPT greater than the transient limit and less than or equal to the maximum limit due to misalignment of a CONTROL ROD or an APSR.</p>	<p>B.1 Reduce THERMAL POWER $\geq 2\%$ RTP from ALLOWABLE THERMAL POWER for each 1% of QPT greater than the steady state limit.</p>	30 minutes
	<p><u>AND</u></p> <p>B.2 Restore QPT to less than or equal to the transient limit.</p>	2 hours
<p>C. Required Action and associated Completion Time of Condition A or B not met.</p> <p><u>OR</u></p> <p>QPT greater than the transient limit and less than or equal to the maximum limit due to causes other than the misalignment of either CONTROL ROD or APSR.</p>	<p>C.1 Reduce THERMAL POWER to $< 60\%$ of the ALLOWABLE THERMAL POWER.</p>	2 hours
	<p><u>AND</u></p> <p>C.2 Reduce High Flux trip setpoint to $\leq 65.5\%$ of the ALLOWABLE THERMAL POWER.</p>	10 hours
<p>D. Required Action and associated Completion Time for Condition C not met.</p> <p><u>OR</u></p> <p>QPT greater than the maximum limit.</p>	<p>D.1 Reduce THERMAL POWER to $\leq 20\%$ RTP.</p>	2 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.2.4.1 Verify QPT is within limits as specified in the COLR.</p>	<p>7 days</p> <p><u>AND</u></p> <p>-----NOTE----- Only required to be performed if both Condition C was entered and THERMAL POWER is $\geq 60\%$ of ALLOWABLE THERMAL POWER -----</p> <p>When QPT has been restored to less than or equal to the steady state limit, once every hour for 12 hours, or until verified acceptable at $\geq 95\%$ RTP</p>

3.2 POWER DISTRIBUTION LIMITS

3.2.5 Power Peaking Factors

LCO 3.2.5 F_Q and $F_{\Delta H}^N$ shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. F_Q not within limit.	A.1 Reduce THERMAL POWER $\geq 1\%$ RTP for each 1% that F_Q exceeds limit.	15 minutes
	<u>AND</u>	
	A.2 Reduce High Flux trip setpoint and Flux- Δ Flux-Flow trip setpoint $\geq 1\%$ RTP for each 1% that F_Q exceeds limit.	10 hours
	<u>AND</u>	
	A.3 Restore F_Q to within limit.	24 hours
B. $F_{\Delta H}^N$ not within limit.	B.1 Reduce THERMAL POWER $\geq RH(\%)$ RTP (specified in the COLR) for each 1% that $F_{\Delta H}^N$ exceeds limit.	15 minutes
	<u>AND</u>	

ACTIONS (continued)

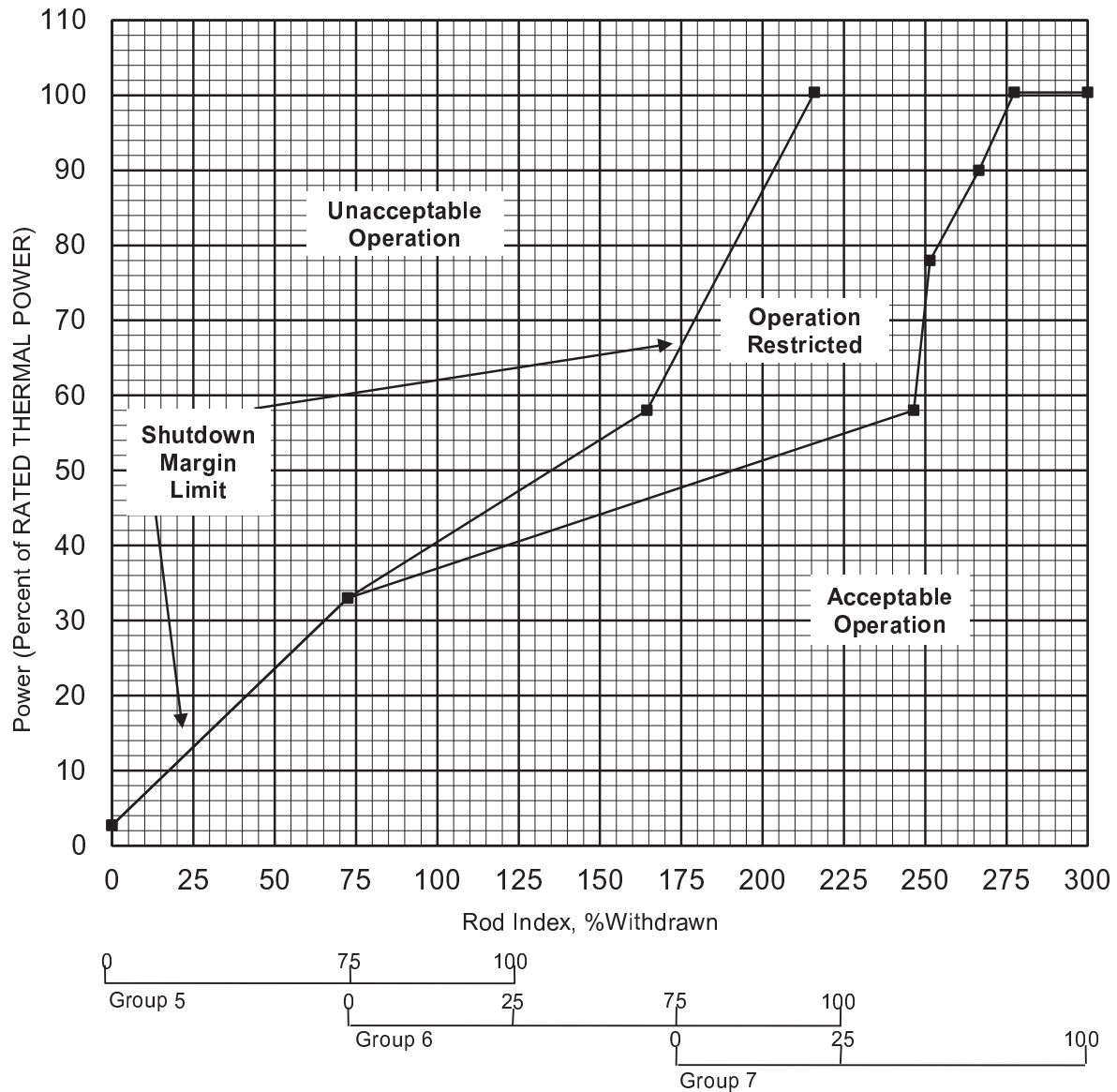
CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Reduce High Flux trip setpoint and Flux- Δ Flux-Flow trip setpoint \geq RH(%) RTP (specified in the COLR) for each 1% that $F_{\Delta H}^N$ exceeds limit.	10 hours
	<u>AND</u> B.3 Restore $F_{\Delta H}^N$ to within limit.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER \leq 20% RTP.	2 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.2.5.1 -----NOTE----- Only required to be performed when specified in LCO 3.1.8, "PHYSICS TESTS Exceptions - MODE 1," or when complying with Required Actions of LCO 3.1.4, "CONTROL ROD Group Alignment Limits," LCO 3.2.1, "Regulating Rod Insertion Limits," LCO 3.2.2, "AXIAL POWER SHAPING ROD (APSR) Insertion Limits," LCO 3.2.3, "AXIAL POWER IMBALANCE Operating Limits," or LCO 3.2.4, "QUADRANT POWER TILT (QPT)." ----- Verify F_Q and $F_{\Delta H}^N$ are within limits by using the Incore Detector System to obtain a power distribution map.</p>	As specified by the applicable LCO(s)

Figure 2a Regulating Group Position Operating Limits
0 to 300 ± 10 EFPD, Four RC Pumps
Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specifications 3.2.1



Note 1: A Rod Group overlap of 25 \pm 5% between sequential withdrawn groups 5 and 6, and 6 and 7, shall be maintained.

