

Doc No.: PMP-2080-EPP-101

Rev
No.: 019

Title: EMERGENCY
CLASSIFICATION

Alteration Cat.: Minor Revision
CDI/50.59:

PORC Mtg. No.:
CARB Mtg. No.:
Admin Hold AR No.:
Superceding Proc(s):

Temp Proc Exp Date:
Temp Change Exp
Date:

Temp Proc/Change
End:

Effective Date: 5/10/2016 12:00:00 AM

Approvals

Name	Review/Approval Type/Capacity	Date
Etheridge, William (i266712)	1 Cross-Discipline Review : OPERATIONS	04/06/2016 07:01
Becvar, Robert J (s228955)	1 Special Review : E-PLAN GROUP	04/07/2016 08:46
Simpson, Kevin (s222639)	1 Validation Review	04/07/2016 09:50
Hart, William E (i376639)	1 Validation Review	04/07/2016 10:06
Hicks, Roger (s998758)	3 Technical Review	04/07/2016 10:57
Henderson, Kristen M (s008645)	5 Management Review	04/15/2016 12:30
Wendzel, Regan (s007887)	7 Approval Authority	04/19/2016 11:00

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Approved at PORC per Plant Manager, Jim Ross.

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Reference			
<u>Bill Hart</u> Writer	<u>Emergency Preparedness</u> Document Owner	<u>Emergency Preparedness</u> Cognizant Organization	

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1 PURPOSE AND SCOPE

NOTE: The operator aids located in the Control Rooms, Simulator, Technical Support Center and Emergency Operations Facility are updated when changes are made to this procedure.

- 1.1 To ensure correct and timely classification of abnormal events into one of four emergency classification levels if appropriate. Attachments may be used as operator aids in a format different than the procedure provided the content remains the same.

2 DEFINITIONS AND ABBREVIATIONS

Term	Meaning
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 Guideline exposure levels.
Confinement Boundary	The barrier(s) formed by the sealed, cylindrical enclosure of the Multi-Purpose Canister (MPC) shell which encloses and confines the spent nuclear fuel during storage.
Control	Placing all local controls in position necessary for operation from remote panels and the shift manager has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.
Civil Disturbance	A group of persons violently protesting plant operations or activities at the site.
Critical Safety Function (CSF)	Subcriticality, core cooling, heat sink, pressure-temperature-stress (RCS integrity), containment, and RCS inventory as monitored in accordance with the Emergency Operating Procedures (EOPs).
Critical Safety Function Status Tree (CSFST)	The method by which the level of challenge to each CSF is determined in accordance with the EOPs.
Emergency Action Level (EAL)	A pre-determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be an instrument reading; an equipment status indicator, a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

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Term	Meaning
Emergency Condition Category (ECC)	A grouping of Initiating Conditions, recognizable to the Site Emergency Coordinator, applying to the same area of concern and that can logically lead to escalating the emergency class.
Emergency Classification Level (ECL)	These are taken from 10 CFR 50- Appendix E. They are in escalating order. (Notification of) Unusual Event (UE), Alert, Site Area Emergency (SAE), and General Emergency (GE).
Explosion	A rapid, violent, uncontained combustion or catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures or equipment.
Fire	Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.
Fission Product Barrier	One of the three principal barriers to uncontrolled release of radionuclides, i.e., fuel clad, reactor coolant system (RCS), and the containment building (CNTMT).
General Emergency (GE)	Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity 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.
Hostile Action	An act toward a Nuclear Power Plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate 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 NPP. Non-terrorism-based EALs should be used to address such activities, (e.g., violent acts between individuals in the owner controlled area).
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.
ISFSI	Independent Spent Fuel Storage Installation
Initiating Condition (IC)	One of a predetermined subset of nuclear power plant conditions where either the potential exists for a radiological emergency, or such an emergency has occurred.
Large Aircraft	Any aircraft with the potential for causing significant damage to the plant.
Loss (of a fission product barrier)	Severe challenge to a fission product barrier sufficient to consider that barrier incapable of containing fission products.

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Emergency Classification			

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Emergency Condition Category (ECC)	A grouping of Initiating Conditions, recognizable to the Site Emergency Coordinator, applying to the same area of concern and that can logically lead to escalating the emergency class.
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Normal Charging Mode	The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.
Owner Controlled Area	The area encompassing the plant that makes up all the owners property.
Potential Loss (of a fission product barrier)	Challenge to a fission product barrier sufficient to consider the barrier degraded in its ability to contain fission products.
Protected Area	Protected area means an area encompassed by physical barrier to which access is controlled. Unless specified otherwise, protected area in this procedure includes both the Plant and Independent Spent Fuel Storage Installation (ISFSI) protected areas.
Recognition Category	A logical and convenient grouping of ECCs used to quickly eliminate non-applicable ICs from consideration during Emergency Classification.
Safe Shutdown Area	<p>Selected areas within the Protected Area that may be occupied for the security or safe shutdown of the units.</p> <p>The safe shutdown areas are:</p> <ul style="list-style-type: none"> • Control Rooms • Central alarm station • Containment buildings in Modes 5 and 6 <p>The following are Safe Shutdown areas, if a Control Room must be evacuated:</p> <ul style="list-style-type: none"> • Emergency Diesel Generator rooms • 4 kV rooms • Vicinity of all Local Shutdown Stations
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.

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Safe Shutdown Equipment	<p>Selected components deemed necessary to place and maintain a unit in Hot Shutdown with capability to establish and maintain Cold Shutdown as described in Safe-Shutdown Capability Assessment. In brief, the safe shutdown equipment can be described as:</p> <ul style="list-style-type: none"> • RCS makeup path from the Refueling Water Storage Tank (RWST) via the Centrifugal Charging Pumps (CCPs) and Boron Injection Tank (BIT) injection lines. • Secondary Heat Sink consisting of: <ul style="list-style-type: none"> — Condensate Storage Tank (CST) — all three Auxiliary Feed Water (AFW) pumps — Associated AFW valves — Steam Generators (SGs) — SG Main Steam Isolation Valves (MSIVs) — SG safeties and PORVs. • Component Cooling Water (CCW) system. • Essential Service Water (ESW) system including alternate supply to AFW. • Residual Heat Removal (RHR) system. • Emergency Diesel Generators and the emergency AC buses. • CRIDs and most CRID-powered instrumentation. • DC distribution system including batteries and battery chargers. • All Local Shutdown Stations. • Unit crossties for BIT flow, RCP seal injection, CSTs and AFW.
Strike Action	Work stoppage within the Protected Area by a body of workers to enforce compliance with demands made on Cook Plant. The strike action must threaten to interrupt normal plant operations.
Site Area Emergency (SAE)	Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile actions that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) 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.
Toxic	Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.
Transient	A condition (1) beyond the expected steady-state fluctuations in temperature, pressure, power level, or water level, (2) beyond the normal manipulations of the Control Room operating crew, and (3) that would be expected to require actuation of fast-acting automatic control or protection systems to bring the reactor to a new safe, steady-state condition.
Uncontrolled	A change that is not the result of a planned evolution.

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Emergency Classification			

Safe Shutdown Equipment	<p>Selected components deemed necessary to place and maintain a unit in Hot Shutdown with capability to establish and maintain Cold Shutdown as described in Safe-Shutdown Capability Assessment. In brief, the safe shutdown equipment can be described as:</p> <ul style="list-style-type: none"> • RCS makeup path from the Refueling Water Storage Tank (RWST) via the Centrifugal Charging Pumps (CCPs) and Boron Injection Tank (BIT) injection lines. • Secondary Heat Sink consisting of: <ul style="list-style-type: none"> — Condensate Storage Tank (CST) — all three Auxiliary Feed Water (AFW) pumps — Associated AFW valves — Steam Generators (SGs) — SG Main Steam Isolation Valves (MSIVs) — SG safeties and PORVs. • Component Cooling Water (CCW) system. • Essential Service Water (ESW) system including alternate supply to AFW. • Residual Heat Removal (RHR) system. • Emergency Diesel Generators and the emergency AC buses. • CRIDs and most CRID-powered instrumentation. • DC distribution system including batteries and battery chargers. • All Local Shutdown Stations. • Unit crossties for BIT flow, RCP seal injection, CSTs and AFW.
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Uncontrolled	A change that is not the result of a planned evolution.

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Unisolable	A leak that cannot be isolated from the Control Room.
Unplanned	Any activity is unplanned if it is not being performed in accordance with the plan of the day, the outage schedule, the preventative maintenance schedule, a job order, or an approved procedure. In addition, the activity can be considered “unplanned” if resultant conditions exceed expected or authorized limits (e.g., a planned waste gas release should be considered “unplanned” if release conditions do not conform to values specified in the discharge permit).
Unusual Event (UE)	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. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety system occurs.
Valid	Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.
Vital Area	<p>Selected areas within the Protected Area that contain equipment necessary for the security or safe shutdown of the units. The vital areas are:</p> <ul style="list-style-type: none"> • Control Rooms • Control Room and auxiliary cable vaults • Containment buildings • Emergency Diesel Generator rooms • Auxiliary Feedwater pump rooms • Essential Service Water pump rooms and switchgear • Spent fuel pit area and new fuel vault • 4 kV switchgear rooms (D/G 4kV switchgear rooms) • UPS battery and inverter rooms • Central Alarm Station • N-Train battery rooms and N-Train battery chargers

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3 DETAILS

- 3.1 Using Attachment 1, Emergency Condition Categories, determine which Recognition Category applies to the abnormal conditions.

NOTE:	It is likely that an event will have to be classified using more than one Recognition Category.
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- 3.1.1 Classify the event within 15 minutes of when the classification criterion (EAL threshold value) exists.
- a. **IF** the classification criterion is NOT recognized within 15 minutes AND the condition still exists, **THEN** classify the event.
 - b. **IF** the classification criterion is NOT recognized within 15 minutes AND the condition no longer exists, **THEN** do NOT classify the event. Make notifications in accordance with PMP-7030-001-001, Prompt NRC Notification.
- 3.1.2 Review ALL appropriate Initiating Conditions within the selected Recognition Categories starting in the left-most applicable column.
- 3.1.3 Determine whether the threshold values for Emergency Classification have been exceeded.
- a. Attachment 2 may be needed in making a determination of emergency classification under ECC S-6: Loss of Alarms or Indications.
 - b. The appropriate basis pages (Attachment 3) should also be used if clarification is needed in making proper determination of emergency classification in any of the Recognition Categories.
- 3.1.4 The Initiating Conditions in Attachment 1 that are marked with an Σ do NOT have the entire EAL description listed in Attachment 1. In order to properly classify an event, the basis pages in Attachment 3 must be reviewed to insure the full description of the EAL is considered when making the classification. The page numbers listed in the Initiating Condition boxes in Attachment 1 refer to the appropriate section of the basis pages, Attachment 3.

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3.1.5 If the threshold value has been exceeded, the higher Emergency Classification Levels within the associated ECC must be checked to ensure the highest ECL has been determined.

3.2 The Emergency Classification Level is the highest ECL determined in step 3.1 as appropriate – OR – any higher Emergency Classification Level as determined by Site Emergency Coordinator (SEC) judgment as described in Attachment 1 and Attachment 3.

3.3 The SEC shall evaluate plant conditions at least every 15 minutes to determine if conditions have deteriorated to the point that the Emergency Classification Level should be upgraded to a higher level until the event is terminated. The need to upgrade to a higher level could be indicated by:

- Critical Safety Function Status Trees
- Additional radiation monitor alarms
- Reports from plant personnel

4 FINAL CONDITIONS

4.1 Event Classification

5 REFERENCES

5.1 Use References:

5.1.1 PMP-7030-001-001, Prompt NRC Notification

5.1.2 PMP-2081-EPP-105, Core Damage Assessment

5.1.3 OHP-4023-E-3, Steam Generator Tube Rupture

5.1.4 OHP-4023-SUP-003, Phase A Isolation Checklist

5.1.5 OHP-4023-SUP-004, Phase B Isolation Checklist

5.1.6 OHP-4025-001-001, Emergency Remote Shutdown

5.1.7 OHP-4022-001-007, Earth Quake

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4 FINAL CONDITIONS

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5 REFERENCES

- 5.1 Use References:

- 5.1.1 PMP-7030-001-001, Prompt NRC Notification
- 5.1.2 PMP-2081-EPP-105, Core Damage Assessment
- 5.1.3 OHP-4023-E-3, Steam Generator Tube Rupture
- 5.1.4 OHP-4023-SUP-003, Phase A Isolation Checklist
- 5.1.5 OHP-4023-SUP-004, Phase B Isolation Checklist
- 5.1.6 OHP-4025-001-001, Emergency Remote Shutdown
- 5.1.7 OHP-4022-001-007, Earth Quake

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5.1.8 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System

5.1.9 RMT-2080-TSC-001, Activation and Operation of the TSC

5.2 Writing References:

5.2.1 Source References:

- a. NUMARC/NESP-007, Rev. 2, "Methodology for Development of Emergency Action Levels"
- b. NUMARC/NESP-007, Rev. 4, "Methodology for Development of Emergency Action Levels"
- c. Regulatory Analysis: "Revision of Regulatory Guide 1.101 to Accept the Guidance in NUMARC/NESP-007, Rev. 2 as an Alternative Methodology for the Development of Emergency Action Levels"
- d. NUMARC letter: "Methodology for the Development of Emergency Action Levels," NUMARC/NESP-007, Revision 2, Questions and Answers, June 1993 from Thomas E. Tipton, to NUMARC Administrative Points of Contact
- e. NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events.
- f. NEI White paper, Enhancements to Emergency Preparedness Programs for Hostile Action (revised 11/18/05)
- g. NRC Commitment 8369
- h. AEP:NRC:7036, License Amendment Request to Revise Technical Specification Associated with Generic Letter (GL) 2004-02 (dated 6/27/07)
- i. NRC Commitment 6489
- j. NRC commitment 7991
- k. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

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5.1.8 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System

5.1.9 RMT-2080-TSC-001, Activation and Operation of the TSC

5.2 Writing References:

5.2.1 Source References:

- a. NUMARC/NESP-007, Rev. 2, "Methodology for Development of Emergency Action Levels"
- b. NUMARC/NESP-007, Rev. 4, "Methodology for Development of Emergency Action Levels"
- c. Regulatory Analysis: "Revision of Regulatory Guide 1.101 to Accept the Guidance in NUMARC/NESP-007, Rev. 2 as an Alternative Methodology for the Development of Emergency Action Levels"
- d. NUMARC letter: "Methodology for the Development of Emergency Action Levels," NUMARC/NESP-007, Revision 2, Questions and Answers, June 1993 from Thomas E. Tipton, to NUMARC Administrative Points of Contact
- e. NRC Bulletin 2005-02, Emergency Preparedness and Response Actions for Security-Based Events.
- f. NEI White paper, Enhancements to Emergency Preparedness Programs for Hostile Action (revised 11/18/05)
- g. NRC Commitment 8369
- h. AEP:NRC:7036, License Amendment Request to Revise Technical Specification Associated with Generic Letter (GL) 2004-02 (dated 6/27/07)
- i. NRC Commitment 6489
- j. NRC commitment 7991
- k. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

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1. NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, [and Independent Spent Fuel Storage Installation Security Plan], Revision 6.

5.2.2 General References

- a. Donald C. Cook Nuclear Plant Emergency Plan

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1. NEI 03-12, Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, [and Independent Spent Fuel Storage Installation Security Plan], Revision 6.