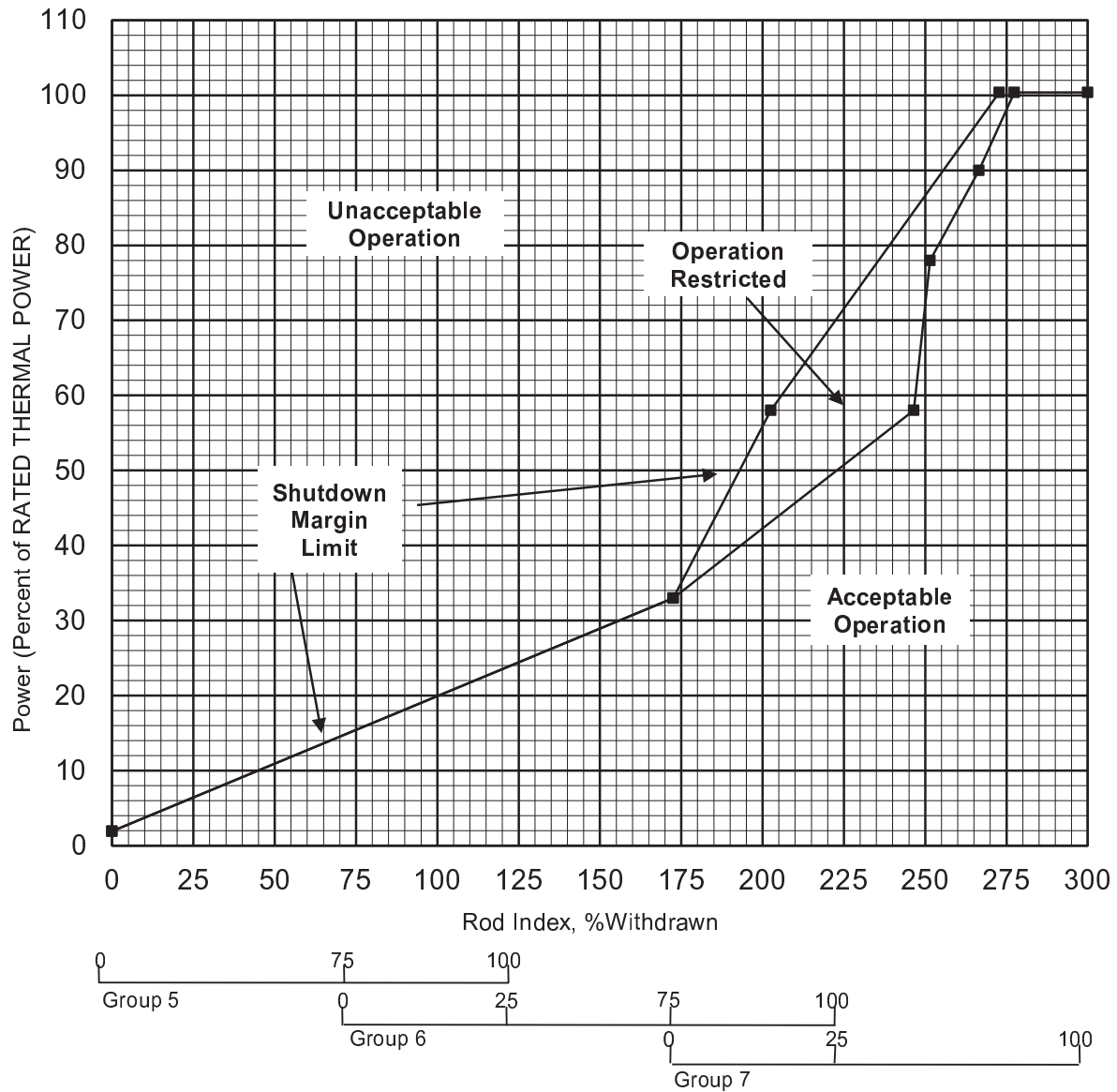
Note 2: Instrument error is accounted for in these Operating Limits.

Note 3: Maximum plotted power level is 100.37 %RTP.

SDM Limit		RI Limit	
Power	RI	Power	RI
100.37	215.90	100.37	300.00
58.00	164.50	100.37	277.40
33.00	72.50	90.00	266.50
2.70	0.00	78.00	251.50
		58.00	246.50
		33.00	72.50
		2.70	0.00

Figure 2b Regulating Group Position Operating Limits
After 300 ± 10 EFPD, Four RC Pumps
Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specifications 3.2.1



Note 1: A Rod Group overlap of $25 \pm 5\%$ between sequential withdrawn groups 5 and 6, and 6 and 7, shall be maintained.

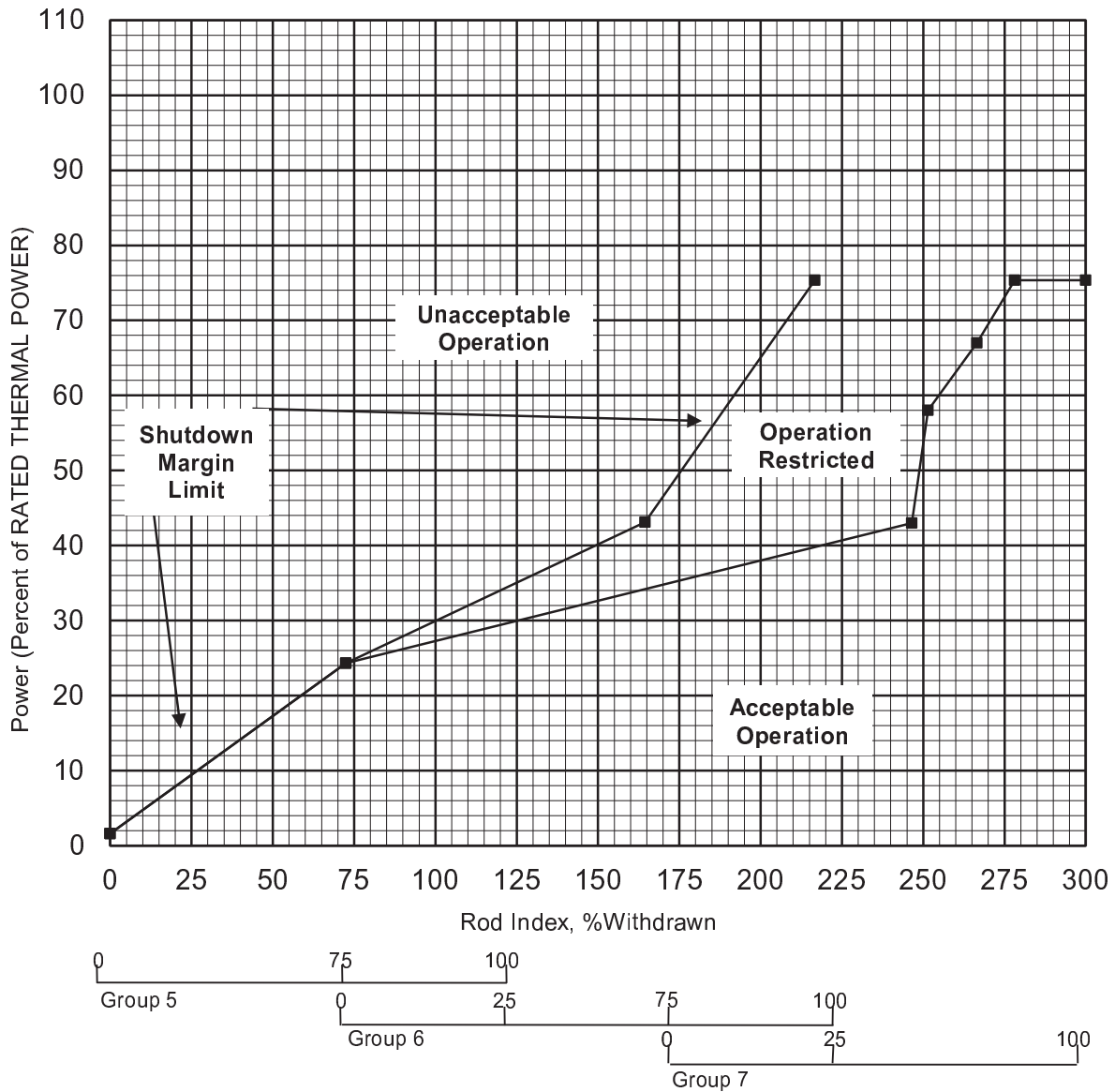
Note 2: Instrument error is accounted for in these Operating Limits.

Note 3: Maximum plotted power level is 100.37 %RTP.