5.2.2 General References

- a. Donald C. Cook Nuclear Plant Emergency Plan

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12	Fuel Clad Barrier Loss/Potential Loss Table
12	RCS Barrier Loss/Potential Loss Table
13	Containment Barrier Loss/Potential Loss Table
14	ECC H-1 SEC Judgment
15	ECC H-2 Security Events
15	ECC H-3 Control Room Evacuation
15	ECC H-4 Fire
15	ECC H-5 Toxic or Flammable Gases
15	ECC H-8 Independent Spent Fuel Storage Installation
16	ECC N-1 Seismic Activity
16	ECC N-2 Tornado/High Wind
16	ECC N-3 Visible Structural Damage
16	ECC N-4 Vehicle Collision
16	ECC N-5 Main Turbine Rotating Component Failure
16	ECC N-6 Plant Flooding
16	ECC N-7 Unanticipated Explosion
17	ECC R-1 Radioactive Effluent Release
17	ECC R-2 Increasing In-Plant Radiation Level
17	ECC R-3 Loss of Water Level in Any Area Holding Irradiated Fuel
18	ECC S-1 Failure of Reactor Protection System
18	ECC S-2 Loss of AC Power (Modes 1-4)
18	ECC S-3 Loss of DC Power (Modes 1-4)
18	ECC S-5 Loss of Systems Needed to Achieve/Maintain Hot Shutdown
19	ECC S-6 Loss of Alarms
19	ECC S-7 Fuel Clad Degradation
19	ECC S-8 Excessive RCS Leakage
19	ECC S-9 Tech Spec Compliance
19	ECC S-10 Loss of Communication Systems (Modes 1-4)
20	ECC H-2 – H-5 Hazards and Other Conditions (Modes 5, 6)
21	ECC N-1 – N-7 Natural/Destructive Phenomena (Modes 5, 6)
22	ECC R-1 – R-3 Abnormal Radiation Levels/Effluents (Modes 5, 6)
23	ECC C-3 Cold Shutdown/Refueling/Defueled – Loss of AC Power (Modes 5, 6)
23	ECC C-4 Cold Shutdown/Refueling – Inability to Maintain Cold Shutdown
23	ECC C-5 Cold Shutdown/Refueling – Fuel Clad Degradation (Modes 5, 6)
23	ECC C-6 Cold Shutdown/Refueling – Loss of Communications (Modes 5, 6)
23	ECC C-7 Cold Shutdown/Refueling – Loss of DC Power (Modes 5, 6)

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Page	Emergency Condition Category
12	Fuel Clad Barrier Loss/Potential Loss Table
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15	ECC H-3 Control Room Evacuation
15	ECC H-4 Fire
15	ECC H-5 Toxic or Flammable Gases
15	ECC H-8 Independent Spent Fuel Storage Installation
16	ECC N-1 Seismic Activity
16	ECC N-2 Tornado/High Wind
16	ECC N-3 Visible Structural Damage
16	ECC N-4 Vehicle Collision
16	ECC N-5 Main Turbine Rotating Component Failure
16	ECC N-6 Plant Flooding
16	ECC N-7 Unanticipated Explosion
17	ECC R-1 Radioactive Effluent Release
17	ECC R-2 Increasing In-Plant Radiation Level
17	ECC R-3 Loss of Water Level in Any Area Holding Irradiated Fuel
18	ECC S-1 Failure of Reactor Protection System
18	ECC S-2 Loss of AC Power (Modes 1-4)
18	ECC S-3 Loss of DC Power (Modes 1-4)
18	ECC S-5 Loss of Systems Needed to Achieve/Maintain Hot Shutdown
19	ECC S-6 Loss of Alarms
19	ECC S-7 Fuel Clad Degradation
19	ECC S-8 Excessive RCS Leakage
19	ECC S-9 Tech Spec Compliance
19	ECC S-10 Loss of Communication Systems (Modes 1-4)
20	ECC H-2 – H-5 Hazards and Other Conditions (Modes 5, 6)
21	ECC N-1 – N-7 Natural/Destructive Phenomena (Modes 5, 6)
22	ECC R-1 – R-3 Abnormal Radiation Levels/Effluents (Modes 5, 6)
23	ECC C-3 Cold Shutdown/Refueling/Defueled – Loss of AC Power (Modes 5, 6)
23	ECC C-4 Cold Shutdown/Refueling – Inability to Maintain Cold Shutdown
23	ECC C-5 Cold Shutdown/Refueling – Fuel Clad Degradation (Modes 5, 6)
23	ECC C-6 Cold Shutdown/Refueling – Loss of Communications (Modes 5, 6)
23	ECC C-7 Cold Shutdown/Refueling – Loss of DC Power (Modes 5, 6)

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FISSION PRODUCT BARRIER MATRIX – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

1. FUEL CLAD BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Core Cooling CSFST	Core Cooling CSFST - RED	Core Exit Thermocouples > 757° OR RVLIS Level < 46% (Narrow Range) OR Heat Sink CSFST - RED
.2 Containment Radiation	> 200 R/hr.	None
.3 Primary Coolant Activity	> 300 uCi/cc I-131 dose equivalent OR Core Damage > 5.0% clad failure	None
.4 SEC Judgment (p.28)	Any condition in the opinion of the SEC that indicates loss of the Fuel Clad barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier. Σ

2. RCS BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 RCS Leak Rate (unisolable)	> available makeup capacity as indicated by complete loss of RCS subcooling.	> capacity of one centrifugal charging pump in normal charging line up.
.2 Steam Generator Leakage	Entry into OHP 4023.E-3, SGTR AND A Non-isolable secondary line break or a prolonged release (>30 minutes) of contaminated secondary coolant resulting in a radioactive release to the environment from the affected SG. ¹	Ruptured SG with leak > capacity of one charging pump in normal charging line up.
.3 Containment Radiation	> 10 R/hr	None
.4 RCS Integrity CSFST	None	RCS Integrity CSFST - RED
.5 Heat Sink CSFST	None	Heat Sink CSFST - RED
.6 SEC Judgment (p.34)	Any condition in the opinion of the SEC that indicates loss of the RCS barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the RCS barrier. Σ

¹ Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

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FISSION PRODUCT BARRIER MATRIX – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

1. FUEL CLAD BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Core Cooling CSFST	Core Cooling CSFST - RED	Core Exit Thermocouples > 757° OR RVLIS Level < 46% (Narrow Range) OR Heat Sink CSFST - RED
.2 Containment Radiation	> 200 R/hr.	None
.3 Primary Coolant Activity	> 300 uCi/cc I-131 dose equivalent OR Core Damage > 5.0% clad failure	None
.4 SEC Judgment (p.28)	Any condition in the opinion of the SEC that indicates loss of the Fuel Clad barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier. Σ

2. RCS BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 RCS Leak Rate (unisolable)	> available makeup capacity as indicated by complete loss of RCS subcooling.	> capacity of one centrifugal charging pump in normal charging line up.
.2 Steam Generator Leakage	Entry into OHP 4023.E-3, SGTR AND A Non-isolable secondary line break or a prolonged release (>30 minutes) of contaminated secondary coolant resulting in a radioactive release to the environment from the affected SG. ¹	Ruptured SG with leak > capacity of one charging pump in normal charging line up.
.3 Containment Radiation	> 10 R/hr	None
.4 RCS Integrity CSFST	None	RCS Integrity CSFST - RED
.5 Heat Sink CSFST	None	Heat Sink CSFST - RED
.6 SEC Judgment (p.34)	Any condition in the opinion of the SEC that indicates loss of the RCS barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the RCS barrier. Σ

¹ Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

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FISSION PRODUCT BARRIER MATRIX – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

3. CONTAINMENT BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Containment Radiation	None	> 1000 R/hr. OR Core damage > 20% clad failure.
.2 Containment Integrity	Unisolable breach of containment. OR Rapid unexplained containment pressure or sump level drop following pressure rise caused by a LOCA. OR Containment pressure/sump level NOT performing as expected for conditions. OR Entry into ECA-1.2, LOCA Outside Containment.	None
.3 SG Secondary Side Release	Primary to secondary leakage rate greater than technical specification limit. AND Release of secondary coolant from the associated steam generator to the environment is occurring. ¹	None
.4 Containment CSFST	None	Containment CSFST - RED
.5 Containment Hydrogen	None	> 4.0% OR Containment Hydrogen > 0.5% AND any Hydrogen Control equipment inoperable.
.6 Containment Pressure Control	None	BOTH CTS trains OR BOTH containment air recirc fans inoperable OR fail to auto start on their containment pressure setpoint OR containment pressure > 12 psig.
.7 Core Exit Thermocouples	None	Core Cooling CSFST – RED AND Restoration procedures not effective within 15 minutes.
.8 SEC Judgment (p.43)	Any condition in the opinion of the SEC that indicates loss of the Containment barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the Containment barrier. Σ

¹ Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

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FISSION PRODUCT BARRIER MATRIX – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

3. CONTAINMENT BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Containment Radiation	None	> 1000 R/hr. OR Core damage > 20% clad failure.
.2 Containment Integrity	Unisolable breach of containment. OR Rapid unexplained containment pressure or sump level drop following pressure rise caused by a LOCA. OR Containment pressure/sump level NOT performing as expected for conditions. OR Entry into ECA-1.2, LOCA Outside Containment.	None
.3 SG Secondary Side Release	Primary to secondary leakage rate greater than technical specification limit. AND Release of secondary coolant from the associated steam generator to the environment is occurring. ¹	None
.4 Containment CSFST	None	Containment CSFST - RED
.5 Containment Hydrogen	None	> 4.0% OR Containment Hydrogen > 0.5% AND any Hydrogen Control equipment inoperable.
.6 Containment Pressure Control	None	BOTH CTS trains OR BOTH containment air recirc fans inoperable OR fail to auto start on their containment pressure setpoint OR containment pressure > 12 psig.
.7 Core Exit Thermocouples	None	Core Cooling CSFST – RED AND Restoration procedures not effective within 15 minutes.
.8 SEC Judgment (p.43)	Any condition in the opinion of the SEC that indicates loss of the Containment barrier. Σ	Any condition in the opinion of the SEC that indicates potential loss of the Containment barrier. Σ

¹ Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

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SEC Judgment: SEC Judgment may be used to determine that a Fission Product Barrier is LOST or POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

Once a barrier has been lost, the symptoms may disappear. SEC judgment may be used to determine whether to carry the barrier as lost. If the ability to monitor a barrier is lost or degraded, SEC judgment must be used to determine barrier status.

IF escalation to Site Area Emergency or General Emergency is expected within 2 hours based on current trends, **THEN IMMINENT** barrier degradation should be assumed and the SEC should make the appropriate classification.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SEC Judgment – All Modes

H-1 SEC Judgment (p.48) Conditions indicate actual or imminent substantial core damage with potential loss of containment or the potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.	H-1 SEC Judgment (p.47) Conditions indicate likely or actual major failures of plant functions needed to protect the public.	H-1 SEC Judgment (p.46) Conditions indicate that plant safety systems may be degraded and additional personnel are needed for additional monitoring.	H-1 SEC Judgment (p.44) Conditions indicate a potential degradation of the level of safety of the plant.
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SEC Judgment: SEC Judgment may be used to determine that a Fission Product Barrier is LOST or POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

Once a barrier has been lost, the symptoms may disappear. SEC judgment may be used to determine whether to carry the barrier as lost. If the ability to monitor a barrier is lost or degraded, SEC judgment must be used to determine barrier status.

IF escalation to Site Area Emergency or General Emergency is expected within 2 hours based on current trends, **THEN IMMINENT** barrier degradation should be assumed and the SEC should make the appropriate classification.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SEC Judgment – All Modes

H-1 SEC Judgment (p.48) Conditions indicate actual or imminent substantial core damage with potential loss of containment or the potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.	H-1 SEC Judgment (p.47) Conditions indicate likely or actual major failures of plant functions needed to protect the public.	H-1 SEC Judgment (p.46) Conditions indicate that plant safety systems may be degraded and additional personnel are needed for additional monitoring.	H-1 SEC Judgment (p.44) Conditions indicate a potential degradation of the level of safety of the plant.
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INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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HAZARDS AND OTHER CONDITIONS

H-2 Security (p.55) HOSTILE ACTION resulting in Loss of Physical Control of the Facility. 1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below: <ul style="list-style-type: none"> Reactivity Control (ability to shut down the reactor and keep it shutdown) RCS Inventory (ability to cool the core) Secondary Heat Removal (ability to maintain heat sink) .[Ref. 5.2.1i] <p style="text-align: center;">OR</p> 2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely. <p style="text-align: right;">Σ</p>	H-2 Security (p.53) HOSTILE ACTION within the PROTECTED AREA 1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor. . [Ref. 5.2.1i] <p style="text-align: right;">Σ</p>	H-2 Security (p.51) HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat. 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor. <p style="text-align: center;">OR</p> 2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within 30 minutes of the site. [Ref. 5.2.1i] <p style="text-align: right;">Σ</p>	H-2 Security (p.49) Confirmed Security Condition which indicates a potential degradation in the level of safety of the plant. 1. SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Shift Supervision. <p style="text-align: center;">OR</p> 2. A credible site-specific security threat notification. <p style="text-align: center;">OR</p> 3. A validated notification from NRC providing information of an aircraft threat. [Ref: 5.2.1i] <p style="text-align: right;">Σ</p>
	H-3 CR Evacuation (p.58) Control Room evacuated AND control not established in 15 minutes. <p style="text-align: right;">Σ</p>	H-3 CR Evacuation (p.57) Control Room evacuation initiated. <p style="text-align: right;">Σ</p>	
		H-4 FIRE (p.60) FIRE OR EXPLOSION affecting plant operations. <p style="text-align: right;">Σ</p>	H-4 FIRE (p.59) FIRE in Protected Area NOT extinguished within 15 minutes of detection. <p style="text-align: right;">Σ</p>
		H-5 TOXIC Gas (p.62) TOXIC OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. <p style="text-align: right;">Σ</p>	H-5 TOXIC Gas (p.61) TOXIC OR flammable gas release affecting plant operation. <p style="text-align: right;">Σ</p>
			H-8 ISFSI (p. 64) Damage to a loaded cask CONFINEMENT BOUNDARY. [Ref: 5.2.1i] <p style="text-align: right;">Σ</p>

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INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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HAZARDS AND OTHER CONDITIONS

H-2 Security (p.55) HOSTILE ACTION resulting in Loss of Physical Control of the Facility. 1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below: <ul style="list-style-type: none"> Reactivity Control (ability to shut down the reactor and keep it shutdown) RCS Inventory (ability to cool the core) Secondary Heat Removal (ability to maintain heat sink) .[Ref. 5.2.1i] OR 2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely. <div style="text-align: right;">Σ</div>	H-2 Security (p.53) HOSTILE ACTION within the PROTECTED AREA 1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor. . [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.51) HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat. 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor. OR 2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within 30 minutes of the site. [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.49) Confirmed Security Condition which indicates a potential degradation in the level of safety of the plant. 1. SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Shift Supervision. OR 2. A credible site-specific security threat notification. OR 3. A validated notification from NRC providing information of an aircraft threat. [Ref: 5.2.1i] <div style="text-align: right;">Σ</div>
	H-3 CR Evacuation (p.58) Control Room evacuated AND control not established in 15 minutes. <div style="text-align: right;">Σ</div>	H-3 CR Evacuation (p.57) Control Room evacuation initiated. <div style="text-align: right;">Σ</div>	
		H-4 FIRE (p.60) FIRE OR EXPLOSION affecting plant operations. <div style="text-align: right;">Σ</div>	H-4 FIRE (p.59) FIRE in Protected Area NOT extinguished within 15 minutes of detection. <div style="text-align: right;">Σ</div>
		H-5 TOXIC Gas (p.62) TOXIC OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. <div style="text-align: right;">Σ</div>	H-5 TOXIC Gas (p.61) TOXIC OR flammable gas release affecting plant operation. <div style="text-align: right;">Σ</div>
			H-8 ISFSI (p. 64) Damage to a loaded cask CONFINEMENT BOUNDARY. [Ref: 5.2.1i] <div style="text-align: right;">Σ</div>

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INITIATING CONDITIONS – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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NATURAL/DESTRUCTIVE PHENOMENA

		N-1 Seismic (p.67) Seismic event indicated by: 1. Seismic instrument activated OR 2. Ground motion detected by Control Room crew AND 1. Visible major damage in vital area. OR 2. Plant Trip.	N-1 Seismic (p.65) Seismic event indicated by: 1. Seismic instrument activated OR 2. Ground motion detected by Control Room crew.
		N-2 Tornado/wind (p.67) 1. Tornado strike in Vital Area OR 2. > 90 mph wind for > 15 minutes.	N-2 Tornado/wind (p.65) 1. Tornado strike within Protected Area.
		N-3 Structural (p.67) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.67) Vehicle collision affecting Vital Area.	N-4 Vehicle Collision (p.65) Vehicle collision affecting systems or structures within the Protected Area.
		N-5 MT Failure (p.67) Main turbine generated missile penetrates Vital Area.	N-5 MT Failure (p.65) Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.67) Flooding in Vital Area affects safety related equipment.	
			N-7 EXPLOSION (p.65) Unanticipated EXPLOSION within Protected Area causes visible damage to permanent structures or equipment.

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INITIATING CONDITIONS – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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NATURAL/DESTRUCTIVE PHENOMENA

		N-1 Seismic (p.67) Seismic event indicated by: 1. Seismic instrument activated OR 2. Ground motion detected by Control Room crew AND 1. Visible major damage in vital area. OR 2. Plant Trip.	N-1 Seismic (p.65) Seismic event indicated by: 1. Seismic instrument activated OR 2. Ground motion detected by Control Room crew.
		N-2 Tornado/wind (p.67) 1. Tornado strike in Vital Area OR 2. > 90 mph wind for > 15 minutes.	N-2 Tornado/wind (p.65) 1. Tornado strike within Protected Area.
		N-3 Structural (p.67) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.67) Vehicle collision affecting Vital Area.	N-4 Vehicle Collision (p.65) Vehicle collision affecting systems or structures within the Protected Area.
		N-5 MT Failure (p.67) Main turbine generated missile penetrates Vital Area.	N-5 MT Failure (p.65) Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.67) Flooding in Vital Area affects safety related equipment.	
			N-7 EXPLOSION (p.65) Unanticipated EXPLOSION within Protected Area causes visible damage to permanent structures or equipment.

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INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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ABNORMAL RADIATION LEVELS/EFFLUENTS

R-1 Effluent release (p.75) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes Σ	R-1 Effluent release (p.73) Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.71) Unplanned Rad release >200X ODCM limits for > 15 minutes based on: 1. Effluent Rad monitor 200X high alarm setpoint. OR 2. Release Rad monitor 200X high alarm setpoint. OR 3. Gas or liquid sample results 200X ODCM release limit. Σ	R-1 Effluent release (p.69) Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1. Effluent Rad monitor 2X high alarm setpoint. OR 2. Release Rad monitor 2X high alarm setpoint. OR 3. Gas or liquid sample results 2X ODCM release limit. Σ
		R-2 Plant Rad level (p.78) Rad levels that impede plant operations based on: 1. > 15 mR/hr in Control Rm(s) /CAS OR 2. > 100 mR/hr at remote S/D areas. Σ	R-2 Plant Rad level (p.77) Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.81) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1. Visual observation of levels. OR 2. Rad monitor alarms OR 3. Level < 632'4" SFP or Transfer Canal. Σ	R-3 Loss of level (p.80) Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1. Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present OR 2. Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

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INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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ABNORMAL RADIATION LEVELS/EFFLUENTS

R-1 Effluent release (p.75) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes Σ	R-1 Effluent release (p.73) Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.71) Unplanned Rad release >200X ODCM limits for > 15 minutes based on: 1. Effluent Rad monitor 200X high alarm setpoint. OR 2. Release Rad monitor 200X high alarm setpoint. OR 3. Gas or liquid sample results 200X ODCM release limit. Σ	R-1 Effluent release (p.69) Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1. Effluent Rad monitor 2X high alarm setpoint. OR 2. Release Rad monitor 2X high alarm setpoint. OR 3. Gas or liquid sample results 2X ODCM release limit. Σ
		R-2 Plant Rad level (p.78) Rad levels that impede plant operations based on: 1. > 15 mR/hr in Control Rm(s) /CAS OR 2. > 100 mR/hr at remote S/D areas. Σ	R-2 Plant Rad level (p.77) Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.81) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1. Visual observation of levels. OR 2. Rad monitor alarms OR 3. Level < 632'4" SFP or Transfer Canal. Σ	R-3 Loss of level (p.80) Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1. Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present OR 2. Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

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INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SYSTEM MALFUNCTIONS

S-1 RPS failure (p.85) 1. Auto and manual Reactor Trip fails from Control Rm AND Subcriticality and Core Cooling CSFSTs are RED <p style="text-align: center;">OR</p> 2. Subcriticality and Heat Sink CSFSTs are RED.	S-1 RPS failure (p.84) Auto and manual Reactor Trip fails from Control room.	S-1 RPS failure (p.83) Auto Reactor Trip fails AND manual trip successful from Control Room.	
S-2 Loss of AC (p.90) 1. Prolonged loss of all AC (A and D -T buses) AND Core Cooling CSFST – ORANGE. <p style="text-align: center;">OR</p> 2. Loss of all AC (A and D – T buses) expected to last for > 4 hrs.	S-2 Loss of AC (p.89) Loss of all AC (A and D – T buses) for > 15 minutes.	S-2 Loss of AC (p.88) AC power supply to T buses reduced to a single source for > 15 minutes.	S-2 Loss of AC (p.87) Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv Transformers) to the T Buses for > 15 minutes.
	S-3 Loss of DC power (p.92) Loss of ALL vital DC buses AB AND CD for > 15 minutes (bus volts < 220v)		
	S-5 Loss of Hot SD sys. (p.93) Loss of ability to achieve or maintain hot shutdown based on entry into: 1. OHP 4023.FR-H.1, Response to Loss of Secondary Heat Sink <p style="text-align: center;">OR</p> 2. OHP 4023.FR-C.1, Response to Inadequate Core Cooling.		

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INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SYSTEM MALFUNCTIONS

S-1 RPS failure (p.85) 1. Auto and manual Reactor Trip fails from Control Rm AND Subcriticality and Core Cooling CSFSTs are RED <p style="text-align: center;">OR</p> 2. Subcriticality and Heat Sink CSFSTs are RED.	S-1 RPS failure (p.84) Auto and manual Reactor Trip fails from Control room.	S-1 RPS failure (p.83) Auto Reactor Trip fails AND manual trip successful from Control Room.	
S-2 Loss of AC (p.90) 1. Prolonged loss of all AC (A and D -T buses) AND Core Cooling CSFST – ORANGE. <p style="text-align: center;">OR</p> 2. Loss of all AC (A and D – T buses) expected to last for > 4 hrs.	S-2 Loss of AC (p.89) Loss of all AC (A and D – T buses) for > 15 minutes.	S-2 Loss of AC (p.88) AC power supply to T buses reduced to a single source for > 15 minutes.	S-2 Loss of AC (p.87) Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv Transformers) to the T Buses for > 15 minutes.
	S-3 Loss of DC power (p.92) Loss of ALL vital DC buses AB AND CD for > 15 minutes (bus volts < 220v)		
	S-5 Loss of Hot SD sys. (p.93) Loss of ability to achieve or maintain hot shutdown based on entry into: 1. OHP 4023.FR-H.1, Response to Loss of Secondary Heat Sink <p style="text-align: center;">OR</p> 2. OHP 4023.FR-C.1, Response to Inadequate Core Cooling.		

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INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SYSTEM MALFUNCTIONS

	<p>S-6 Loss of Alarms (p.98) Loss of ability to monitor alarms during a transient indicated by:</p> <ol style="list-style-type: none"> 1. Loss of Safety System annunciator panel(s) for > 15 minutes. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 2. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 3. Compensatory indications NOT available (PPC, SPDS). <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 4. A significant transient is in progress. <p style="text-align: right;">Σ</p>	<p>S-6 Loss of Alarms (p.96)</p> <ol style="list-style-type: none"> 1. Loss of either: <ol style="list-style-type: none"> a. Safety system annunciator panels in a unit for > 15 minutes <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes: <p style="text-align: center;">-AND-</p> 2. Additional monitoring is required. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 3. Annunciator/Indicator loss does not result from PLANNED action. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 4. Either <ol style="list-style-type: none"> a. A significant transient is in progress, <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. Compensatory Indications <u>NOT</u> available <p style="text-align: right;">Σ</p>	<p>S-6 Loss of Alarms (p.94)</p> <ol style="list-style-type: none"> 1. Loss of either: <ol style="list-style-type: none"> a. Safety system annunciator panels in a unit for > 15 minutes: <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes: <p style="text-align: center;">-AND-</p> 2. Additional monitoring is required. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 3. Annunciator/Indicator loss does not result from PLANNED action. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 4. Compensatory Indications are available. <p style="text-align: right;">Σ</p>
			<p>S-7 Degraded Clad (p.100)</p> <ol style="list-style-type: none"> 1. RCS activity > 1.0 uCi/gram I-131 dose equivalent for > 48 hrs. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. RCS activity > 100/E uCi/gram.
			<p>S-8 RCS Leakage (p.101) RCS leakage exceeds 10 gpm pressure boundary leakage, SG tube leakage or unidentified leakage OR > 25 gpm identified leakage.</p>
			<p>S-9 Tech Spec (p.102) Unit not in required mode within LCO time limits.</p>
			<p>S-10 Loss of Comm. (p.103) Unplanned loss of all on or off-site communications</p> <p style="text-align: right;">Σ</p>

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INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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SYSTEM MALFUNCTIONS

	<p>S-6 Loss of Alarms (p.98) Loss of ability to monitor alarms during a transient indicated by:</p> <ol style="list-style-type: none"> 1. Loss of Safety System annunciator panel(s) for > 15 minutes. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 2. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 3. Compensatory indications NOT available (PPC, SPDS). <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 4. A significant transient is in progress. <p style="text-align: right;">Σ</p>	<p>S-6 Loss of Alarms (p.96)</p> <ol style="list-style-type: none"> 1. Loss of either: <ol style="list-style-type: none"> a. Safety system annunciator panels in a unit for > 15 minutes <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes: <p style="text-align: center;">-AND-</p> 2. Additional monitoring is required. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 3. Annunciator/Indicator loss does not result from PLANNED action. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 4. Either <ol style="list-style-type: none"> a. A significant transient is in progress, <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. Compensatory Indications <u>NOT</u> available <p style="text-align: right;">Σ</p>	<p>S-6 Loss of Alarms (p.94)</p> <ol style="list-style-type: none"> 1. Loss of either: <ol style="list-style-type: none"> a. Safety system annunciator panels in a unit for > 15 minutes: <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> b. A known loss of Attachment 2 Critical Parameters indications for > 15 minutes: <p style="text-align: center;">-AND-</p> 2. Additional monitoring is required. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 3. Annunciator/Indicator loss does not result from PLANNED action. <p style="text-align: center;">-AND-</p> <ol style="list-style-type: none"> 4. Compensatory Indications are available. <p style="text-align: right;">Σ</p>
			<p>S-7 Degraded Clad (p.100)</p> <ol style="list-style-type: none"> 1. RCS activity > 1.0 uCi/gram I-131 dose equivalent for > 48 hrs. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. RCS activity > 100/E uCi/gram.
			<p>S-8 RCS Leakage (p.101) RCS leakage exceeds 10 gpm pressure boundary leakage, SG tube leakage or unidentified leakage OR > 25 gpm identified leakage.</p>
			<p>S-9 Tech Spec (p.102) Unit not in required mode within LCO time limits.</p>
			<p>S-10 Loss of Comm. (p.103) Unplanned loss of all on or off-site communications</p> <p style="text-align: right;">Σ</p>

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INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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HAZARDS AND OTHER CONDITIONS

H-2 Security (p.55) HOSTILE ACTION resulting in Loss of Physical Control of the Facility. 1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below: <ul style="list-style-type: none"> Reactivity Control (ability to shut down the reactor and keep it shutdown) RCS Inventory (ability to cool the core) Secondary Heat Removal (ability to maintain heat sink) .[Ref. 5.2.1i] OR 2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely. <div style="text-align: right;">Σ</div>	H-2 Security (p.53) HOSTILE ACTION within the PROTECTED AREA 1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor. . [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.51) HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat. 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor. OR 2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within 30 minutes of the site. [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.49) Confirmed Security Condition which indicates a potential degradation in the level of safety of the plant. 1. SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Shift Supervision. OR 2. A credible site-specific security threat notification. OR 3. A validated notification from NRC providing information of an aircraft threat. [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>
	H-3 CR Evacuation (p.58) Control Room evacuated AND control not established in 15 minutes. <div style="text-align: right;">Σ</div>	H-3 CR Evacuation (p.57) Control Room evacuation initiated. <div style="text-align: right;">Σ</div>	
		H-4 FIRE (p.60) FIRE OR EXPLOSION affecting plant operations. <div style="text-align: right;">Σ</div>	H-4 FIRE (p.59) FIRE in Protected Area NOT extinguished within 15 minutes of detection. <div style="text-align: right;">Σ</div>
		H-5 TOXIC Gas (p.62) TOXIC OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. <div style="text-align: right;">Σ</div>	H-5 TOXIC Gas (p.61) TOXIC OR flammable gas release affecting plant operation. <div style="text-align: right;">Σ</div>
			H-8 ISFSI (p.64) Damage to a loaded cask CONFINEMENT BOUNDARY [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>

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INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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HAZARDS AND OTHER CONDITIONS

H-2 Security (p.55) HOSTILE ACTION resulting in Loss of Physical Control of the Facility. 1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below: <ul style="list-style-type: none"> Reactivity Control (ability to shut down the reactor and keep it shutdown) RCS Inventory (ability to cool the core) Secondary Heat Removal (ability to maintain heat sink) .[Ref. 5.2.1i] OR 2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely. <div style="text-align: right;">Σ</div>	H-2 Security (p.53) HOSTILE ACTION within the PROTECTED AREA 1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor. . [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.51) HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat. 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor. OR 2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within 30 minutes of the site. [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>	H-2 Security (p.49) Confirmed Security Condition which indicates a potential degradation in the level of safety of the plant. 1. SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Shift Supervision. OR 2. A credible site-specific security threat notification. OR 3. A validated notification from NRC providing information of an aircraft threat. [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>
	H-3 CR Evacuation (p.58) Control Room evacuated AND control not established in 15 minutes. <div style="text-align: right;">Σ</div>	H-3 CR Evacuation (p.57) Control Room evacuation initiated. <div style="text-align: right;">Σ</div>	
		H-4 FIRE (p.60) FIRE OR EXPLOSION affecting plant operations. <div style="text-align: right;">Σ</div>	H-4 FIRE (p.59) FIRE in Protected Area NOT extinguished within 15 minutes of detection. <div style="text-align: right;">Σ</div>
		H-5 TOXIC Gas (p.62) TOXIC OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. <div style="text-align: right;">Σ</div>	H-5 TOXIC Gas (p.61) TOXIC OR flammable gas release affecting plant operation. <div style="text-align: right;">Σ</div>
			H-8 ISFSI (p.64) Damage to a loaded cask CONFINEMENT BOUNDARY [Ref. 5.2.1i] <div style="text-align: right;">Σ</div>

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INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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NATURAL/DESTRUCTIVE PHENOMENA

		N-1 Seismic(p.67) Seismic event indicated by: 1. Seismic instrument activated. OR 2. Ground motion detected by Control Room crew. AND a. Visible major damage in vital area. OR b. Plant Trip.	N-1 Seismic (p.65) Seismic event indicated by: 1. Seismic instrument activated. OR 2. Ground motion detected by Control Room crew.
		N-2 Tornado/wind (p.67) 1. Tornado strike in Vital Area OR 2. >90 mph wind for > 15 minutes.	N-2 Tornado/wind(p.65) 1. Tornado strike in Protected Area.
		N-3 Structural (p.67) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.67) Vehicle collision affecting Vital Area.	N-4 Vehicle Collision(p.65) Vehicle collision affects systems or structures in the Protected Area.
		N-5 MT Failure (p.67) Main turbine generated missile penetrates Vital Area.	N-5 MT Failure (p.65) Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.67) Flooding in Vital Area affects safety related equip.	
			N-7 EXPLOSION (p.65) Unanticipated EXPLOSION within Protected Area causes visible damage to permanent structures or equipment.

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GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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NATURAL/DESTRUCTIVE PHENOMENA

		N-1 Seismic(p.67) Seismic event indicated by: 1. Seismic instrument activated. OR 2. Ground motion detected by Control Room crew. AND a. Visible major damage in vital area. OR b. Plant Trip.	N-1 Seismic (p.65) Seismic event indicated by: 1. Seismic instrument activated. OR 2. Ground motion detected by Control Room crew.
		N-2 Tornado/wind (p.67) 1. Tornado strike in Vital Area OR 2. >90 mph wind for > 15 minutes.	N-2 Tornado/wind(p.65) 1. Tornado strike in Protected Area.
		N-3 Structural (p.67) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.67) Vehicle collision affecting Vital Area.	N-4 Vehicle Collision(p.65) Vehicle collision affects systems or structures in the Protected Area.
		N-5 MT Failure (p.67) Main turbine generated missile penetrates Vital Area.	N-5 MT Failure (p.65) Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.67) Flooding in Vital Area affects safety related equip.	
			N-7 EXPLOSION (p.65) Unanticipated EXPLOSION within Protected Area causes visible damage to permanent structures or equipment.

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INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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ABNORMAL RADIATION LEVELS/EFFLUENTS

R-1 Effluent release (p.75) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.73) Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.71) Unplanned Rad release >200X ODCM limits for > 15 minutes based on: 1. Effluent Rad monitor 200X high alarm setpoint. OR 2. Release Rad monitor 200X high alarm setpoint. OR 3. Gas or liquid sample results 200X ODCM release limit. Σ	R-1 Effluent release (p.69) Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1. Effluent Rad monitor 2X high alarm setpoint. OR 2. Release Rad monitor 2X high alarm setpoint. OR 3. Gas or liquid sample results 2X ODCM release limit. Σ
		R-2 Plant Rad level (p.78) Rad levels that impede plant operations based on: 1. > 15 mR/hr in Control Room(s) or CAS OR 2. >100 mR/hr at remote S/D areas. Σ	R-2 Plant Rad level (p.77) Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.81) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1. Visual observation of levels. OR 2. Rad monitor alarms OR 3. Level < 632'4" SFP or Transfer Canal. Σ	R-3 Loss of level (p.80) Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1. Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present. OR 2. Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

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GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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ABNORMAL RADIATION LEVELS/EFFLUENTS

R-1 Effluent release (p.75) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.73) Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1. Survey results OR 2. Dose assessment OR 3. Effluent monitor readings >15 minutes. Σ	R-1 Effluent release (p.71) Unplanned Rad release >200X ODCM limits for > 15 minutes based on: 1. Effluent Rad monitor 200X high alarm setpoint. OR 2. Release Rad monitor 200X high alarm setpoint. OR 3. Gas or liquid sample results 200X ODCM release limit. Σ	R-1 Effluent release (p.69) Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1. Effluent Rad monitor 2X high alarm setpoint. OR 2. Release Rad monitor 2X high alarm setpoint. OR 3. Gas or liquid sample results 2X ODCM release limit. Σ
		R-2 Plant Rad level (p.78) Rad levels that impede plant operations based on: 1. > 15 mR/hr in Control Room(s) or CAS OR 2. >100 mR/hr at remote S/D areas. Σ	R-2 Plant Rad level (p.77) Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.81) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1. Visual observation of levels. OR 2. Rad monitor alarms OR 3. Level < 632'4" SFP or Transfer Canal. Σ	R-3 Loss of level (p.80) Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1. Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present. OR 2. Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

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COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTIONS

		C-3 Loss of AC(p.106) Loss of ALL AC power to A and D T-buses for > 15 minutes. Mode 5,6 and defueled	C-3 Loss of AC (p.104) Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv transformers) to the T buses for > 15 minutes. Mode 5,6
	C-4 Loss of Water Level in the Reactor Vessel that has or will Uncover Fuel in the Reactor Vessel (p.109) 1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling” AND 2. Core uncover as indicated by: a. RVLIS NR <46% - 0 RCPs OR b. Reactor Vessel Water Level <614 feet Mode 5,6	C-4 Inability to Maintain a Unit in Cold Shutdown (p.107) 1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling” AND 2. RCS Temperature that either: a. Exceeds T/S cold shutdown limit of 200°F. OR b. Results in an UNCONTROLLED RCS temperature rise approaching the cold shutdown T/S limit of 200°F Mode 5,6	
			C-5 Degraded Clad (p.110) 1.RCS activity > 1.0μCi/grams I-131 dose equivalent for > 48 hrs. OR 2.RCS activity > 100/E uCi/gram. Mode 5,6
			C-6 Loss of Comm. (p.111) Unplanned loss of all on or off-site communications. Mode 5,6
			C-7 Loss of DC power (p.113) Unplanned loss of ALL vital DC buses AB AND CD for > 15 minutes (bus volts ≤220v) Modes 5,6

Reference	PMP-2080-EPP-101	Rev. 19	Page 23 of 114
Emergency Classification			
Attachment 1	Emergency Condition Categories	Pages: 11 - 23	

INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
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COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTIONS

		C-3 Loss of AC(p.106) Loss of ALL AC power to A and D T-buses for > 15 minutes. Mode 5,6 and defueled	C-3 Loss of AC (p.104) Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv transformers) to the T buses for > 15 minutes. Mode 5,6
	C-4 Loss of Water Level in the Reactor Vessel that has or will Uncover Fuel in the Reactor Vessel (p.109) 1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling” AND 2. Core uncover as indicated by: a. RVLIS NR <46% - 0 RCPs OR b. Reactor Vessel Water Level <614 feet Mode 5,6	C-4 Inability to Maintain a Unit in Cold Shutdown (p.107) 1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling” AND 2. RCS Temperature that either: a. Exceeds T/S cold shutdown limit of 200°F. OR b. Results in an UNCONTROLLED RCS temperature rise approaching the cold shutdown T/S limit of 200°F Mode 5,6	
			C-5 Degraded Clad (p.110) 1.RCS activity > 1.0μCi/grams I-131 dose equivalent for > 48 hrs. OR 2.RCS activity > 100/E uCi/gram. Mode 5,6
			C-6 Loss of Comm. (p.111) Unplanned loss of all on or off-site communications. Mode 5,6
			C-7 Loss of DC power (p.113) Unplanned loss of ALL vital DC buses AB AND CD for > 15 minutes (bus volts ≤220v) Modes 5,6