SDM Limit		RI Limit	
Power	RI	Power	RI
100.37	272.80	100.37	300.00
58.00	202.50	100.37	277.40
33.00	172.50	90.00	266.50
1.90	0.00	78.00	251.50
		58.00	246.50
		33.00	172.50
		1.90	0.00

Figure 2c Regulating Group Position Operating Limits
0 to 300 ± 10 EFPD, Three RC Pumps
Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specifications 3.2.1



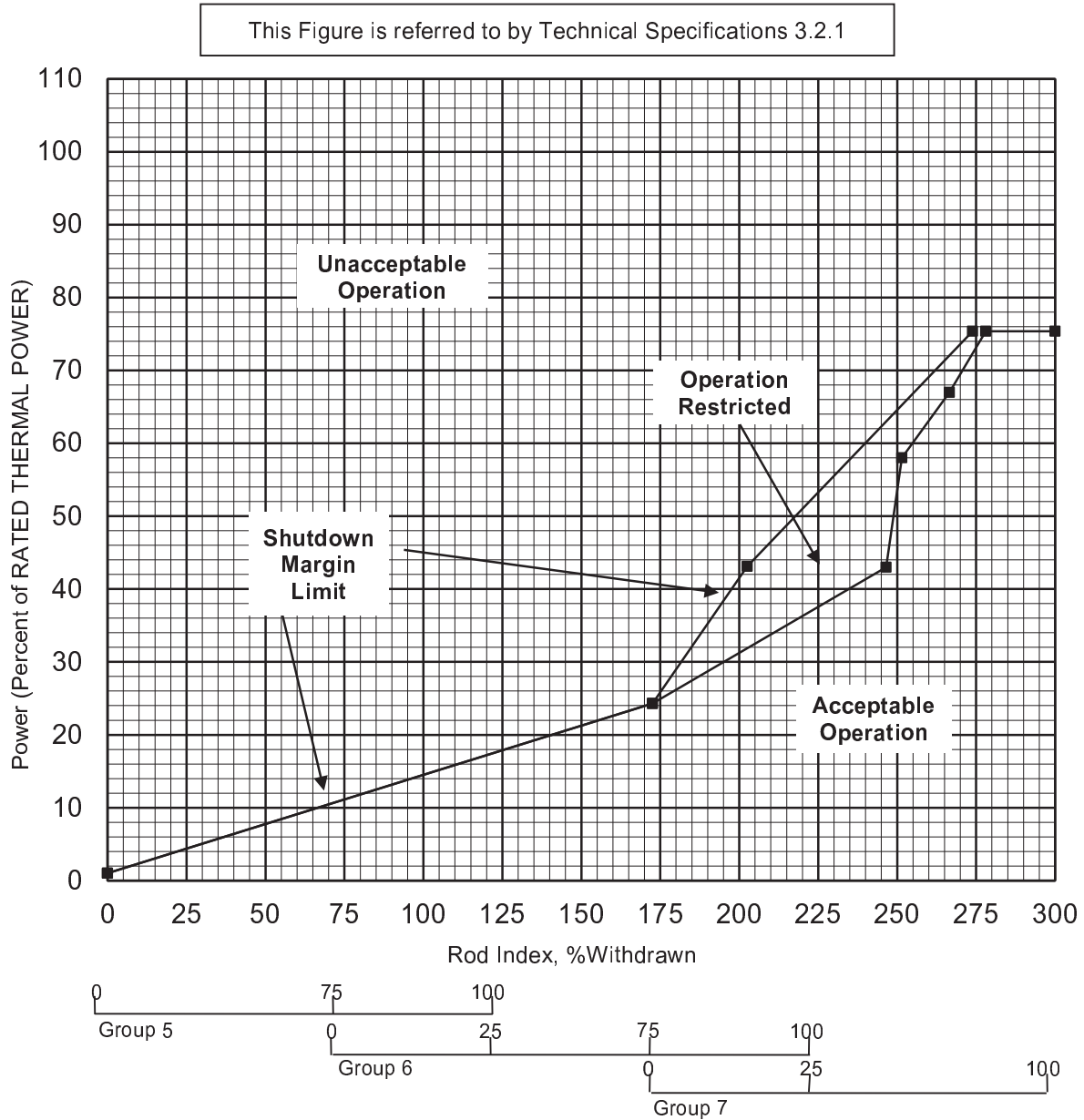
Note 1: A Rod Group overlap of 25 \pm 5% between sequential withdrawn groups 5 and 6, and 6 and 7, shall be maintained.

Note 2: Instrument error is accounted for in these Operating Limits.

Note 3: Maximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

SDM Limit		RI Limit	
Power	RI	Power	RI
75.37	216.70	75.37	300.00
43.10	164.50	75.37	278.10
24.30	72.50	67.00	266.50
1.60	0.00	58.00	251.50
		43.00	246.50
		24.30	72.50
		1.60	0.00

Figure 2d Regulating Group Position Operating Limits
After 300 ± 10 EFPD, Three RC Pumps
Davis-Besse 1, Cycle 20



Note 1: A Rod Group overlap of $25 \pm 5\%$ between sequential withdrawn groups 5 and 6, and 6 and 7, shall be maintained.

Note 2: Instrument error is accounted for in these Operating Limits.

Note 3: MaMaximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

SDM Limit		RI Limit	
Power	RI	Power	RI
75.37	273.90	75.37	300.00
43.10	202.50	75.37	278.10
24.30	172.50	67.00	266.50
1.00	0.00	58.00	251.50
		43.00	246.50
		24.30	172.50
		1.00	0.00

Figure 3 APSR Position Operating Limits

This Figure is referred to by Technical Specifications 3.2.2

**Before APSR Pull: 0 EFPD to 605 ± 10 EFPD,
Three or Four RC pumps operation***

Lower Limit: 0 %WD

Upper Limit: 100 %WD

**After APSR Pull: 605 ± 10 EFPD to End-of-Cycle
Three or Four RC pumps operation***

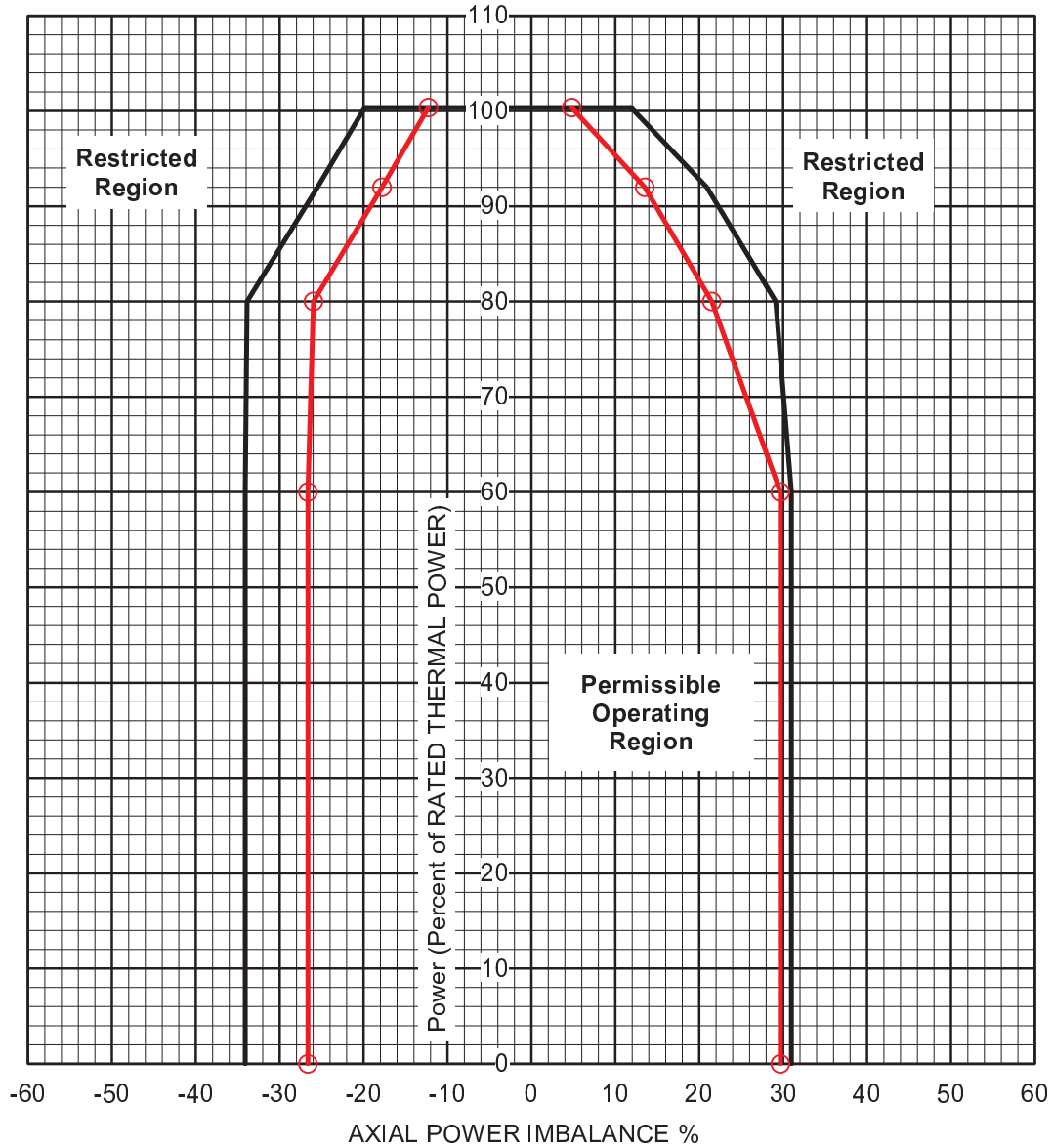
Insertion Prohibited (maintain $\geq 99\%$ WD) **