Reference	PMP-2080-EPP-101	Rev. 19	Page 24 of 114
Emergency Classification			
Attachment 2	Critical NUREG 0737 Parameters	Page: 24	

PARAMETERS	INSTRUMENTATION
Neutron Flux – (Gammametrics)	NRI-21, 23
Reactor Coolant Pressure (Wide Range)	NPS-110, NPS-111, MR-13
Reactor Coolant Outlet Temperature THOT (Wide Range)	NTR-110, 120, 130, 140
Reactor Coolant Outlet Temperature TCOLD (Wide Range)	NTR-210, 220, 230, 240
Incore Thermocouples (Core Exit Thermocouples)	T/S 1-65
Reactor Coolant System Subcooling Margin Monitor	QR-110-3
Reactor Coolant Inventory System (Reactor Vessel Level Indication)	NLI-110, 111, 120, 121, 130, 131
Pressurizer Water Level	NLP-151, 152, 153
Charging Pump Flow	IFI-51, 52, 53, 54
Charging Pump Breaker Status	1E, 1W, 2E, 2W Control Room Position Indicating Lights for Breakers
Safety Injection Pump Breaker Status	1N, 1S, 2N, 2S Control Room Position Indication Lights for Breakers
Safety Injection Flow	IFI-260 – 266
Refueling Water Storage Tank Water Level	ILS-950, 951
Containment Water Level	NLI-320, 321, 330, 331, 340, 341
Containment Recirculation Sump Water Level*	NLI-300*, 301*
Containment Pressure (Wide Range)	PPA-310, 312
Containment Pressure (Narrow Range)	PPP-300, 301, 302, 303
Containment Hydrogen Monitoring	ESR-1 thru 9
Containment Isolation Valve Position Monitoring	Control Room Position Indicating Lights
Containment Area Radiation Monitor (High Range)	Unit 1 VRA-1310, 1410, Unit 2-2310, 2410
Steam Line Pressure	MPP-210, 211, 212, 220, 221, 222, 230, 231, 232, 240, 241, 242
Steam Generator Water Level (Wide Range)	BLI-110, 120, 130, 140
Steam Generator Water Level (Narrow Range)	BLP-110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 141, 142
Auxiliary Feedwater Flow Rate	FFI-210, 220, 230, 240
CCW Flow to ESF System, CCW Pump Breaker Status	PP-10E, PP-10W
Reactivity Control, Control Rod Position	CA1-8(U1), CB1-4(U1), CA1-4(U2), CB1-8(U2), CC1-8, CD1-9, SA1-8, SB1-8, SC1-4, SD1-4
Condensate Storage Tank Level	CLI-113, 114, CLR-110, 111

Reference	PMP-2080-EPP-101	Rev. 19	Page 24 of 114
Emergency Classification			
Attachment 2	Critical NUREG 0737 Parameters	Page: 24	

PARAMETERS	INSTRUMENTATION
Neutron Flux – (Gammametrics)	NRI-21, 23
Reactor Coolant Pressure (Wide Range)	NPS-110, NPS-111, MR-13
Reactor Coolant Outlet Temperature THOT (Wide Range)	NTR-110, 120, 130, 140
Reactor Coolant Outlet Temperature TCOLD (Wide Range)	NTR-210, 220, 230, 240
Incore Thermocouples (Core Exit Thermocouples)	T/S 1-65
Reactor Coolant System Subcooling Margin Monitor	QR-110-3
Reactor Coolant Inventory System (Reactor Vessel Level Indication)	NLI-110, 111, 120, 121, 130, 131
Pressurizer Water Level	NLP-151, 152, 153
Charging Pump Flow	IFI-51, 52, 53, 54
Charging Pump Breaker Status	1E, 1W, 2E, 2W Control Room Position Indicating Lights for Breakers
Safety Injection Pump Breaker Status	1N, 1S, 2N, 2S Control Room Position Indication Lights for Breakers
Safety Injection Flow	IFI-260 – 266
Refueling Water Storage Tank Water Level	ILS-950, 951
Containment Water Level	NLI-320, 321, 330, 331, 340, 341
Containment Recirculation Sump Water Level*	NLI-300*, 301*
Containment Pressure (Wide Range)	PPA-310, 312
Containment Pressure (Narrow Range)	PPP-300, 301, 302, 303
Containment Hydrogen Monitoring	ESR-1 thru 9
Containment Isolation Valve Position Monitoring	Control Room Position Indicating Lights
Containment Area Radiation Monitor (High Range)	Unit 1 VRA-1310, 1410, Unit 2-2310, 2410
Steam Line Pressure	MPP-210, 211, 212, 220, 221, 222, 230, 231, 232, 240, 241, 242
Steam Generator Water Level (Wide Range)	BLI-110, 120, 130, 140
Steam Generator Water Level (Narrow Range)	BLP-110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 141, 142
Auxiliary Feedwater Flow Rate	FFI-210, 220, 230, 240
CCW Flow to ESF System, CCW Pump Breaker Status	PP-10E, PP-10W
Reactivity Control, Control Rod Position	CA1-8(U1), CB1-4(U1), CA1-4(U2), CB1-8(U2), CC1-8, CD1-9, SA1-8, SB1-8, SC1-4, SD1-4
Condensate Storage Tank Level	CLI-113, 114, CLR-110, 111

Reference	PMP-2080-EPP-101	Rev. 19	Page 25 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.1: CRITICAL SAFETY FUNCTION STATUS TREES

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Core Cooling Critical Safety Function Status Tree – RED

POTENTIAL LOSS:

Core Exit Thermocouples > 757°

-OR-

RVLIS level < 46% (Narrow Range)

-OR-

Heat Sink Critical Safety Function Status Tree – RED.

BASIS (References)

LOSS – The core cooling critical safety function RED path indicates significant superheating and core uncover and is considered to indicate a loss of the fuel clad barrier. One of the indicators of the core cooling critical safety function red is when the core exit thermocouple temperature is equal to or greater than 1200 degrees Fahrenheit.

POTENTIAL LOSS – Core exit thermocouple temperature equal to or greater than 757 degrees Fahrenheit or RVLIS level < 46% (Narrow Range) corresponds to a loss of subcooling and is indicative of a potential loss of the fuel clad barrier. The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the fuel clad barrier. This threshold does not apply if the CSFST – RED Path entry was created through operator action directed by an EOP.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 25 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.1: CRITICAL SAFETY FUNCTION STATUS TREES

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Core Cooling Critical Safety Function Status Tree – RED

POTENTIAL LOSS:

Core Exit Thermocouples > 757°

-OR-

RVLIS level < 46% (Narrow Range)

-OR-

Heat Sink Critical Safety Function Status Tree – RED.

BASIS (References)

LOSS – The core cooling critical safety function RED path indicates significant superheating and core uncover and is considered to indicate a loss of the fuel clad barrier. One of the indicators of the core cooling critical safety function red is when the core exit thermocouple temperature is equal to or greater than 1200 degrees Fahrenheit.

POTENTIAL LOSS – Core exit thermocouple temperature equal to or greater than 757 degrees Fahrenheit or RVLIS level < 46% (Narrow Range) corresponds to a loss of subcooling and is indicative of a potential loss of the fuel clad barrier. The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the fuel clad barrier. This threshold does not apply if the CSFST – RED Path entry was created through operator action directed by an EOP.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 26 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.2 - CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment area radiation greater than 200 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS – The 200 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the high range containment radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). This represents the expected reading for loss of coolant accidents with fuel failure in the range between 2 and 5% (depending on core inventory which will vary with the time after reactor shutdown).

The 200 R/hr value was determined on the basis of the D. C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. Typically, these curves show that for noble gases the containment radiation monitors will read 1325 R/hr after 10 hours of core shutdown, and assuming 100% fuel cladding damage based on noble gas release only. This would correspond to 200 R/hour for 5% cladding damage and noble gas release 90 minutes after the reactor is shut down. The reading is based on noble gas reading alone, and does not include the instantaneous release and dispersal of the reactor coolant iodine inventory associated with a concentration of 300 microcuries per gram 1-131 equivalent into the containment atmosphere as suggested by Revision 2 of NUREG/NESP 007. The addition of the iodine activity from the reactor coolant would result in higher monitor readings, thus making the 200 R/hr value a conservative threshold value.

This assumption is appropriate since it is consistent with the current dose assessment methodology of the Donald C. Cook Nuclear Plant, an ice condenser containment plant.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

Reference	PMP-2080-EPP-101	Rev. 19	Page 26 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.2 - CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment area radiation greater than 200 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS – The 200 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the high range containment radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). This represents the expected reading for loss of coolant accidents with fuel failure in the range between 2 and 5% (depending on core inventory which will vary with the time after reactor shutdown).

The 200 R/hr value was determined on the basis of the D. C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. Typically, these curves show that for noble gases the containment radiation monitors will read 1325 R/hr after 10 hours of core shutdown, and assuming 100% fuel cladding damage based on noble gas release only. This would correspond to 200 R/hour for 5% cladding damage and noble gas release 90 minutes after the reactor is shut down. The reading is based on noble gas reading alone, and does not include the instantaneous release and dispersal of the reactor coolant iodine inventory associated with a concentration of 300 microcuries per gram 1-131 equivalent into the containment atmosphere as suggested by Revision 2 of NUREG/NESP 007. The addition of the iodine activity from the reactor coolant would result in higher monitor readings, thus making the 200 R/hr value a conservative threshold value.

This assumption is appropriate since it is consistent with the current dose assessment methodology of the Donald C. Cook Nuclear Plant, an ice condenser containment plant.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

Reference	PMP-2080-EPP-101	Rev. 19	Page 27 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.3: PRIMARY COOLANT ACTIVITY

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Reactor Coolant System activity level greater than 300 micro curies per cc I-131 dose equivalent.

-OR-

Assessment of core damage greater than 5% clad failure.
(NRC commitment 7991)

POTENTIAL LOSS: None

BASIS (References)

LOSS – 300 micro curies per cc I-131 dose equivalent corresponds to a value which is cited in Revision 2 of NUMARC/NESP 007 as being well above that expected for iodine spikes and corresponding to 2 to 5% fuel clad damage. This amount of cladding damage indicates significant clad heating and thus the Fuel Clad Barrier is considered lost. This value will be determined from Cook Nuclear Plant procedure PMP-2081-EPP-105, Core Damage Assessment.

Assessment may be performed by authorized shift personnel prior to TSC activation or the TSC after TSC has been activated.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 27 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.3: PRIMARY COOLANT ACTIVITY

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Reactor Coolant System activity level greater than 300 micro curies per cc I-131 dose equivalent.

-OR-

Assessment of core damage greater than 5% clad failure.
(NRC commitment 7991)

POTENTIAL LOSS: None

BASIS (References)

LOSS – 300 micro curies per cc I-131 dose equivalent corresponds to a value which is cited in Revision 2 of NUMARC/NESP 007 as being well above that expected for iodine spikes and corresponding to 2 to 5% fuel clad damage. This amount of cladding damage indicates significant clad heating and thus the Fuel Clad Barrier is considered lost. This value will be determined from Cook Nuclear Plant procedure PMP-2081-EPP-105, Core Damage Assessment.

Assessment may be performed by authorized shift personnel prior to TSC activation or the TSC after TSC has been activated.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 28 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**FUEL CLAD BARRIER 1.4: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the Fuel Clad barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 28 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**FUEL CLAD BARRIER 1.4: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the Fuel Clad barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the Fuel Clad barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 29 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.1: RCS LEAK RATE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUES:

LOSS:

UNISOLABLE RCS leak rate greater than available makeup capacity as indicated by a complete loss of RCS subcooling.

POTENTIAL LOSS:

UNISOLABLE RCS leakage greater than capacity of one centrifugal charging pump in normal charging lineup.

BASIS (References)

UNISOLABLE – A leak that cannot be isolated from the control room.

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Leakage that results in complete loss of subcooling is a fundamental indication that the inventory control systems are inadequate for maintaining RCS pressure and inventory.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

This leak is NOT isolable from the control room OR an attempt for isolation from the control room has been made and was unsuccessful. An attempt for isolation should be made prior to the accident classification. If isolable upon identification, this initiating condition is not applicable.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 29 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.1: RCS LEAK RATE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUES:

LOSS:

UNISOLABLE RCS leak rate greater than available makeup capacity as indicated by a complete loss of RCS subcooling.

POTENTIAL LOSS:

UNISOLABLE RCS leakage greater than capacity of one centrifugal charging pump in normal charging lineup.

BASIS (References)

UNISOLABLE – A leak that cannot be isolated from the control room.

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Leakage that results in complete loss of subcooling is a fundamental indication that the inventory control systems are inadequate for maintaining RCS pressure and inventory.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

This leak is NOT isolable from the control room OR an attempt for isolation from the control room has been made and was unsuccessful. An attempt for isolation should be made prior to the accident classification. If isolable upon identification, this initiating condition is not applicable.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 30 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.2: STEAM GENERATOR LEAKAGE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Entry into OHP-4023-E-3, Steam Generator Tube Rupture AND a non-isolable secondary line break or a prolonged release (> 30 minutes) of contaminated secondary coolant resulting in a radioactive release to the environment from the affected steam generator.

POTENTIAL LOSS:

Ruptured steam generator with primary to secondary leak rate greater than capacity of one charging pump in normal charging mode.

BASIS (References)

NORMAL CHARGING MODE – The normal charging flow path through volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – This is intended to address the full spectrum of steam generator tube rupture events and addresses the direct release of radioactive material to the environment. Dose assessment is required when there is indication that the fuel matrix/clad is potentially lost. This EAL encompasses steam breaks, feed breaks, and stuck open safety or stuck open relief valves that cannot be isolated. A normally operating SG PORV does NOT constitute a non-isolable secondary leak. The assumed break flow termination time period in our steam generator tube rupture dose consequence analysis is 30 minutes; therefore, 30 minutes is used to define prolonged.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 30 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.2: STEAM GENERATOR LEAKAGE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Entry into OHP-4023-E-3, Steam Generator Tube Rupture AND a non-isolable secondary line break or a prolonged release (> 30 minutes) of contaminated secondary coolant resulting in a radioactive release to the environment from the affected steam generator.

POTENTIAL LOSS:

Ruptured steam generator with primary to secondary leak rate greater than capacity of one charging pump in normal charging mode.

BASIS (References)

NORMAL CHARGING MODE – The normal charging flow path through volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – This is intended to address the full spectrum of steam generator tube rupture events and addresses the direct release of radioactive material to the environment. Dose assessment is required when there is indication that the fuel matrix/clad is potentially lost. This EAL encompasses steam breaks, feed breaks, and stuck open safety or stuck open relief valves that cannot be isolated. A normally operating SG PORV does NOT constitute a non-isolable secondary leak. The assumed break flow termination time period in our steam generator tube rupture dose consequence analysis is 30 minutes; therefore, 30 minutes is used to define prolonged.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 31 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.3: CONTAINMENT RADIATION

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment radiation greater than 10 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS – A value of 10 R/hr as indicated on VRA 1310/1410 (Unit 1) and VRA 2310/2410 (Unit 2) was chosen because it is above the ambient background radiation and represents a detectable radiation level above allowed Technical Specification radiochemistry limits but less than the 2-5% fuel clad damage used in the fuel clad fission product barrier threshold value.

The 10 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment methodology, taking into account that the radiation levels resulting from noble gases released from the coolant will vary as a function of core shutdown time. The reading is based on noble gas reading alone approximately 90 minutes after reactor shutdown. This assumption is consistent with the current core damage assessment methodology for the Donald C. Cook Nuclear Plant.

The use of noble gases alone for an EAL threshold is conservative since if iodine or other radioactive materials were present, the doses would be higher. The use of a value reflecting a plant shutdown of one hour was selected as a reasonable reflection of the phenomena being considered without concern about setting the threshold too high or too low. The actual fission product barrier threshold will be declared at any time the value indicated is exceeded.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.3: CONTAINMENT RADIATION

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment radiation greater than 10 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS – A value of 10 R/hr as indicated on VRA 1310/1410 (Unit 1) and VRA 2310/2410 (Unit 2) was chosen because it is above the ambient background radiation and represents a detectable radiation level above allowed Technical Specification radiochemistry limits but less than the 2-5% fuel clad damage used in the fuel clad fission product barrier threshold value.

The 10 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment methodology, taking into account that the radiation levels resulting from noble gases released from the coolant will vary as a function of core shutdown time. The reading is based on noble gas reading alone approximately 90 minutes after reactor shutdown. This assumption is consistent with the current core damage assessment methodology for the Donald C. Cook Nuclear Plant.

The use of noble gases alone for an EAL threshold is conservative since if iodine or other radioactive materials were present, the doses would be higher. The use of a value reflecting a plant shutdown of one hour was selected as a reasonable reflection of the phenomena being considered without concern about setting the threshold too high or too low. The actual fission product barrier threshold will be declared at any time the value indicated is exceeded.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.4: RCS INTEGRITY CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS: None

POTENTIAL LOSS:

RCS Integrity Critical Safety Function Status Tree - RED

BASIS (References)

LOSS – None

POTENTIAL LOSS –

The RCS Integrity Critical Safety Function RED indicates an extreme challenge to the safety function and a potential loss of the RCS barrier.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.4: RCS INTEGRITY CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS: None

POTENTIAL LOSS:

RCS Integrity Critical Safety Function Status Tree - RED

BASIS (References)

LOSS – None

POTENTIAL LOSS –

The RCS Integrity Critical Safety Function RED indicates an extreme challenge to the safety function and a potential loss of the RCS barrier.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.5: HEAT SINK CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS: None

POTENTIAL LOSS:

Heat Sink Critical Safety Function Status Tree - RED

BASIS (References)

LOSS – None

POTENTIAL LOSS –

The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the RCS barrier. This threshold does not apply if the CSFST – RED Path entry was created through operator action directed by an EOP.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.5: HEAT SINK CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS: None

POTENTIAL LOSS:

Heat Sink Critical Safety Function Status Tree - RED

BASIS (References)

LOSS – None

POTENTIAL LOSS –

The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the RCS barrier. This threshold does not apply if the CSFST – RED Path entry was created through operator action directed by an EOP.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**RCS BARRIER 2.6: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the RCS barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the RCS barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**RCS BARRIER 2.6: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the RCS barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the RCS barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.1 – CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment Radiation greater than 1000 R/hr.

-OR-

Assessment of core damage greater than 20% clad failure

BASIS (References)

LOSS – None

POTENTIAL LOSS – The 1000 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the containment high range area radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). The reading represents the expected reading for loss of coolant accidents with 20% fuel clad damage.

The 1000 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. As with the RCS and Fuel Clad barriers containment radiation EALs, this reading is based on release of noble gases only, approximately 90 minutes after shutdown.

DEVIATION FROM NUMARC;

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

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Emergency Classification			
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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.1 – CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment Radiation greater than 1000 R/hr.

-OR-

Assessment of core damage greater than 20% clad failure

BASIS (References)

LOSS – None

POTENTIAL LOSS – The 1000 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the containment high range area radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). The reading represents the expected reading for loss of coolant accidents with 20% fuel clad damage.

The 1000 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. As with the RCS and Fuel Clad barriers containment radiation EALs, this reading is based on release of noble gases only, approximately 90 minutes after shutdown.

DEVIATION FROM NUMARC;

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.2: CONTAINMENT INTEGRITY

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

1. UNISOLABLE breach or bypass of containment

-OR-

2. Rapid unexplained containment pressure or sump level drop following pressure rise caused by LOCA

-OR-

3. Pressure/Sump level NOT performing consistent with expected conditions

-OR-

4. Entry into ECA-1.2, "LOCA OUTSIDE CONTAINMENT"

POTENTIAL LOSS:

None

BASIS (References)

UNISOLABLE – A breach that cannot be isolated from the control room.

LOSS – An unisolable breach of containment includes any open unisolable containment penetration. A breach of containment has occurred if an inboard and outboard pair of isolation valves fails to close on an automatic activation signal or from a manual action in the control room and opens a release path to the environment. Plant procedures OHP-4023-SUP-003, Phase A Isolation Checklist and OHP-4023-SUP-004, Phase B Isolation Checklist, provides lists of containment isolation valves required to close on high or HI HI containment pressure.

The breach is considered unisolable if it cannot be isolated from the control room or an attempt for isolation was made from the control room and was unsuccessful. An attempt for isolation should be made prior to accident classification. If isolable upon identification this initiating condition is not applicable.

The rapid pressure drop following an initial pressure rise indicates a failed containment. Failure of containment pressure to elevate or containment sump level to rise is also indicative of containment bypass or a loss of containment scenario. ECA-1.2 is entered when there is evidence of excessive auxiliary building radiation while a loss of reactor or secondary coolant is occurring.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.2: CONTAINMENT INTEGRITY

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

1. UNISOLABLE breach or bypass of containment

-OR-

2. Rapid unexplained containment pressure or sump level drop following pressure rise caused by LOCA

-OR-

3. Pressure/Sump level NOT performing consistent with expected conditions

-OR-

4. Entry into ECA-1.2, "LOCA OUTSIDE CONTAINMENT"

POTENTIAL LOSS:

None

BASIS (References)

UNISOLABLE – A breach that cannot be isolated from the control room.

LOSS – An unisolable breach of containment includes any open unisolable containment penetration. A breach of containment has occurred if an inboard and outboard pair of isolation valves fails to close on an automatic activation signal or from a manual action in the control room and opens a release path to the environment. Plant procedures OHP-4023-SUP-003, Phase A Isolation Checklist and OHP-4023-SUP-004, Phase B Isolation Checklist, provides lists of containment isolation valves required to close on high or HI HI containment pressure.

The breach is considered unisolable if it cannot be isolated from the control room or an attempt for isolation was made from the control room and was unsuccessful. An attempt for isolation should be made prior to accident classification. If isolable upon identification this initiating condition is not applicable.

The rapid pressure drop following an initial pressure rise indicates a failed containment. Failure of containment pressure to elevate or containment sump level to rise is also indicative of containment bypass or a loss of containment scenario. ECA-1.2 is entered when there is evidence of excessive auxiliary building radiation while a loss of reactor or secondary coolant is occurring.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.3 – STEAM GENERATOR SECONDARY SIDE RELEASE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Primary to secondary leakage rate greater than technical specification limit.

AND

Release of secondary coolant from the associated steam generator to the environment is occurring.¹

¹Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

POTENTIAL LOSS:

None

BASIS (References)

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Secondary side release paths to the environment include atmospheric relief valves that can not be isolated and main steam safety valves, but does not include releases through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a Site Area Emergency.

For smaller breaks, not exceeding the capacity of one charging pump threshold in RCS Barrier “Potential Loss” EAL 2.1P (RCS Leak Rate) or EAL 2.2P (Steam Generator Leakage), this EAL results in an Unusual Event. For larger breaks, RCS barrier “Loss” EAL 2.1L or “Potential Loss” EAL 2.1P would result in an Alert. For SG tube ruptures which may involve multiple steam generators or unisolable secondary line breaks, this EAL would exist in conjunction with RCS barrier “Loss” 2.2L or “Potential Loss” 2.2P (Steam Generator Leakage) and would result in a Site Area Emergency. Escalation to General Emergency would be based on “Potential Loss” of the Fuel Clad Barrier.

POTENTIAL LOSS

None

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.3 – STEAM GENERATOR SECONDARY SIDE RELEASE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Primary to secondary leakage rate greater than technical specification limit.

AND

Release of secondary coolant from the associated steam generator to the environment is occurring.¹

¹Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

POTENTIAL LOSS:

None

BASIS (References)

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Secondary side release paths to the environment include atmospheric relief valves that can not be isolated and main steam safety valves, but does not include releases through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a Site Area Emergency.

For smaller breaks, not exceeding the capacity of one charging pump threshold in RCS Barrier “Potential Loss” EAL 2.1P (RCS Leak Rate) or EAL 2.2P (Steam Generator Leakage), this EAL results in an Unusual Event. For larger breaks, RCS barrier “Loss” EAL 2.1L or “Potential Loss” EAL 2.1P would result in an Alert. For SG tube ruptures which may involve multiple steam generators or unisolable secondary line breaks, this EAL would exist in conjunction with RCS barrier “Loss” 2.2L or “Potential Loss” 2.2P (Steam Generator Leakage) and would result in a Site Area Emergency. Escalation to General Emergency would be based on “Potential Loss” of the Fuel Clad Barrier.

POTENTIAL LOSS

None

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.4 – CONTAINMENT CRITICAL SAFETY FUNCTION STATUS TREE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment critical safety function status tree – RED

BASIS (References)

LOSS – None

POTENTIAL LOSS – The RED path indicates an extreme challenge to the containment and represents a potential loss of containment.

In addition to a containment isolation system, the Cook Nuclear Plant design includes an ice condenser system, containment air recirculation hydrogen skimmer fans, containment spray system, and an RHR system. The lower containment high pressure setpoint is 1.1 psig at which a partial containment isolation will occur and the containment air recirculation fans are automatically started after a short time delay. Containment spray is automatically started when containment pressure reaches its HI HI pressure of 2.9 psig. RHR spray will be initiated if both containment spray trains are not running and 50 minutes has elapsed since the reactor trip. This 12 psig value is also the containment pressure which indicates Containment Critical Safety Function Status Tree – RED, this EAL indicates the potential of the containment exceeding its design pressure of 12 psig, hence the potential of loss of containment.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.4 – CONTAINMENT CRITICAL SAFETY FUNCTION STATUS TREE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment critical safety function status tree – RED

BASIS (References)

LOSS – None

POTENTIAL LOSS – The RED path indicates an extreme challenge to the containment and represents a potential loss of containment.

In addition to a containment isolation system, the Cook Nuclear Plant design includes an ice condenser system, containment air recirculation hydrogen skimmer fans, containment spray system, and an RHR system. The lower containment high pressure setpoint is 1.1 psig at which a partial containment isolation will occur and the containment air recirculation fans are automatically started after a short time delay. Containment spray is automatically started when containment pressure reaches its HI HI pressure of 2.9 psig. RHR spray will be initiated if both containment spray trains are not running and 50 minutes has elapsed since the reactor trip. This 12 psig value is also the containment pressure which indicates Containment Critical Safety Function Status Tree – RED, this EAL indicates the potential of the containment exceeding its design pressure of 12 psig, hence the potential of loss of containment.

DEVIATION FROM NUMARC: None

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.5: CONTAINMENT HYDROGEN

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.2, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Hydrogen greater than 4.0%

-OR-

2. Containment hydrogen concentration greater than 0.5% AND any hydrogen control equipment (Containment air recirculation/hydrogen skimmer systems, electric hydrogen recombiner OR igniters) inoperable.

BASIS (References)

LOSS - None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or non-condensables in containment, or the consequences associated with ignition of hydrogen gas in the containment.

The potential for loss of containment may be caused by the accumulation of hydrogen gas and the inability of at least one train of required safety components required for the control of hydrogen gas to be inoperable. A 0.5% or greater volume percent is indicative that significant hydrogen gas has formed in containment, and control measures are warranted. Equipment to limit accumulation of hydrogen includes the containment air recirculation fans and the containment air recirculation/hydrogen skimmer system. Failure of this equipment is indicative of accumulating percentages of hydrogen until 4 volume percent, the lower flammability limit for hydrogen gas is exceeded. Above this percentage, the hydrogen igniters are the principal equipment relied on to reduce hydrogen gas concentration to below 4 percent.

DEVIATION FROM NUMARC:

A threshold value has been added for hydrogen concentration greater than 0.5% and key hydrogen control equipment inoperable.

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.5: CONTAINMENT HYDROGEN

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.2, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Hydrogen greater than 4.0%

-OR-

2. Containment hydrogen concentration greater than 0.5% AND any hydrogen control equipment (Containment air recirculation/hydrogen skimmer systems, electric hydrogen recombiner OR igniters) inoperable.

BASIS (References)

LOSS - None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or non-condensables in containment, or the consequences associated with ignition of hydrogen gas in the containment.

The potential for loss of containment may be caused by the accumulation of hydrogen gas and the inability of at least one train of required safety components required for the control of hydrogen gas to be inoperable. A 0.5% or greater volume percent is indicative that significant hydrogen gas has formed in containment, and control measures are warranted. Equipment to limit accumulation of hydrogen includes the containment air recirculation fans and the containment air recirculation/hydrogen skimmer system. Failure of this equipment is indicative of accumulating percentages of hydrogen until 4 volume percent, the lower flammability limit for hydrogen gas is exceeded. Above this percentage, the hydrogen igniters are the principal equipment relied on to reduce hydrogen gas concentration to below 4 percent.

DEVIATION FROM NUMARC:

A threshold value has been added for hydrogen concentration greater than 0.5% and key hydrogen control equipment inoperable.

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Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.6 – CONTAINMENT PRESSURE CONTROL

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.2, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Both containment spray systems both inoperable OR fail to automatically actuate on HI-HI containment pressure.

-OR-

2. Both containment air recirculation fans inoperable OR fail to automatically actuate on HI containment pressure.

-OR-

3. Containment pressure exceeds 12 psig.

BASIS (References)

LOSS – None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or non-condensables in containment, or the consequences associated with ignition of hydrogen gas in the containment.

Containment pressure control is achieved through the Containment Spray system and the Containment Air Recirculation/hydrogen skimmer system. Total failure of both these systems may allow steam to build up within containment, and, unabated, this steam buildup may cause the internal containment pressure buildup to exceed the design pressure of 12 psig. Studies have shown that the containment can withstand pressures well above this value.

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.6 – CONTAINMENT PRESSURE CONTROL

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.2, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Both containment spray systems both inoperable OR fail to automatically actuate on HI-HI containment pressure.

-OR-

2. Both containment air recirculation fans inoperable OR fail to automatically actuate on HI containment pressure.

-OR-

3. Containment pressure exceeds 12 psig.

BASIS (References)

LOSS – None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or non-condensables in containment, or the consequences associated with ignition of hydrogen gas in the containment.

Containment pressure control is achieved through the Containment Spray system and the Containment Air Recirculation/hydrogen skimmer system. Total failure of both these systems may allow steam to build up within containment, and, unabated, this steam buildup may cause the internal containment pressure buildup to exceed the design pressure of 12 psig. Studies have shown that the containment can withstand pressures well above this value.

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Both the recirculation fans and the containment spray pumps are actuated automatically following receipt of a HI or HI HI containment pressure signal, respectively. However, rapid startup of these systems is not required, since the ice condenser will serve as a passive steam pressure reduction device until the ice has melted. Therefore, if these systems should fail, it is permissible to start both these systems manually without being overly concerned about the potential loss of containment due to overpressure. However, the failure of automatic startup of redundant equipment is considered symptomatic of potentially degraded key safety equipment. Thus the potential loss categorization will remain until it can be determined that the failure to start automatically was not symptomatic of major system degradation.

DEVIATION FROM NUMARC: None.

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Both the recirculation fans and the containment spray pumps are actuated automatically following receipt of a HI or HI HI containment pressure signal, respectively. However, rapid startup of these systems is not required, since the ice condenser will serve as a passive steam pressure reduction device until the ice has melted. Therefore, if these systems should fail, it is permissible to start both these systems manually without being overly concerned about the potential loss of containment due to overpressure. However, the failure of automatic startup of redundant equipment is considered symptomatic of potentially degraded key safety equipment. Thus the potential loss categorization will remain until it can be determined that the failure to start automatically was not symptomatic of major system degradation.

DEVIATION FROM NUMARC: None.

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FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.7 – CORE EXIT THERMOCOUPLES

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

None

POTENTIAL LOSS:

Core Cooling Critical Safety Function Status Tree – RED

-AND-

Restoration procedures not effective within 15 minutes.

BASIS (References)

LOSS – None

POTENTIAL LOSS – The conditions in this EAL represent imminent fuel melt sequence which, if not corrected could lead to vessel failure and an increased potential for containment failure. Severe accident analysis has concluded that functional restoration procedures can arrest core damage within the reactor vessel in many core damage scenarios, and that the likelihood of containment failure is small for these events. Whether or not the procedures will be effective should be apparent within 15 minutes of taking action as directed by the procedure. The SEC should make the declaration as soon as it is determined that the procedure appears to be ineffective.

The core cooling status tree – RED is indicative that major fuel damage has occurred, and radioactive release can be expected. The conditions which indicate this condition are either 1) core exit thermocouples greater than 1200 degrees F or core exit thermocouples greater than 757 degrees F and RVLIS (Reactor Vessel Level Indication System) narrow range less than 46% with no reactor coolant pump running. This represents a more conservative position than recommended in Revision 2 of NUMARC/NESP 007, but is taken to be consistent with the guidance afforded by the Westinghouse Owners Group as to the indication of when core cooling may be considered to be lost.

DEVIATION FROM NUMARC: None

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.7 – CORE EXIT THERMOCOUPLES

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

None

POTENTIAL LOSS:

Core Cooling Critical Safety Function Status Tree – RED

-AND-

Restoration procedures not effective within 15 minutes.

BASIS (References)

LOSS – None

POTENTIAL LOSS – The conditions in this EAL represent imminent fuel melt sequence which, if not corrected could lead to vessel failure and an increased potential for containment failure. Severe accident analysis has concluded that functional restoration procedures can arrest core damage within the reactor vessel in many core damage scenarios, and that the likelihood of containment failure is small for these events. Whether or not the procedures will be effective should be apparent within 15 minutes of taking action as directed by the procedure. The SEC should make the declaration as soon as it is determined that the procedure appears to be ineffective.

The core cooling status tree – RED is indicative that major fuel damage has occurred, and radioactive release can be expected. The conditions which indicate this condition are either 1) core exit thermocouples greater than 1200 degrees F or core exit thermocouples greater than 757 degrees F and RVLIS (Reactor Vessel Level Indication System) narrow range less than 46% with no reactor coolant pump running. This represents a more conservative position than recommended in Revision 2 of NUMARC/NESP 007, but is taken to be consistent with the guidance afforded by the Westinghouse Owners Group as to the indication of when core cooling may be considered to be lost.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 43 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**CONTAINMENT BARRIER 3.8: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the Containment barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the Containment barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 43 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

**CONTAINMENT BARRIER 3.8: SEC JUDGMENT
MODE APPLICABILITY**

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Any condition in the opinion of the SEC that Indicates loss of the Containment barrier.

POTENTIAL LOSS:

Any condition in the opinion of the SEC that indicates potential loss of the Containment barrier.

BASIS (References)

LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

POTENTIAL LOSS : SEC Judgment may be used to determine that a Fission Product Barrier is POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 44 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: UNUSUAL EVENT – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of an Unusual Event.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC, conditions indicate a potential degradation of the level of safety of the plant.

BASIS (References)

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

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

Specific examples of actual events that may require SEC judgment for Unusual Event declaration are listed here for consideration. However, this list is by no means all inclusive and is not intended to limit the discretion of the SEC.

- Aircraft crash on –site but, outside the protected area.
- Train derailment on-site but, outside the protected area.
- Near-site EXPLOSION which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.
- Near-site releases of TOXIC or flammable gas which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.

It is also intended that the SEC's judgment not be limited by any lists of events as defined here. This list is provided solely as examples for consideration and it is recognized that actual events may not

Reference	PMP-2080-EPP-101	Rev. 19	Page 44 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: UNUSUAL EVENT – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of an Unusual Event.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC, conditions indicate a potential degradation of the level of safety of the plant.

BASIS (References)

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

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

Specific examples of actual events that may require SEC judgment for Unusual Event declaration are listed here for consideration. However, this list is by no means all inclusive and is not intended to limit the discretion of the SEC.

- Aircraft crash on –site but, outside the protected area.
- Train derailment on-site but, outside the protected area.
- Near-site EXPLOSION which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.
- Near-site releases of TOXIC or flammable gas which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.

It is also intended that the SEC's judgment not be limited by any lists of events as defined here. This list is provided solely as examples for consideration and it is recognized that actual events may not

Reference	PMP-2080-EPP-101	Rev. 19	Page 45 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 45 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 46 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: ALERT – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of an Alert.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

1. Conditions indicate that plant safety systems may be degraded,

-AND-

2. Increased monitoring of plant functions is needed.

BASIS (References)

This ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the Alert emergency class.