* Power restricted to 75.37% for 3-pump operation, however, steam generator analyses limits power to 73.46 %RTP.

** Reinsertion is allowed only during the end of cycle shutdown when the reactor power is equal to, or less than, 30%RTP.

Figure 4a AXIAL POWER IMBALANCE Operating Limits
0 to 50 \pm 10 EFPD, Four RC Pumps
Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 100.37 %RTP.

LEGEND
FULL INCORE

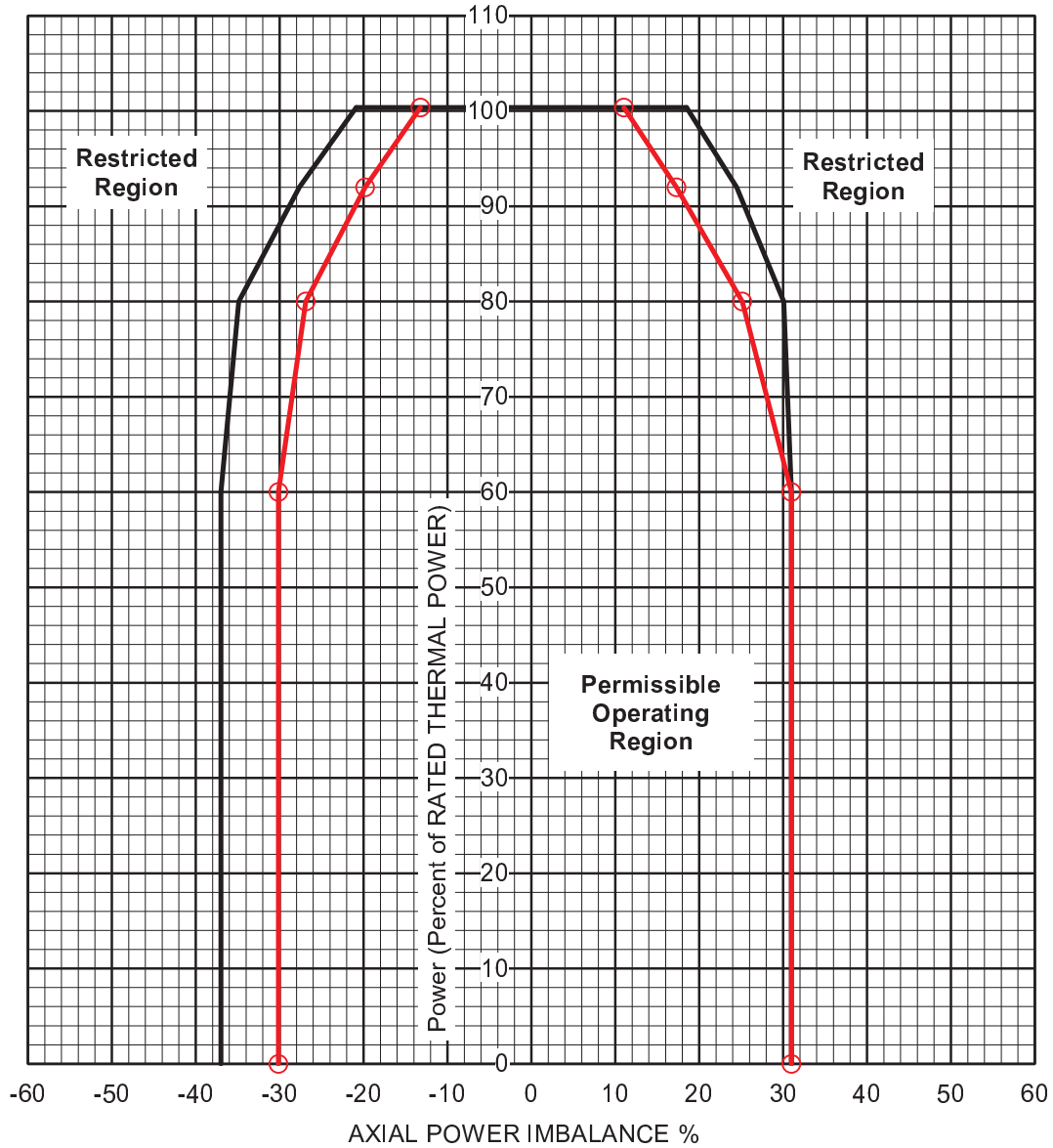
EXCORE



Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
100.37	-19.87	11.85	100.37	-12.29	4.78
92.00	-25.51	20.92	92.00	-17.81	13.51
80.00	-33.89	29.13	80.00	-25.98	21.52
60.00	-34.09	31.00	60.00	-26.64	29.66
0.00	-34.09	31.00	0.00	-26.64	29.66

Figure 4b AXIAL POWER IMBALANCE Operating Limits
 50 ± 10 EFPD to 400 ± 10 EFPD, Four RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 100.37 %RTP.