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 46 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: ALERT – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of an Alert.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

1. Conditions indicate that plant safety systems may be degraded,

-AND-

2. Increased monitoring of plant functions is needed.

BASIS (References)

This ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the Alert emergency class.

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 47 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: SITE AREA EMERGENCY – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of a Site Area Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

Conditions indicate likely or actual major failures of plant functions needed for the protection of the public.

BASIS (References)

This ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the Site Area Emergency, emergency classification.

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition no longer indicates likely or actual major failures of plant functions needed for the protection of the public health and safety.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 47 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: SITE AREA EMERGENCY – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of a Site Area Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

Conditions indicate likely or actual major failures of plant functions needed for the protection of the public.

BASIS (References)

This ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the Site Area Emergency, emergency classification.

TERMINATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgment, the condition no longer indicates likely or actual major failures of plant functions needed for the protection of the public health and safety.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 48 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: GENERAL EMERGENCY – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of a General Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

1. Conditions indicate an actual or imminent substantial core degradation with potential loss of affected unit's containment.

-OR-

2. Potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.

BASIS (References)

The ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the General Emergency, emergency classification.

TERMINATION/RECOVERY CRITERIA

In the SEC's judgment, a General Emergency no longer exists and entry into recovery procedures is appropriate. The affected unit has achieved a cold shutdown.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 48 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: GENERAL EMERGENCY – SEC JUDGMENT

INITIATING CONDITION

Other conditions existing which in the judgment of the Site Emergency Coordinator (SEC) warrant declaration of a General Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgment of the SEC:

1. Conditions indicate an actual or imminent substantial core degradation with potential loss of affected unit's containment.

-OR-

2. Potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.

BASIS (References)

The ECC is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the SEC to fall under the General Emergency, emergency classification.

TERMINATION/RECOVERY CRITERIA

In the SEC's judgment, a General Emergency no longer exists and entry into recovery procedures is appropriate. The affected unit has achieved a cold shutdown.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 49 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: UNUSUAL EVENT – SECURITY EVENTS

INITIATING CONDITION

Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor.

OR

2. A credible site specific security threat notification.

OR

3. A validated notification from the NRC providing information of an aircraft threat.

[Ref. 5.2.1k]

BASIS (References)

Security events which do not represent a potential degradation in the level of safety of the plant are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Security events assessed as hostile actions are classifiable under H2 Alert, H2 Site Area Emergency and H2 General Emergency.

A higher initial classification could be made based upon the nature and timing of the security threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification level in accordance with the site's Safeguards Contingency Plan and Emergency Plan.

EAL #1

Reference is made to site specific security shift supervision because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This threshold is based on site specific security plans. Site specific Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

Reference	PMP-2080-EPP-101	Rev. 19	Page 49 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: UNUSUAL EVENT – SECURITY EVENTS

INITIATING CONDITION

Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor.

OR

2. A credible site specific security threat notification.

OR

3. A validated notification from the NRC providing information of an aircraft threat.

[Ref. 5.2.1k]

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A higher initial classification could be made based upon the nature and timing of the security threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification level in accordance with the site's Safeguards Contingency Plan and Emergency Plan.

EAL #1

Reference is made to site specific security shift supervision because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This threshold is based on site specific security plans. Site specific Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

Reference	PMP-2080-EPP-101	Rev. 19	Page 50 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

EAL #2

This threshold is included to ensure that appropriate notifications for the security threat are made in a timely manner. This includes information of a credible threat. Only the plant to which the specific threat is made need declare the Notification of an Unusual Event.

The determination of “credible” is made through use of information found in the site specific Safeguards Contingency Plan.

EAL #3

The intent of this EAL is to ensure that notifications for the aircraft threat are made in a timely manner and that Offsite Response Organizations (OROs) and plant personnel are at a state of heightened awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

This EAL is met when a plant receives information regarding an aircraft threat from NRC. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Unusual Event.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

TERMINATION/RECOVERY CRITERIA

The hazard to the level of safety of the plant no longer exists.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008
2. NEI 03-12, Template for Security Plan and Training and Qualification Plan

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12.

Reference	PMP-2080-EPP-101	Rev. 19	Page 50 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

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The intent of this EAL is to ensure that notifications for the aircraft threat are made in a timely manner and that Offsite Response Organizations (OROs) and plant personnel are at a state of heightened awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

This EAL is met when a plant receives information regarding an aircraft threat from NRC. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Unusual Event.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

TERMINATION/RECOVERY CRITERIA

The hazard to the level of safety of the plant no longer exists.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008
2. NEI 03-12, Template for Security Plan and Training and Qualification Plan

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12.

Reference	PMP-2080-EPP-101	Rev. 19	Page 51 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: ALERT – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.

OR

2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within **30 minutes** of the site.

[Ref. 5.2.1k]

BASIS (References)

These EALs address the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. They are not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack or is an identified attack target with minimal time available for further preparation or additional assistance to arrive requires a heightened state of readiness and implementation of protective measures that can be effective (such as on-site evacuation, dispersal or sheltering).

EAL #1

This EAL addresses the potential for a very rapid progression of events due to a hostile action. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the Owner Controlled Area (OCA). Those events are adequately addressed by other EALs.

Note that this EAL is applicable for any hostile action occurring, or that has occurred, in the Owner Controlled Area.

Reference	PMP-2080-EPP-101	Rev. 19	Page 51 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: ALERT – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.

OR

2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within **30 minutes** of the site.

[Ref. 5.2.1k]

BASIS (References)

These EALs address the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. They are not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack or is an identified attack target with minimal time available for further preparation or additional assistance to arrive requires a heightened state of readiness and implementation of protective measures that can be effective (such as on-site evacuation, dispersal or sheltering).

EAL #1

This EAL addresses the potential for a very rapid progression of events due to a hostile action. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the Owner Controlled Area (OCA). Those events are adequately addressed by other EALs.

Note that this EAL is applicable for any hostile action occurring, or that has occurred, in the Owner Controlled Area.

Reference	PMP-2080-EPP-101	Rev. 19	Page 52 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Although nuclear plant security officers are well trained and prepared to protect against hostile action, it is appropriate for OROs to be notified and encouraged to begin activation (if they do not normally) to be better prepared should it be necessary to consider further actions.

EAL #2

This EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time.

The intent of this EAL is to ensure that notifications for the airliner attack threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant.

This EAL is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is within 30 minutes of the plant. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

If not previously notified by the NRC that the airborne hostile action was intentional, then it would be expected, although not certain, that notification by an appropriate Federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting Federal notification.

TERMINATION/RECOVERY CRITERIA

Challenge to the safety of the plant no longer exists.

EAL #2

LARGE AIRCRAFT is the site specific term used for airliner.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008.

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12. Changed airliner to large aircraft consistent with the wording in the NEI technical bases section.

Reference	PMP-2080-EPP-101	Rev. 19	Page 52 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Although nuclear plant security officers are well trained and prepared to protect against hostile action, it is appropriate for OROs to be notified and encouraged to begin activation (if they do not normally) to be better prepared should it be necessary to consider further actions.

EAL #2

This EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time.

The intent of this EAL is to ensure that notifications for the airliner attack threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant.

This EAL is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is within 30 minutes of the plant. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

If not previously notified by the NRC that the airborne hostile action was intentional, then it would be expected, although not certain, that notification by an appropriate Federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting Federal notification.

TERMINATION/RECOVERY CRITERIA

Challenge to the safety of the plant no longer exists.

EAL #2

LARGE AIRCRAFT is the site specific term used for airliner.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008.

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12. Changed airliner to large aircraft consistent with the wording in the NEI technical bases section.

Reference	PMP-2080-EPP-101	Rev. 19	Page 53 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: SITE AREA EMERGENCY – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION within the PROTECTED AREA.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor.

[Ref. 5.2.1k]

BASIS (References)

This condition represents an escalated threat to plant safety above that contained in the Alert in that a hostile force has progressed from the Owner Controlled Area to the Protected Area.

This EAL addresses the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. It is not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack with minimal time available for further preparation or additional assistance to arrive requires Offsite Response Organization (ORO) readiness and preparation for the implementation of protective measures.

This EAL addresses the potential for a very rapid progression of events due to a hostile action. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the Protected Area. Those events are adequately addressed by other EALs.

Although nuclear plant security officers are well trained and prepared to protect against hostile action, it is appropriate for OROs to be notified and encouraged to begin preparations for public protective actions (if they do not normally) to be better prepared should it be necessary to consider further actions.

If not previously notified by NRC that the airborne hostile action was intentional, then it would be expected, although not certain, that notification by an appropriate Federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting Federal notification.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: SITE AREA EMERGENCY – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION within the PROTECTED AREA.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor.

[Ref. 5.2.1k]

BASIS (References)

This condition represents an escalated threat to plant safety above that contained in the Alert in that a hostile force has progressed from the Owner Controlled Area to the Protected Area.

This EAL addresses the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. It is not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack with minimal time available for further preparation or additional assistance to arrive requires Offsite Response Organization (ORO) readiness and preparation for the implementation of protective measures.

This EAL addresses the potential for a very rapid progression of events due to a hostile action. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the Protected Area. Those events are adequately addressed by other EALs.

Although nuclear plant security officers are well trained and prepared to protect against hostile action, it is appropriate for OROs to be notified and encouraged to begin preparations for public protective actions (if they do not normally) to be better prepared should it be necessary to consider further actions.

If not previously notified by NRC that the airborne hostile action was intentional, then it would be expected, although not certain, that notification by an appropriate Federal agency would follow. In this case, appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting Federal notification.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

The condition causing the event has been eliminated.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

The condition causing the event has been eliminated.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: GENERAL EMERGENCY – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION resulting in loss of physical control of the facility.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below:
 - Reactivity Control (ability to shut down the reactor and keep it shutdown)
 - RCS Inventory (ability to cool the core)
 - Secondary Heat Removal (ability to maintain heat sink)

OR

2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely.

. [Ref. 5.2.1k]

BASIS (References)

EAL #1

This EAL encompasses conditions under which a hostile action has resulted in a loss of physical control of vital areas (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown), RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink).

Loss of physical control of the control room or remote shutdown capability alone may not prevent the ability to maintain safety functions. Design of the remote shutdown capability and the location of the transfer switches should be taken into account. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions.

Reference	PMP-2080-EPP-101	Rev. 19	Page 55 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: GENERAL EMERGENCY – SECURITY EVENTS

INITIATING CONDITION

HOSTILE ACTION resulting in loss of physical control of the facility.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions listed below:
 - Reactivity Control (ability to shut down the reactor and keep it shutdown)
 - RCS Inventory (ability to cool the core)
 - Secondary Heat Removal (ability to maintain heat sink)

OR

2. A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely.

. [Ref. 5.2.1k]

BASIS (References)

EAL #1

This EAL encompasses conditions under which a hostile action has resulted in a loss of physical control of vital areas (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown), RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink).

Loss of physical control of the control room or remote shutdown capability alone may not prevent the ability to maintain safety functions. Design of the remote shutdown capability and the location of the transfer switches should be taken into account. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the threshold is not met.

EAL #2

This EAL addresses failure of spent fuel cooling systems as a result of hostile action if imminent fuel damage is likely, such as when a freshly off-loaded reactor core is in the spent fuel pit.

TERMINATION/RECOVERY CRITERIA

The security threat has been eliminated and cold shutdown can be maintained.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12. Created a generalized category list of the items required to maintain safety functions. Removed “for a freshly off-loaded reactor core in pit” to eliminate unnecessary complication. Operators do not track days since off-load in the Control Room and imminent damage applies to any type of fuel in the pit.

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If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the threshold is not met.

EAL #2

This EAL addresses failure of spent fuel cooling systems as a result of hostile action if imminent fuel damage is likely, such as when a freshly off-loaded reactor core is in the spent fuel pit.

TERMINATION/RECOVERY CRITERIA

The security threat has been eliminated and cold shutdown can be maintained.

Basis Reference(s):

1. NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008

DEVIATION FROM NUMARC: Cook Nuclear Plant (CNP) is adopting the Security Events Emergency Action Levels (EALs) per Nuclear Energy Institute (NEI) NEI 99-01, Methodology for the Development of Emergency Action Levels, Revision 5, February 2008 in order to align the current EALs with the required changes to site security plans as required by implementation of NEI-03-12. Created a generalized category list of the items required to maintain safety functions. Removed “for a freshly off-loaded reactor core in pit” to eliminate unnecessary complication. Operators do not track days since off-load in the Control Room and imminent damage applies to any type of fuel in the pit.

Reference	PMP-2080-EPP-101	Rev. 19	Page 57 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: ALERT – CONTROL ROOM EVACUATION

INITIATING CONDITION

Control room evacuation has been initiated.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

Control room evacuation has been initiated.

BASIS (References)

CONTROL – Placing all local controls in position necessary for operation from remote panels and the shift manager has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Evacuation of the control room represents a potential for substantial degradation in the level of safety of the plant and, therefore, requires an ALERT declaration. Additional support, monitoring, and direction is required and accomplished by activation of the Technical Support Center at the Alert classification level. Inability to establish plant CONTROL from outside the control room will escalate the event to a Site Area Emergency.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedures governing control room evacuation and establishing plant control outside the control room is 1(2)-OHP-4025-001-001, Emergency Remote Shutdown (fire related incidents), and 1(2)-OHP-4022-CRE-001, Control Room Evacuation (non-fire related incidents).

TERMINATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 57 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: ALERT – CONTROL ROOM EVACUATION

INITIATING CONDITION

Control room evacuation has been initiated.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

Control room evacuation has been initiated.

BASIS (References)

CONTROL – Placing all local controls in position necessary for operation from remote panels and the shift manager has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Evacuation of the control room represents a potential for substantial degradation in the level of safety of the plant and, therefore, requires an ALERT declaration. Additional support, monitoring, and direction is required and accomplished by activation of the Technical Support Center at the Alert classification level. Inability to establish plant CONTROL from outside the control room will escalate the event to a Site Area Emergency.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedures governing control room evacuation and establishing plant control outside the control room is 1(2)-OHP-4025-001-001, Emergency Remote Shutdown (fire related incidents), and 1(2)-OHP-4022-CRE-001, Control Room Evacuation (non-fire related incidents).

TERMINATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 58 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: SITE AREA EMERGENCY – CONTROL ROOM EVACUATION

INITIATING CONDIITON

Control room evacuation has been initiated and plant CONTROL cannot be established.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

The following conditions exist:

1. Control Room evacuation has been initiated.
- AND-
2. CONTROL of any one of the following processes is not established within 15 minutes:
 - Reactivity
 - RCS inventory
 - RCS temperature
 - SG heat sink

BASIS (References)

CONTROL – Placing all local control switches in local control necessary for operation from remote panel and the shift manager has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedures governing control room evacuation and establishing plant control outside the control room is 1(2)-OHP-4025-001-001, Emergency Remote Shutdown (fire related incidents), and 1(2)-OHP-4022-CRE-001, Control Room Evacuation (non-fire related incidents). *The 15 minute time for CONTROL being established outside of the control room is taken from Revision 2 of NUMARC/NESP 007.

TERMINATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

*The inability to establish control of RCS inventory, RCS temperature, reactivity and heat sink functions outside of the control room within 15 minutes requires the declaration of a site area emergency.

Reference	PMP-2080-EPP-101	Rev. 19	Page 58 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: SITE AREA EMERGENCY – CONTROL ROOM EVACUATION

INITIATING CONDIITON

Control room evacuation has been initiated and plant CONTROL cannot be established.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

The following conditions exist:

1. Control Room evacuation has been initiated.
- AND-
2. CONTROL of any one of the following processes is not established within 15 minutes:
 - Reactivity
 - RCS inventory
 - RCS temperature
 - SG heat sink

BASIS (References)

CONTROL – Placing all local control switches in local control necessary for operation from remote panel and the shift manager has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedures governing control room evacuation and establishing plant control outside the control room is 1(2)-OHP-4025-001-001, Emergency Remote Shutdown (fire related incidents), and 1(2)-OHP-4022-CRE-001, Control Room Evacuation (non-fire related incidents). *The 15 minute time for CONTROL being established outside of the control room is taken from Revision 2 of NUMARC/NESP 007.

TERMINATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

*The inability to establish control of RCS inventory, RCS temperature, reactivity and heat sink functions outside of the control room within 15 minutes requires the declaration of a site area emergency.

Reference	PMP-2080-EPP-101	Rev. 19	Page 59 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: UNUSUAL EVENT - FIRE

INITIATING CONDITION

FIRE in protected area boundary not extinguished within 15 minutes of detection.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

FIRE within the protected area boundary not extinguished within 15 minutes of detection.

BASIS (References)

FIRE is defined as, "Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed." (The NEI Methodology for the Development of Emergency Action Levels, Revision 5, February 2008). [Ref. 5.2.1k]

Areas of concern at the Cook Nuclear Plant for this initiating condition (H-4: UNUSUAL EVENT-FIRE) include the protected area. The radioactive material building (RMB) is not included since it is outside the protected area, and not required to safely shutdown the plant. In the unlikely event that a FIRE were to occur where 100% of the RMB contained radioactive material were released, it could result in an offsite dose of 2.5 Rem. If a FIRE or EXPLOSION were to occur that could result in an offsite radioactive release, the SEC would declare an Unusual Event under the classification requirements of H-1, SEC judgment. The classification could be escalated in accordance with the requirement of R-1, if field measurements show large offsite releases have actually occurred.

The purpose of this EAL is to address only FIRES which are potentially significant precursors to safety system damage. This excludes such items as FIRES within office buildings, waste basket FIRES, and other small FIRES of no consequence. This EAL applies to buildings and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where safety system performance would be adversely affected or there could be an uncontrolled release of radioactive material.

TERMINATION/RECOVERY CRITERIA

FIRE Extinguished.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 59 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: UNUSUAL EVENT - FIRE

INITIATING CONDITION

FIRE in protected area boundary not extinguished within 15 minutes of detection.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

FIRE within the protected area boundary not extinguished within 15 minutes of detection.