LEGEND
 FULL INCORE

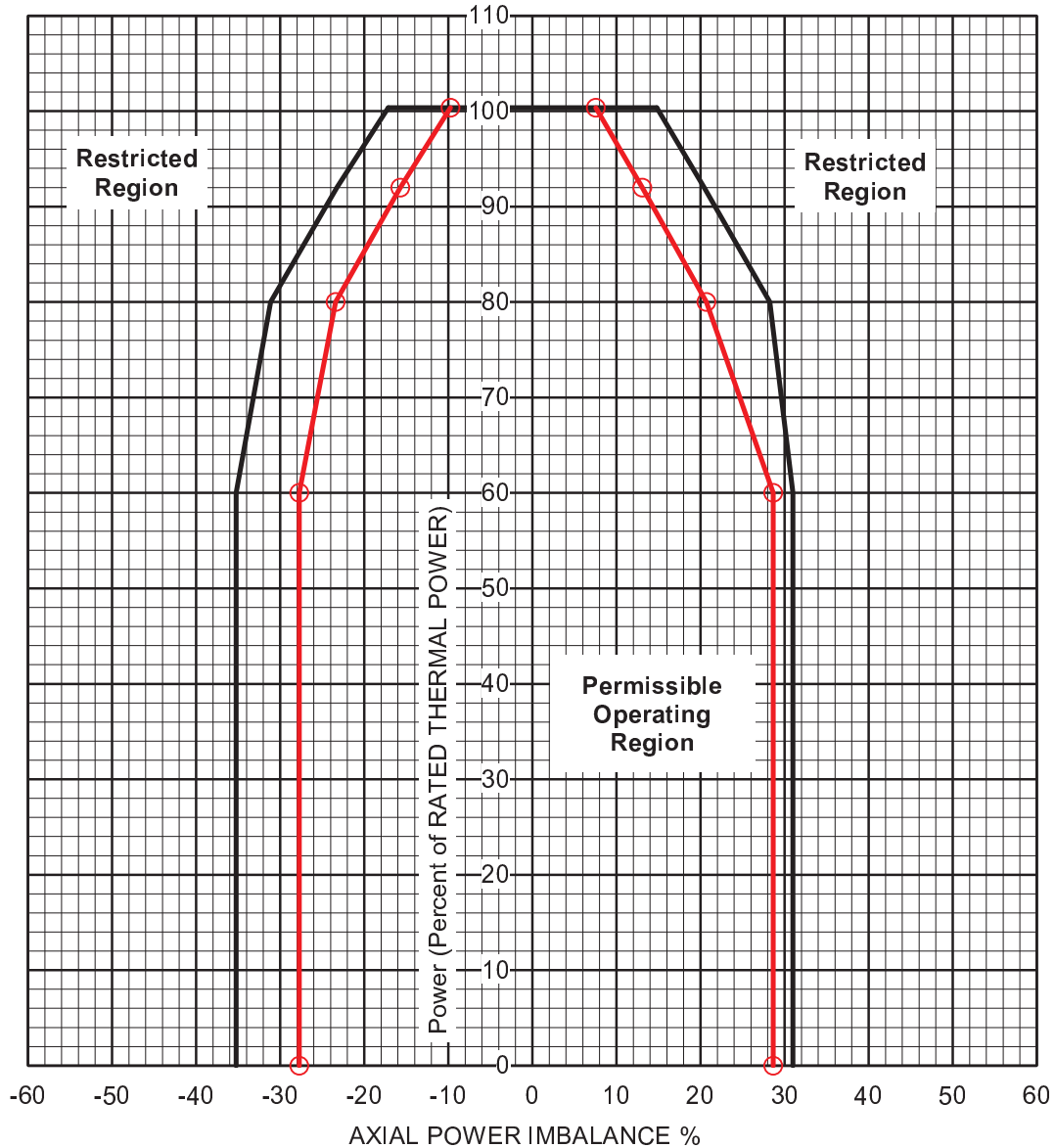
EXCORE



Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
100.37	-20.87	18.50	100.37	-13.23	11.01
92.00	-27.65	24.46	92.00	-19.81	17.30
80.00	-34.87	30.06	80.00	-26.90	25.12
60.00	-37.00	31.00	60.00	-30.16	31.00
0.00	-37.00	31.00	0.00	-30.16	31.00

Figure 4c AXIAL POWER IMBALANCE Operating Limits
 400 ± 10 EFPD to 550 ± 10 EFPD, Four RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 100.37 %RTP.

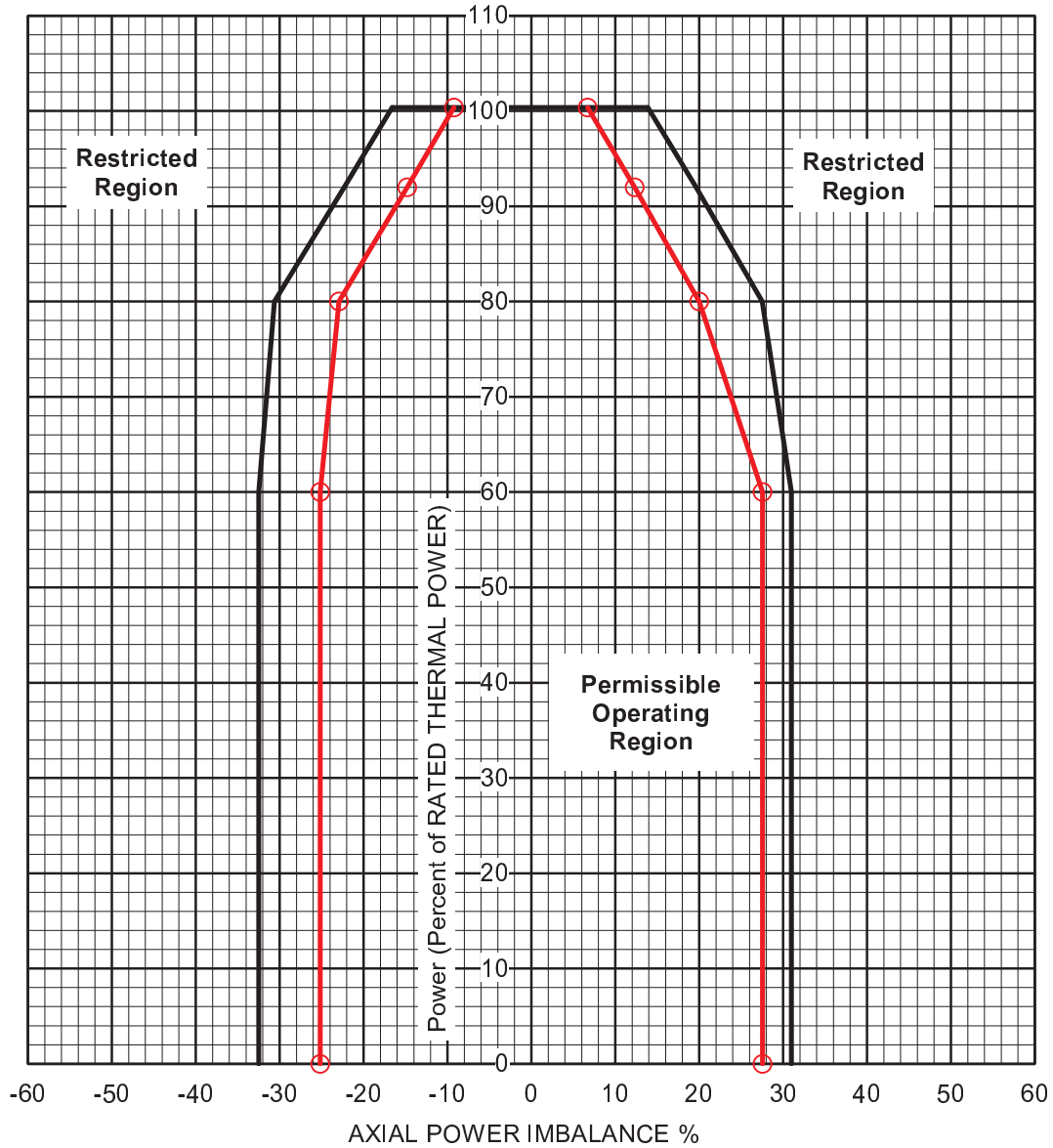
LEGEND
 FULL INCORE

EXCORE

Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
100.37	-17.14	14.80	100.37	-9.73	7.54
92.00	-23.27	20.44	92.00	-15.72	13.06
80.00	-31.13	28.25	80.00	-23.39	20.70
60.00	-35.25	31.00	60.00	-27.73	28.66
0.00	-35.25	31.00	0.00	-27.73	28.66

Figure 4d AXIAL POWER IMBALANCE Operating Limits
 550 ± 10 EFPD to EOC, Four RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 100.37 %RTP.