BASIS (References)

FIRE is defined as, "Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed." (The NEI Methodology for the Development of Emergency Action Levels, Revision 5, February 2008). [Ref. 5.2.1k]

Areas of concern at the Cook Nuclear Plant for this initiating condition (H-4: UNUSUAL EVENT-FIRE) include the protected area. The radioactive material building (RMB) is not included since it is outside the protected area, and not required to safely shutdown the plant. In the unlikely event that a FIRE were to occur where 100% of the RMB contained radioactive material were released, it could result in an offsite dose of 2.5 Rem. If a FIRE or EXPLOSION were to occur that could result in an offsite radioactive release, the SEC would declare an Unusual Event under the classification requirements of H-1, SEC judgment. The classification could be escalated in accordance with the requirement of R-1, if field measurements show large offsite releases have actually occurred.

The purpose of this EAL is to address only FIRES which are potentially significant precursors to safety system damage. This excludes such items as FIRES within office buildings, waste basket FIRES, and other small FIRES of no consequence. This EAL applies to buildings and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where safety system performance would be adversely affected or there could be an uncontrolled release of radioactive material.

TERMINATION/RECOVERY CRITERIA

FIRE Extinguished.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 60 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: ALERT – FIRE OR EXPLOSION AFFECTING OPERABILITY OF SAFETY EQUIPMENT

INITIATING CONDITION

FIRE or EXPLOSION affecting OPERABILITY of plant safety systems required to establish or maintain safe shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. FIRE or EXPLOSION that affects the OPERABILITY of systems required for the current operating mode OR for safe shutdown.
- OR-**
2. FIRE or EXPLOSION that causes visible damage to any of the following structures: containments, auxiliary buildings, essential service water system enclosures, auxiliary feedwater pump rooms, refueling water storage tank, or condensate storage tank.

BASIS (References)

EXPLOSION – A rapid, violent, uncontained combustion or catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures or equipment.

If one of two redundant trains remains operable, then this EAL is not applicable. The word “OPERABILITY” refers to the definition in the Technical Specifications where required redundant safety equipment will be made inoperable.

The purpose of this EAL is to address only FIRES which are potentially significant precursors to safety system damage. This excludes such items as FIRES within office buildings, waste basket FIRES, and other small FIRES of no consequence. This EAL applies to building and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where the safety system performance would be adversely affected.

Only EXPLOSIONs of significant force to cause damage (deformation, scorching) to structures or equipment required for safe operation should be considered.

TERMINATION/RECOVERY CRITERIA

Plant capability to operate safely no longer affected by the event.

Reference	PMP-2080-EPP-101	Rev. 19	Page 60 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: ALERT – FIRE OR EXPLOSION AFFECTING OPERABILITY OF SAFETY EQUIPMENT

INITIATING CONDITION

FIRE or EXPLOSION affecting OPERABILITY of plant safety systems required to establish or maintain safe shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. FIRE or EXPLOSION that affects the OPERABILITY of systems required for the current operating mode OR for safe shutdown.
- OR-
2. FIRE or EXPLOSION that causes visible damage to any of the following structures: containments, auxiliary buildings, essential service water system enclosures, auxiliary feedwater pump rooms, refueling water storage tank, or condensate storage tank.

BASIS (References)

EXPLOSION – A rapid, violent, uncontained combustion or catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures or equipment.

If one of two redundant trains remains operable, then this EAL is not applicable. The word “OPERABILITY” refers to the definition in the Technical Specifications where required redundant safety equipment will be made inoperable.

The purpose of this EAL is to address only FIRES which are potentially significant precursors to safety system damage. This excludes such items as FIRES within office buildings, waste basket FIRES, and other small FIRES of no consequence. This EAL applies to building and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where the safety system performance would be adversely affected.

Only EXPLOSIONs of significant force to cause damage (deformation, scorching) to structures or equipment required for safe operation should be considered.

TERMINATION/RECOVERY CRITERIA

Plant capability to operate safely no longer affected by the event.

Reference	PMP-2080-EPP-101	Rev. 19	Page 61 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: UNUSUAL EVENT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of TOXIC or flammable gases deemed detrimental to safe operation of the plant.

MODE APPLICABILITY

All

<p>NOTE: 1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, contains instructions for control room isolation in the event of a TOXIC gas release.</p>

EAL THRESHOLD VALUE

1. Release of TOXIC or flammable gases within or near site boundary that may affect normal operation of the plant.
- OR-**
2. Report by local, county, or state officials of potential evacuation of site personnel based on offsite event.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.

This initiating condition is based on release in concentrations within the site boundary that will affect the health and safety of plant personnel or affect safe operation of the plant.

The potential for the degradation in the level of safety of the plant through the affect of TOXIC OR flammable gas on the health of personnel or operation of the plant is to be considered for declaration of the UNUSUAL EVENT. The source of the TOXIC or flammable gas could be from inside or outside the site.

Although carbon dioxide (CO2) concentrations can be lethal, it is not considered a TOXIC gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINATION/RECOVERY CRITERIA

The release of TOXIC material is terminated and the operational impact of the release has been eliminated.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 61 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: UNUSUAL EVENT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of TOXIC or flammable gases deemed detrimental to safe operation of the plant.

MODE APPLICABILITY

All

<p>NOTE: 1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, contains instructions for control room isolation in the event of a TOXIC gas release.</p>

EAL THRESHOLD VALUE

1. Release of TOXIC or flammable gases within or near site boundary that may affect normal operation of the plant.
- OR-**
2. Report by local, county, or state officials of potential evacuation of site personnel based on offsite event.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.

This initiating condition is based on release in concentrations within the site boundary that will affect the health and safety of plant personnel or affect safe operation of the plant.

The potential for the degradation in the level of safety of the plant through the affect of TOXIC OR flammable gas on the health of personnel or operation of the plant is to be considered for declaration of the UNUSUAL EVENT. The source of the TOXIC or flammable gas could be from inside or outside the site.

Although carbon dioxide (CO2) concentrations can be lethal, it is not considered a TOXIC gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINATION/RECOVERY CRITERIA

The release of TOXIC material is terminated and the operational impact of the release has been eliminated.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 62 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: ALERT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of TOXIC of flammable gases within a facility structure which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

<p>NOTE: 1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, contains instructions for control room isolation in the event of a TOXIC gas release.</p>

EAL THRESHOLD VALUE

1. Report or detection of TOXIC gases within a facility structure in concentrations that will be life threatening to plant personnel.

-OR-

2. Report or detection of flammable gases within a facility structure in concentrations that will affect the safe operation of the plant.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.

This EAL is based on gases that have entered plant structures that will affect the safe operation of the plant. These structures include buildings and areas contiguous to plant vital areas and other significant buildings or area. The intent of this EAL is not to include buildings that are not contiguous or immediately adjacent to plant vital areas. The source of the TOXIC or flammable gas could be from inside or outside the site.

The source of the release is not of immediate concern for these threshold values. The concern is for the health and safety of plant personnel and their ability to maintain the plant in a safe operating condition.

This EAL is reached whenever the shift manager determines that protective gear is required to be worn by plant personnel required to safely operate the unit.

Reference	PMP-2080-EPP-101	Rev. 19	Page 62 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: ALERT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of TOXIC of flammable gases within a facility structure which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

<p>NOTE: 1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, contains instructions for control room isolation in the event of a TOXIC gas release.</p>

EAL THRESHOLD VALUE

1. Report or detection of TOXIC gases within a facility structure in concentrations that will be life threatening to plant personnel.

-OR-

2. Report or detection of flammable gases within a facility structure in concentrations that will affect the safe operation of the plant.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.

This EAL is based on gases that have entered plant structures that will affect the safe operation of the plant. These structures include buildings and areas contiguous to plant vital areas and other significant buildings or area. The intent of this EAL is not to include buildings that are not contiguous or immediately adjacent to plant vital areas. The source of the TOXIC or flammable gas could be from inside or outside the site.

The source of the release is not of immediate concern for these threshold values. The concern is for the health and safety of plant personnel and their ability to maintain the plant in a safe operating condition.

This EAL is reached whenever the shift manager determines that protective gear is required to be worn by plant personnel required to safely operate the unit.

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Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Although carbon dioxide (CO₂) concentrations can be lethal, it is not considered a TOXIC gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINATION/RECOVERY CRITERIA

Plant operations are no longer affected.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 63 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Although carbon dioxide (CO₂) concentrations can be lethal, it is not considered a TOXIC gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINATION/RECOVERY CRITERIA

Plant operations are no longer affected.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 64 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-8, Unusual Event, ISFSI

Initiating Condition:

Damage to a loaded cask CONFINEMENT BOUNDARY.

Operating Mode Applicability:

Not Applicable

EALs:

1. Damage to a loaded cask CONFINEMENT BOUNDARY.

Basis:

Generic

An Unusual Event in this IC is categorized on the basis of the occurrence of an event of sufficient magnitude that a loaded cask CONFINEMENT BOUNDARY is damaged or violated. This includes classification based on a loaded fuel storage cask CONFINEMENT BOUNDARY loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

The results of the ISFSI Safety Analysis Report (SAR) per NUREG 1536 or SAR referenced in the cask's Certificate of Compliance and the related NRC Safety Evaluation Report identify natural phenomena events and accident conditions that could potentially effect the CONFINEMENT BOUNDARY. This EAL addresses a dropped cask, a tipped over cask, EXPLOSION, PROJECTILE damage, FIRE damage or natural phenomena affecting a cask (e.g., seismic event, tornado, etc.).

Site Specific

None

Basis Reference(s):

NEI 99-01, Rev 5 E-HU1, Damage to a loaded cask CONFINEMENT BOUNDARY.

Reference	PMP-2080-EPP-101	Rev. 19	Page 64 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-8, Unusual Event, ISFSI

Initiating Condition:

Damage to a loaded cask CONFINEMENT BOUNDARY.

Operating Mode Applicability:

Not Applicable

EALs:

1. Damage to a loaded cask CONFINEMENT BOUNDARY.

Basis:

Generic

An Unusual Event in this IC is categorized on the basis of the occurrence of an event of sufficient magnitude that a loaded cask CONFINEMENT BOUNDARY is damaged or violated. This includes classification based on a loaded fuel storage cask CONFINEMENT BOUNDARY loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

The results of the ISFSI Safety Analysis Report (SAR) per NUREG 1536 or SAR referenced in the cask's Certificate of Compliance and the related NRC Safety Evaluation Report identify natural phenomena events and accident conditions that could potentially effect the CONFINEMENT BOUNDARY. This EAL addresses a dropped cask, a tipped over cask, EXPLOSION, PROJECTILE damage, FIRE damage or natural phenomena affecting a cask (e.g., seismic event, tornado, etc.).

Site Specific

None

Basis Reference(s):

NEI 99-01, Rev 5 E-HU1, Damage to a loaded cask CONFINEMENT BOUNDARY.

Reference	PMP-2080-EPP-101	Rev. 19	Page 65 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

N-1 to N-7: UNUSUAL EVENT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE THE PROTECTED AREA

INITIATING CONDITION

Natural or destructive phenomena inside protected area.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time.
-OR-
2. Report of a tornado strike within the protected area.
-OR-
3. Vehicle collision affecting structures or systems within the protected area.
-OR-
4. Main turbine rotating component failure causing visible damage or damage to the generator seals.
-OR-
5. Report by plant personnel of an unanticipated EXPLOSION within the protected area boundary resulting in visible damage to permanent structures or equipment.

BASIS (References)

These threshold values are natural or destructive phenomena which represent potential degradation of the level of safety of the plant. The affects of the phenomena should also be evaluated on a system or component basis in relation to the Technical Specifications and evaluated for further classification via either Site Emergency Coordinator (SEC) judgment or plant procedures as appropriate.

Threshold Value 1 – Seismic events at the lowest instrument activation, 0.02g (or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time) may cause damage to systems and represent a potential degradation of the level of safety of the plant. A confirmation call to the National Earthquake Center will confirm that an earthquake has occurred and may provide an estimate of the magnitude of the earthquake in the vicinity of Cook Nuclear Plant. Further information regarding anticipated actions may be found in plant procedures OHP-4022-001-007, Earth Quake.

Reference	PMP-2080-EPP-101	Rev. 19	Page 65 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

N-1 to N-7: UNUSUAL EVENT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE THE PROTECTED AREA

INITIATING CONDITION

Natural or destructive phenomena inside protected area.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time.
-OR-
2. Report of a tornado strike within the protected area.
-OR-
3. Vehicle collision affecting structures or systems within the protected area.
-OR-
4. Main turbine rotating component failure causing visible damage or damage to the generator seals.
-OR-
5. Report by plant personnel of an unanticipated EXPLOSION within the protected area boundary resulting in visible damage to permanent structures or equipment.

BASIS (References)

These threshold values are natural or destructive phenomena which represent potential degradation of the level of safety of the plant. The affects of the phenomena should also be evaluated on a system or component basis in relation to the Technical Specifications and evaluated for further classification via either Site Emergency Coordinator (SEC) judgment or plant procedures as appropriate.

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Reference	PMP-2080-EPP-101	Rev. 19	Page 66 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

A call to one of the following may be used to verify/confirm a seismic event. National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), Local television stations, or University monitoring stations. The National Earthquake Center website can be used as a source of verification. The website is www.earthquake.usgs.gov.

Threshold Value 2 – Any report that a tornado has touched down within the protected area.

Threshold Value 3 – A collision of any vehicle on land, from the air, or on water (plane, train, barge, etc.) which affects structures or equipment within the protected area may potentially damage plant structures containing functions and systems required for safe shutdown of the plant. If the crash is confirmed to affect a plant vital area, the event may be escalated to Alert.

Threshold Value 4 – Failure of the rotating components has the potential for leakage of flammable fluids (oil and hydrogen) into the turbine building.

Threshold Value 5 – Only those EXPLOSIONs of sufficient force to damage permanent structures or equipment within the protected area should be considered. As used here an EXPLOSION is a rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment, that potentially imparts significant energy to near-by structures and materials. No attempt is made in the EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage (e.g., deformation, scorching) is sufficient for declaration. The SEC also needs to consider any security aspects of the EXPLOSION, if applicable.

TERMINATION/RECOVERY CRITERIA

No further hazard exists, and damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

A separate ECC category name was established for these “Natural or Destructive Phenomena”. They are included in the “Hazards And Other Conditions” Category in NUMARC/NESP 007.

Reference	PMP-2080-EPP-101	Rev. 19	Page 66 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

A call to one of the following may be used to verify/confirm a seismic event. National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), Local television stations, or University monitoring stations. The National Earthquake Center website can be used as a source of verification. The website is www.earthquake.usgs.gov.

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TERMINATION/RECOVERY CRITERIA

No further hazard exists, and damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

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Reference	PMP-2080-EPP-101	Rev. 19	Page 67 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

**N-1 to N-7: ALERT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE A VITAL AREA
INITIATING CONDITION**

Natural or destructive phenomena inside vital areas.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time AND which causes visible major damage to structures, systems, and components in the vital area or causes a plant trip to occur.
-OR-
2. Report of a tornado strike in a plant vital area or SUSTAINED high wind (> 15 min.) greater than 90 miles per hour.
-OR-
3. Report of visible structural damage to a structure containing systems required to establish and maintain cold shutdown.
-OR-
4. Vehicle collision affecting a vital area.
-OR-
5. Turbine failure generated missiles penetrating a vital area.
-OR-
6. Flooding in a vital area affecting safety related equipment.

BASIS (References)

These threshold values are natural or destructive phenomena which represent actual or potential substantial degradation of the level of safety of the plant. The affects of the phenomena should also be evaluated on a system or component basis in relation to the Technical Specifications and evaluated for further classification via either Site Emergency Coordinator (SEC) judgment or plant procedures as appropriate.

Threshold Value 1 – Seismic events at the lowest instrument activation (0.02g ground acceleration) or ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time. The effect of the earthquake has significantly affected plant operations (up to and including manual or automatic plant trip) or has caused visible damage that has the potential for major degradation of systems required to maintain the plant in a safe shutdown condition. A call to the National Earthquake Center will confirm that an earthquake has occurred and may provide an estimate of the magnitude of the earthquake in the vicinity of the Cook Nuclear Plant. Operator walkdowns of plant systems, structures and components will be performed to assess potential damage levels.

Reference	PMP-2080-EPP-101	Rev. 19	Page 67 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

**N-1 to N-7: ALERT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE A VITAL AREA
INITIATING CONDITION**

Natural or destructive phenomena inside vital areas.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time AND which causes visible major damage to structures, systems, and components in the vital area or causes a plant trip to occur.
-OR-
2. Report of a tornado strike in a plant vital area or SUSTAINED high wind (> 15 min.) greater than 90 miles per hour.
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Reference	PMP-2080-EPP-101	Rev. 19	Page 68 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

A call to one of the following may be used to verify/confirm a seismic event. National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), Local television stations, or, University monitoring stations. The National Earthquake Center website can be used as a source of verification. The website is www.earthquake.usgs.gov.

Threshold Value 2 – A tornado strike must include an affect on systems or components that affects the operability or integrity of the system or structure within a vital area. The threshold value of 90 mph is the FSAR design basis wind load.

Threshold Value 3 – Should be used in conjunction with investigation of threshold values 1 and 2, or on a stand alone basis. A detailed description or assessment of damage is not intended to meet the intent of this threshold value. The list of critical structures is the same as that included under H-4 ALERT (containments, auxiliary buildings, ESW system enclosures, auxiliary feedwater pump rooms, refueling water storage tank, condensate storage tank).

Threshold Value 4 – A collision by any vehicle on land, from the air, or on water (plane, train, barge, etc.) which affects structures or equipment within a vital area.

Threshold Value 5 – This threshold value addresses the threat to safety equipment imposed by missiles generated by main turbine rotating component failures. This includes all areas classified as vital areas of the plant.

Threshold Value 6 – Flooding in vital areas which affect OPERABILITY of safety related systems or components. The source of the flooding need not be known.

The word “OPERABILITY” refers to the definition in the Technical Specifications where required redundant safety equipment will be made inoperable. The only types of floods anticipated to trigger this threshold are major catastrophic pipe ruptures in the plant that have not been previously evaluated or floods caused by severe external phenomena such as seiches.