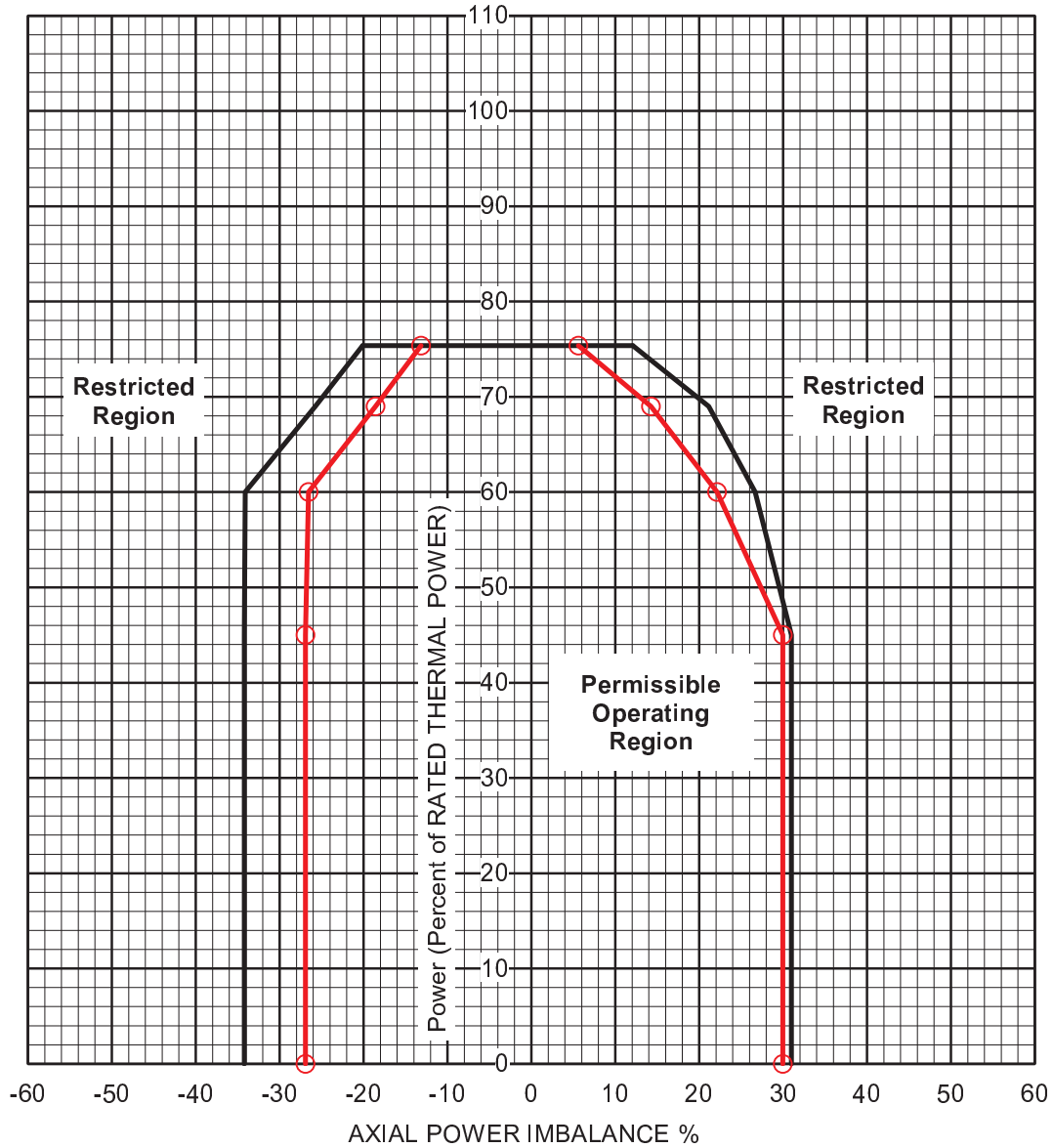
LEGEND
 FULL INCORE

EXCORE

Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
100.37	-16.60	13.90	100.37	-9.23	6.70
92.00	-22.30	19.64	92.00	-14.80	12.31
80.00	-30.64	27.51	80.00	-22.94	20.01
60.00	-32.49	31.00	60.00	-25.15	27.54
0.00	-32.49	31.00	0.00	-25.15	27.54

Figure 4e AXIAL POWER IMBALANCE Operating Limits
0 to 50 \pm 10 EFPD, Three RC Pumps
Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

LEGEND
FULL INCORE

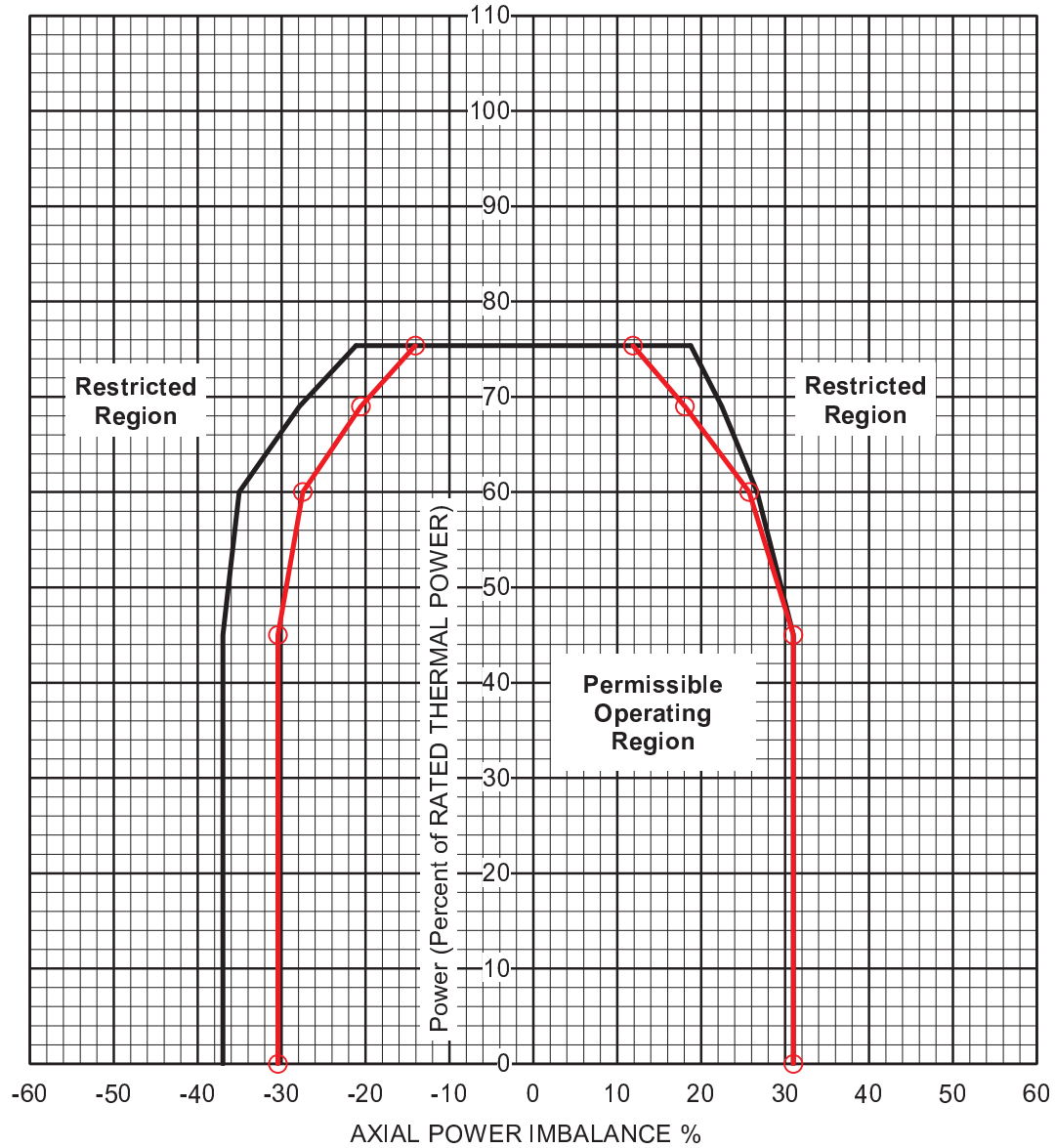
EXCORE



Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
75.37	-20.12	12.10	75.37	-13.14	5.62
69.00	-25.74	21.15	69.00	-18.56	14.26
60.00	-34.09	26.65	60.00	-26.57	22.11
45.00	-34.23	31.00	45.00	-26.94	29.95
0.00	-34.23	31.00	0.00	-26.94	29.95

Figure 4f AXIAL POWER IMBALANCE Operating Limits
 50 ± 10 EFPD to 400 ± 10 EFPD, Three RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excure Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

LEGEND
 FULL INCORE

EXCURE

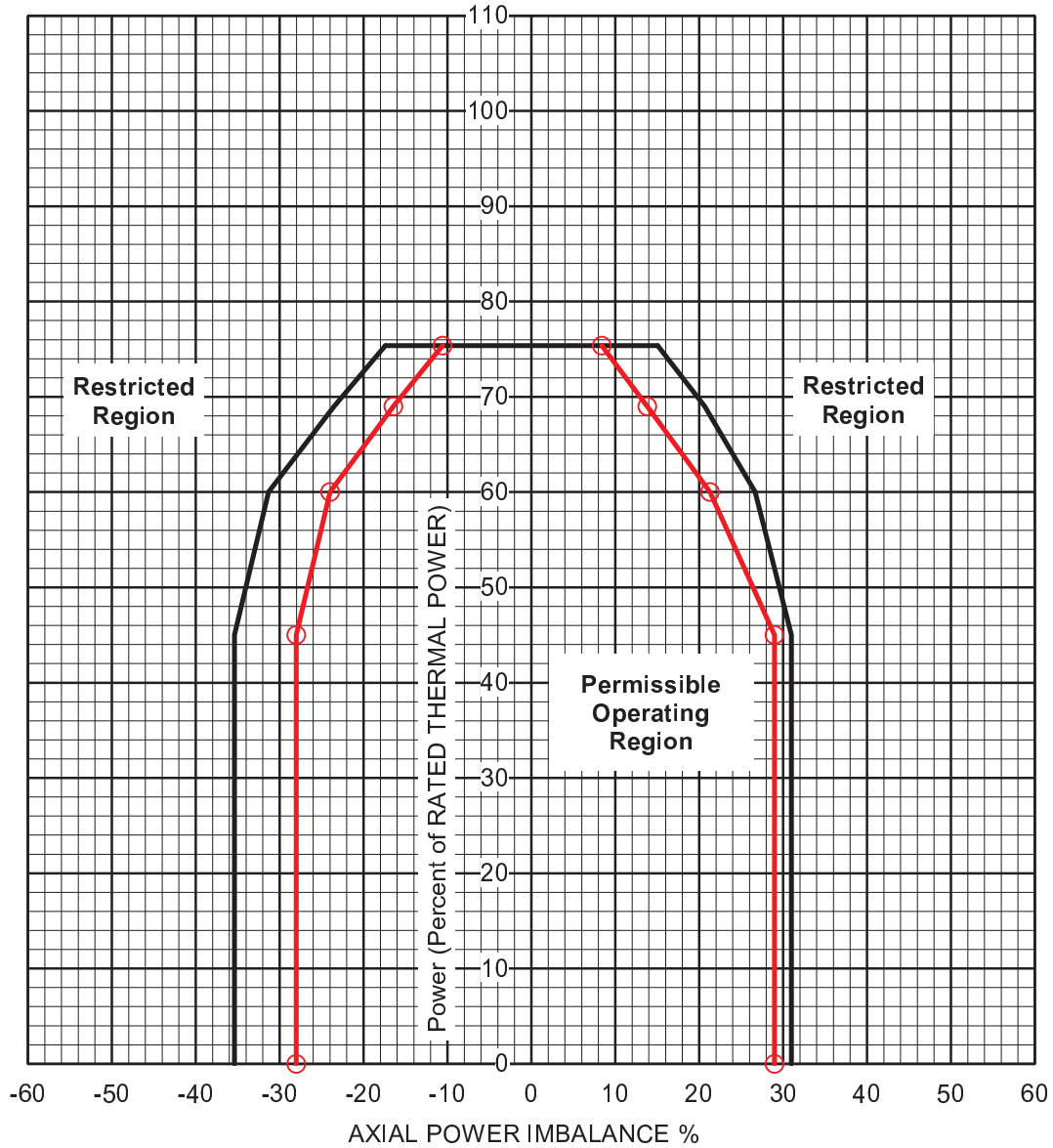


Full Incore		
Power	Negative Imbalance	Positive Imbalance
75.37	-21.12	18.75
69.00	-27.88	22.45
60.00	-35.07	26.65
45.00	-37.00	31.00
0.00	-37.00	31.00

Excure		
Power	Negative Imbalance	Positive Imbalance
75.37	-14.08	11.85
69.00	-20.56	18.05
60.00	-27.49	25.72
45.00	-30.45	31.00
0.00	-30.45	31.00

Figure 4g AXIAL POWER IMBALANCE Operating Limits
 400 ± 10 EFPD to 550 ± 10 EFPD, Three RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

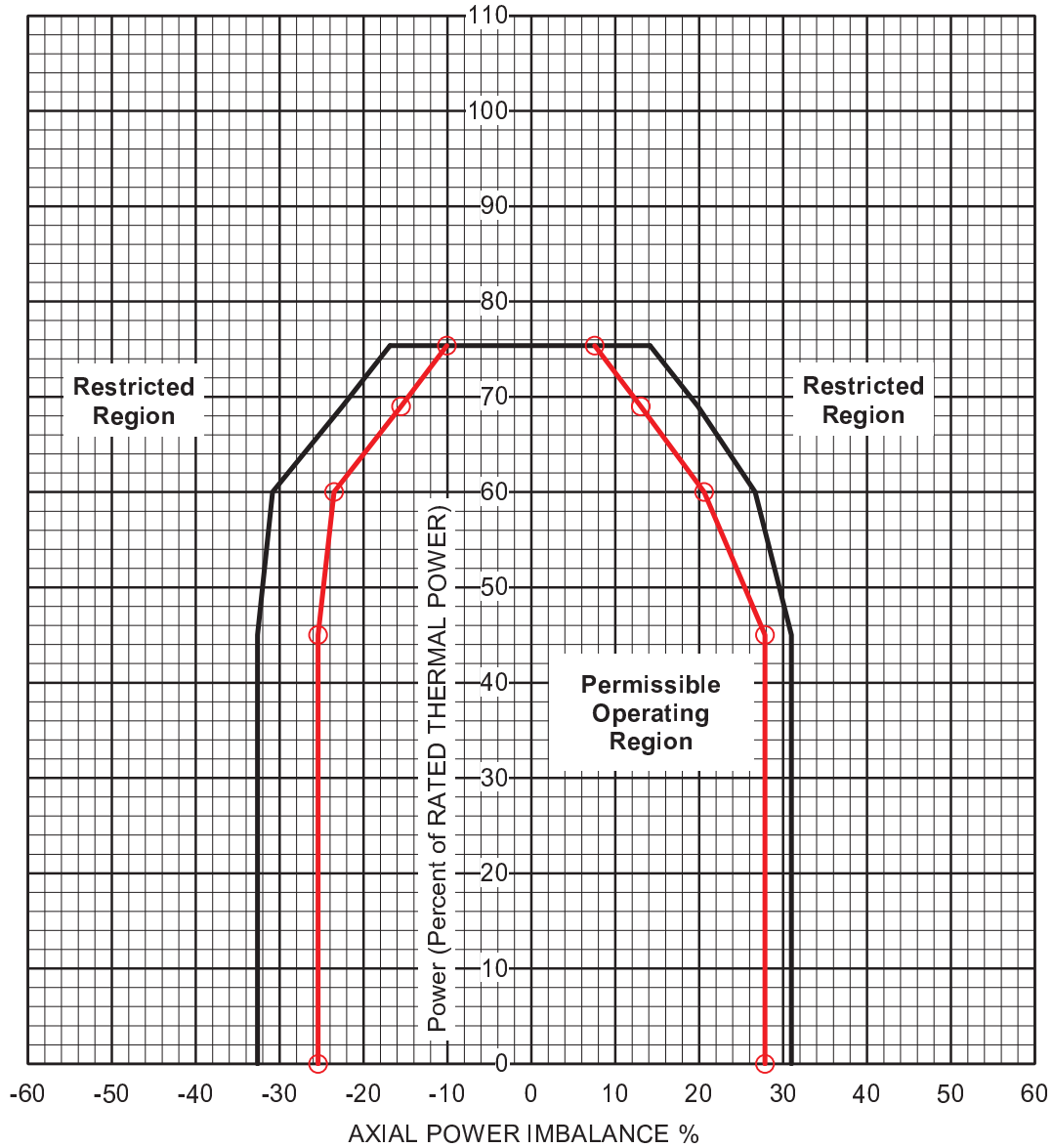
LEGEND
 FULL INCORE

EXCORE

Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
75.37	-17.39	15.05	75.37	-10.58	8.38
69.00	-23.50	20.67	69.00	-16.46	13.80
60.00	-31.33	26.65	60.00	-23.99	21.29
45.00	-35.40	31.00	45.00	-28.03	28.96
0.00	-35.40	31.00	0.00	-28.03	28.96

Figure 4h AXIAL POWER IMBALANCE Operating Limits
 550 ± 10 EFPD to EOC, Three RC Pumps
 Davis-Besse 1, Cycle 20

This Figure is referred to by Technical Specification 3.2.3



Note 1: Instrument error is accounted for in these Operating Limits.

Note 2: The Excore Imbalance Operating Limits are available for use when the Full Incore system is non-functional.

Note 3: Maximum plotted power level is 75.37 %RTP, however, steam generator analyses limits power to 73.46 %RTP.

LEGEND
 FULL INCORE

EXCORE

Full Incore			Excore		
Power	Negative Imbalance	Positive Imbalance	Power	Negative Imbalance	Positive Imbalance
75.37	-16.85	14.15	75.37	-10.08	7.54
69.00	-22.53	19.87	69.00	-15.55	13.05
60.00	-30.84	26.65	60.00	-23.53	20.60
45.00	-32.64	31.00	45.00	-25.44	27.84
0.00	-32.64	31.00	0.00	-25.44	27.84

Table 4 QUADRANT POWER TILT Limits

This Table is referred to by Technical Specifications 3.2.4

QUADRANT POWER TILT as measured by:	From 0 EFPD to EOC			
	Steady-state Limit for THERMAL POWER \leq 60% (%)	Steady-state Limit for THERMAL POWER >60% (%)	Transient Limit (%)	Maximum Limit (%)
Symmetric Incore Detector System	7.90	4.54	10.03	20.00

Table 5 Power Peaking Factors - F_Q

This Table is referred to by Technical Specifications 3.2.5

Heat Flux Hot Channel Factor F_Q

F_Q shall be limited by the following relationships:

$$F_Q \leq \text{LHR}^{\text{allow}} (\text{Bu}) / [\text{LHR}^{\text{avg}} * P] \text{ (for } P \leq 1.0\text{)}$$

$\text{LHR}^{\text{allow}} (\text{Bu})$ = See the following tables

LHR^{avg} = 6.4209 kW/ft at 2817 MWt for all fuel

P = ratio of THERMAL POWER / RATED THERMAL POWER

Bu = fuel burnup (MWd/mtU)

Note: The measured F_Q shall be increased by 1.4% to account for manufacturing tolerances and further increased by 7.5% to account for measurement uncertainty before comparing to the limits.

UO₂ Fuel (Mark-B-HTP) – All Batches $\text{LHR}^{\text{ALLOW}}$ kW/ft^(a)

	0	34,000	62,000
<u>Core Elevation (ft)</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>
0	17.4	15.0	10.9
2.506	17.4	15.0	10.9
4.264	17.3	14.9	10.9
6.021	16.8	14.8	11.1
7.779	17.0	14.7	11.1
9.536	16.2	14.3	11.1
12.000	15.4	13.5	10.4

^(a) Linear interpolation for allowable LHR between specified burnup points is valid for these tables.

Table 5 (continued)

4 wt% Gad Fuel (Mark-B-HTP) – All Batches except 21B LHR_{ALLOW} kW/ft^(a)

	0	34,000	62,000
<u>Core Elevation (ft)</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>
0	15.6	13.5	9.6
2.506	15.6	13.5	9.6
4.264	15.5	13.3	9.6
6.021	15.1	13.2	9.8
7.779	15.3	13.2	9.8
9.536	14.6	12.8	9.8
12.000	13.8	12.1	9.2

6 wt% Gad Fuel (Mark-B-HTP) – Batch 21B LHR_{ALLOW} kW/ft^(a)

	0	34,000	62,000
<u>Core Elevation (ft)</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>
0	15.1	13.2	9.2
2.506	15.1	13.2	9.2
4.264	15.0	13.2	9.2
6.021	14.5	13.1	9.4
7.779	14.8	13.0	9.4
9.536	14.1	12.7	9.4
12.000	13.3	12.0	8.8

8 wt% Gad Fuel (Mark-B-HTP) – All Batches LHR_{ALLOW} kW/ft^(a)

	0	34,000	62,000
<u>Core Elevation (ft)</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>	<u>MWd/mtU</u>
0	14.7	12.7	8.8
2.506	14.7	12.7	8.8
4.264	14.6	12.7	8.8
6.021	14.2	12.5	9.0
7.779	14.4	12.5	9.0
9.536	13.7	12.2	9.0
12.000	13.0	11.5	8.4

^(a) Linear interpolation for allowable LHR between specified burnup points is valid for these tables.

Table 6 Power Peaking Factors - $F_{\Delta H}^N$

This Table is referred to by Technical Specifications 3.2.5

Enthalpy Rise Hot Channel Factors - $F_{\Delta H}^N$

$$F_{\Delta H}^N \leq \text{MARF} [1 + (1/\text{RH}) (1 - P/P_m)] \quad (\text{see note below})$$

MARF = Maximum Allowable Radial Peak, see MARF Figures and data Tables

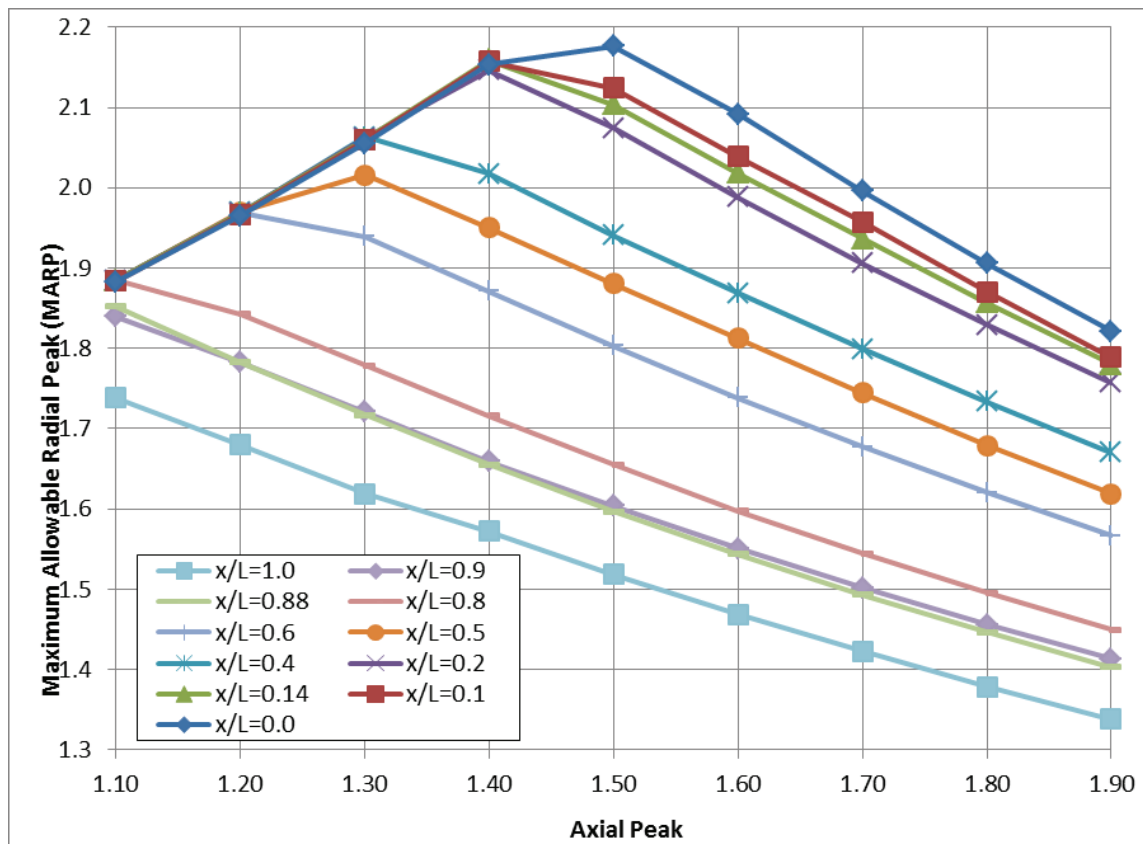
P = THERMAL POWER / RATED THERMAL POWER and $P \leq 1.0$

P_m = 1.00 for 4-RCP operation

P_m = 0.75 for 3-RCP operation

1/RH = 0.3

Note: The measured $F_{\Delta H}^N$ shall be increased by 5.0% to account for measurement uncertainty prior to comparing to the limits.

Figure 5 Maximum Allowable Radial Peak for $F_{\Delta H}^N$ *

* Linear interpolation is acceptable.