TERMINATION/RECOVERY CRITERIA

No further hazard exists, damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

A separate ECC category name was established for these “Natural or Destructive Phenomena.” They are included in the “Hazards And Other Conditions” category in NUMARC/NESP 007.

The EAL for earthquakes does include a real time seismic instrumentation reading. Cook Nuclear Plant seismic instrumentation does not provide indication of the level of earthquake as an Operations Basis Earthquake (OBE) or Design Basis Earthquake (DBE). This EAL is written using the operator assessment method specified in NUMARC/NESP 007.

Reference	PMP-2080-EPP-101	Rev. 19	Page 68 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

A call to one of the following may be used to verify/confirm a seismic event. National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), Local television stations, or, University monitoring stations. The National Earthquake Center website can be used as a source of verification. The website is www.earthquake.usgs.gov.

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Threshold Value 4 – A collision by any vehicle on land, from the air, or on water (plane, train, barge, etc.) which affects structures or equipment within a vital area.

Threshold Value 5 – This threshold value addresses the threat to safety equipment imposed by missiles generated by main turbine rotating component failures. This includes all areas classified as vital areas of the plant.

Threshold Value 6 – Flooding in vital areas which affect OPERABILITY of safety related systems or components. The source of the flooding need not be known.

The word “OPERABILITY” refers to the definition in the Technical Specifications where required redundant safety equipment will be made inoperable. The only types of floods anticipated to trigger this threshold are major catastrophic pipe ruptures in the plant that have not been previously evaluated or floods caused by severe external phenomena such as seiches.

TERMINATION/RECOVERY CRITERIA

No further hazard exists, damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

A separate ECC category name was established for these “Natural or Destructive Phenomena.” They are included in the “Hazards And Other Conditions” category in NUMARC/NESP 007.

The EAL for earthquakes does include a real time seismic instrumentation reading. Cook Nuclear Plant seismic instrumentation does not provide indication of the level of earthquake as an Operations Basis Earthquake (OBE) or Design Basis Earthquake (DBE). This EAL is written using the operator assessment method specified in NUMARC/NESP 007.

Reference	PMP-2080-EPP-101	Rev. 19	Page 69 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: UNUSUAL EVENT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Unplanned release of gaseous or liquid radioactivity to the environment that exceeds two times the ODCM release limits for 60 minutes or longer.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors that exceeds 2 times the high alarm setpoint for 60 minutes or longer.

- VRS-1500/2500 (Noble Gas)
- SRA-1800/2800 (Noble Gas)
- SRA-1900/2900 (Noble Gas)
- R-20
- R-28

-OR-

2. A VALID radiation monitor reading 2 times the high alarm setpoint for any monitored release pathway for \geq 60 minutes.

-OR-

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding 2 times the ODCM maximum instantaneous release limit for \geq 60 minutes.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

Reference	PMP-2080-EPP-101	Rev. 19	Page 69 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: UNUSUAL EVENT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Unplanned release of gaseous or liquid radioactivity to the environment that exceeds two times the ODCM release limits for 60 minutes or longer.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors that exceeds 2 times the high alarm setpoint for 60 minutes or longer.

- VRS-1500/2500 (Noble Gas)
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- SRA-1900/2900 (Noble Gas)
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BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

Reference	PMP-2080-EPP-101	Rev. 19	Page 70 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Environmental release limits for effluent radiation monitor alarms are calculated using methods specified in the offsite dose calculation manual (ODCM). An UNPLANNED release in excess of two times the ODCM release limit for 60 minutes, or longer, represents an uncontrolled situation, and hence, a potential degradation in the level of safety. Although the final integrated dose is very low in the Unusual Event emergency class, the degradation in plant control implied by the fact that the release cannot be terminated in 60 minutes is the primary concern.

Declaration of an Unusual Event should be made as soon as it is determined that the release duration has or will likely exceed 60 minutes. A dose assessment should be performed to ensure that a higher classification is not warranted. If the monitor reading(s) is sustained for longer than 60 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

Radioactive gaseous release pathways are monitored by either the unit vent monitor (VRS-1500/2500), the gland steam condenser exhaust effluent monitors (SRA-1800/2800), the steam jet air ejector vent effluent monitors (SRA-1900/2900), or the steam generator relief monitors. The first three monitors are included in threshold 1. Steam generator relief monitors are excluded. The reason is that radioactive gas release via the steam generator PORVs and safety valves is believed to be a pathway that could not, under normal operating conditions, lead to release of radioactive gases to the environment in sufficient amounts so as to cause exceeding the technical specification limits. The steam generator relief monitors are included as an EAL threshold in the site area emergency classification for abnormal release of radioactive materials.

With the exception of possible releases from the essential water system (monitored by R-20 and R-28) release of radioactive liquids to the environment are planned and controlled. Before a batch of radioactive liquid is released to the environment, the sample is analyzed. If the radioactivity of the sample is within acceptable limits, the liquid will be released, monitored, and recorded. The alarm on the monitor is set in accordance with ODCM limits. To cover the potential that something may go wrong with the liquid release process, threshold 2 addresses any valid radiation monitor reading.

TERMINATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

Example EALs from NUMARC/NESP 007 numbers 3 and 4 (i.e., perimeter radiation monitoring and real time dose assessment) were not used because Cook Nuclear Plant does not have those capabilities.

The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

Reference	PMP-2080-EPP-101	Rev. 19	Page 70 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Environmental release limits for effluent radiation monitor alarms are calculated using methods specified in the offsite dose calculation manual (ODCM). An UNPLANNED release in excess of two times the ODCM release limit for 60 minutes, or longer, represents an uncontrolled situation, and hence, a potential degradation in the level of safety. Although the final integrated dose is very low in the Unusual Event emergency class, the degradation in plant control implied by the fact that the release cannot be terminated in 60 minutes is the primary concern.

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Radioactive gaseous release pathways are monitored by either the unit vent monitor (VRS-1500/2500), the gland steam condenser exhaust effluent monitors (SRA-1800/2800), the steam jet air ejector vent effluent monitors (SRA-1900/2900), or the steam generator relief monitors. The first three monitors are included in threshold 1. Steam generator relief monitors are excluded. The reason is that radioactive gas release via the steam generator PORVs and safety valves is believed to be a pathway that could not, under normal operating conditions, lead to release of radioactive gases to the environment in sufficient amounts so as to cause exceeding the technical specification limits. The steam generator relief monitors are included as an EAL threshold in the site area emergency classification for abnormal release of radioactive materials.

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TERMINATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

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The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

Reference	PMP-2080-EPP-101	Rev. 19	Page 71 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: ALERT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Any unplanned release of gaseous or liquid radioactivity to the environment, greater than 200 times ODCM release limits, which lasts for 15 minutes or longer.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors which is greater than 200 times high alarm setpoint for ≥ 15 minutes.
 - VRS-1500/2500 (Noble Gas)
 - SRA-1800/2800 (Noble Gas)
 - SRA-1900/2900 (Noble Gas)
 - R-20
 - R-28
- OR-**
2. A valid radiation monitor reading indicating 200 times the high alarm setpoint for any monitored release pathway for ≥ 15 minutes.
 - OR-**
3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding 200 times the ODCM maximum instantaneous release limit for ≥ 15 minutes.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

Reference	PMP-2080-EPP-101	Rev. 19	Page 71 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: ALERT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Any unplanned release of gaseous or liquid radioactivity to the environment, greater than 200 times ODCM release limits, which lasts for 15 minutes or longer.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors which is greater than 200 times high alarm setpoint for ≥ 15 minutes.
 - VRS-1500/2500 (Noble Gas)
 - SRA-1800/2800 (Noble Gas)
 - SRA-1900/2900 (Noble Gas)
 - R-20
 - R-28
- OR-**
2. A valid radiation monitor reading indicating 200 times the high alarm setpoint for any monitored release pathway for ≥ 15 minutes.
 - OR-**
3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding 200 times the ODCM maximum instantaneous release limit for ≥ 15 minutes.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

Reference	PMP-2080-EPP-101	Rev. 19	Page 72 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

This event escalates from the Unusual Event by escalating the magnitude of the release by a factor of 100. Prorating the 500 mR/yr criterion for both time (8766 hr/yr and the 200 multiplier, the associated site boundary dose rate would be 10 mR/hr. The required release duration was reduced to 15 minutes in recognition of the increased severity.

Declaration of an Alert should be made as soon as it is determined that the release duration has or will likely exceed 15 minutes. A dose assessment should be performed to ensure that a higher classification is not warranted. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

Further information on the basis of EAL threshold 1 cited above may be found in the basis document for the Unusual Event associated with R-1.

TERMINATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

Example EALs from NUMARC/NESP 007 numbers 3 and 4 (i.e., perimeter radiation monitoring and real time dose assessment) were not used because Cook Nuclear Plant does not have those capabilities.

The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

Reference	PMP-2080-EPP-101	Rev. 19	Page 72 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

This event escalates from the Unusual Event by escalating the magnitude of the release by a factor of 100. Prorating the 500 mR/yr criterion for both time (8766 hr/yr and the 200 multiplier, the associated site boundary dose rate would be 10 mR/hr. The required release duration was reduced to 15 minutes in recognition of the increased severity.

Declaration of an Alert should be made as soon as it is determined that the release duration has or will likely exceed 15 minutes. A dose assessment should be performed to ensure that a higher classification is not warranted. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

Further information on the basis of EAL threshold 1 cited above may be found in the basis document for the Unusual Event associated with R-1.

TERMINATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

Example EALs from NUMARC/NESP 007 numbers 3 and 4 (i.e., perimeter radiation monitoring and real time dose assessment) were not used because Cook Nuclear Plant does not have those capabilities.

The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

Reference	PMP-2080-EPP-101	Rev. 19	Page 73 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: SITE AREA EMERGENCY – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mrem TEDE or 500 mrem thyroid CDE for the actual or projected duration of the release.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 100 mR/hr β - γ or a CDE thyroid exceeding 500 mrem for 1 hour of inhalation at the site boundary.
-OR-
2. A valid dose assessment indicates greater than 100 mrem TEDE or 500 mrem CDE thyroid at the site boundary.
-OR-
3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with appropriate plant procedures.
 - VRS-1500/2500 > 1.07 E-1 μ ci/cc (Unit Vent)
 - SRA-1800/2800 > 7.90 E0 μ ci/cc (Steam Packing Exhauster)
 - SRA-1900/2900 > 1.95 E+3 μ ci/cc (Air Ejector)
 - MRA-1600/2600 > 1.00 E+2 μ ci/cc (SG PORV)

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in RMT-2080-TSC-001, Activation and Operation of the TSC.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Radiation readings can be confirmed by redundant instrumentation, local readings, or grab samples.

The 100 mrem integrated dose in this initiating condition, is based on the 10 CFR 20 annual average population exposure. This value also provides a desirable gradient (one order of magnitude) between

Reference	PMP-2080-EPP-101	Rev. 19	Page 73 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: SITE AREA EMERGENCY – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mrem TEDE or 500 mrem thyroid CDE for the actual or projected duration of the release.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 100 mR/hr β - γ or a CDE thyroid exceeding 500 mrem for 1 hour of inhalation at the site boundary.
-OR-
2. A valid dose assessment indicates greater than 100 mrem TEDE or 500 mrem CDE thyroid at the site boundary.
-OR-
3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with appropriate plant procedures.
 - VRS-1500/2500 > 1.07 E-1 μ ci/cc (Unit Vent)
 - SRA-1800/2800 > 7.90 E0 μ ci/cc (Steam Packing Exhauster)
 - SRA-1900/2900 > 1.95 E+3 μ ci/cc (Air Ejector)
 - MRA-1600/2600 > 1.00 E+2 μ ci/cc (SG PORV)

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in RMT-2080-TSC-001, Activation and Operation of the TSC.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Radiation readings can be confirmed by redundant instrumentation, local readings, or grab samples.

The 100 mrem integrated dose in this initiating condition, is based on the 10 CFR 20 annual average population exposure. This value also provides a desirable gradient (one order of magnitude) between

Reference	PMP-2080-EPP-101	Rev. 19	Page 74 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

the Alert, Site Area Emergency and General Emergency classes. The 500 mrem CDE thyroid dose is consistent with the 1.5 ratio of the EPA Protective Action Guidelines for Total Effective Dose Equivalent and Committed Dose Equivalent to the thyroid.

A release duration of 1 hour is assumed. For analysis of longer or shorter duration releases, the 100 mrem/hr TEDE and 500 mrem/hr CDE thyroid dose rates should be adjusted accordingly.

The releases on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 100 mrem/hour. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated) Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

Reference	PMP-2080-EPP-101	Rev. 19	Page 74 of 114
Emergency Classification			
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the Alert, Site Area Emergency and General Emergency classes. The 500 mrem CDE thyroid dose is consistent with the 1.5 ratio of the EPA Protective Action Guidelines for Total Effective Dose Equivalent and Committed Dose Equivalent to the thyroid.

A release duration of 1 hour is assumed. For analysis of longer or shorter duration releases, the 100 mrem/hr TEDE and 500 mrem/hr CDE thyroid dose rates should be adjusted accordingly.

The releases on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 100 mrem/hour. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated) Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

Reference	PMP-2080-EPP-101	Rev. 19	Page 75 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: GENERAL EMERGENCY – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mrem TEDE or 5000 mrem CDE thyroid for the actual or projected duration of the release.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 1000 mR/hr β - γ or a CDE thyroid exceeding 5000 mrem for 1 hour of inhalation at the site boundary.
- OR-**
2. A valid dose assessment indicates greater than 1000 mrem TEDE or 5000 mrem CDE thyroid at the site boundary.
- OR-**
3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with the appropriate plant procedures.
 - VRS-1500/2500 > 1.07 E+0 μ ci/cc (Unit Vent)
 - SRA-1800/2800 > 1.57 E+2 μ ci/cc (Steam Packing Exhauster)
 - SRA-1900/2900 > 5.78 E+3 μ ci/cc (Air Ejector)

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in RMT-2080-TSC-001, Activation and Operation of the TSC.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

Reference	PMP-2080-EPP-101	Rev. 19	Page 75 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: GENERAL EMERGENCY – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mrem TEDE or 5000 mrem CDE thyroid for the actual or projected duration of the release.

MODE APPLICABILITY

All

NOTE: The term “one or more of the following monitors” in the EAL means that the total of all monitors is to be considered when classifying an event.

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 1000 mR/hr β - γ or a CDE thyroid exceeding 5000 mrem for 1 hour of inhalation at the site boundary.
- OR-**
2. A valid dose assessment indicates greater than 1000 mrem TEDE or 5000 mrem CDE thyroid at the site boundary.
- OR-**
3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with the appropriate plant procedures.
 - VRS-1500/2500 > 1.07 E+0 μ ci/cc (Unit Vent)
 - SRA-1800/2800 > 1.57 E+2 μ ci/cc (Steam Packing Exhauster)
 - SRA-1900/2900 > 5.78 E+3 μ ci/cc (Air Ejector)

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in RMT-2080-TSC-001, Activation and Operation of the TSC.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

The 1000 mrem TEDE and 5000 mrem CDE thyroid values are based on the EPA protective action guidance which indicates that public protective actions are indicated if those values are exceeded. This is consistent with the emergency class description for a General Emergency.

A release duration of 1 hour has been assumed for analysis if longer or shorter duration, releases, the 1000 mrem/hr TEDE and 5000 mrem/hr thyroid CDE dose rates should be adjusted accordingly.

The release on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 1000 mrem. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated). Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

Reference	PMP-2080-EPP-101	Rev. 19	Page 76 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

The 1000 mrem TEDE and 5000 mrem CDE thyroid values are based on the EPA protective action guidance which indicates that public protective actions are indicated if those values are exceeded. This is consistent with the emergency class description for a General Emergency.

A release duration of 1 hour has been assumed for analysis if longer or shorter duration, releases, the 1000 mrem/hr TEDE and 5000 mrem/hr thyroid CDE dose rates should be adjusted accordingly.

The release on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 1000 mrem. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated). Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

Reference	PMP-2080-EPP-101	Rev. 19	Page 77 of 114
Emergency Classification			
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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: UNUSUAL EVENT – RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Unexpected higher in plant radiation levels.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

A valid unexpected reading on an area monitor 1000 times higher than the 24-hour average.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This event has a long lead time relative to potential radiological release outside the site boundary, thus impact to public health and safety is very low. It represents a degradation in the control of radioactive material, and represents a potential degradation in the level of safety of the plant.

TERMINATION/RECOVERY CRITERIA

The source of the higher radiation levels has been determined and levels have decreased to below the threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 AU2 example EALs numbers 1 and 2 are included under R-3, Unusual Event, “Loss of Water Level in Any Area Holding Irradiated Fuel.”

Reference	PMP-2080-EPP-101	Rev. 19	Page 77 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: UNUSUAL EVENT – RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Unexpected higher in plant radiation levels.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

A valid unexpected reading on an area monitor 1000 times higher than the 24-hour average.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This event has a long lead time relative to potential radiological release outside the site boundary, thus impact to public health and safety is very low. It represents a degradation in the control of radioactive material, and represents a potential degradation in the level of safety of the plant.

TERMINATION/RECOVERY CRITERIA

The source of the higher radiation levels has been determined and levels have decreased to below the threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 AU2 example EALs numbers 1 and 2 are included under R-3, Unusual Event, “Loss of Water Level in Any Area Holding Irradiated Fuel.”

Reference	PMP-2080-EPP-101	Rev. 19	Page 78 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: ALERT – RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Release of radioactive material or higher in-plant radiation levels within the facility that impede operation of systems required to maintain safe operation or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Unexpected radiation levels > 15 mR/hr in any of the following areas.
 - U1 Control Room
 - U2 Control Room
 - Central Alarm Station

-OR-

2. Radiation level of > 100 mR/hr at any station required by plant procedure OHP-4025-001-001, Emergency Remote Shutdown, and associated subtier procedures.

BASIS (References)

This IC addresses higher radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually, in order to maintain safe operation or perform a safe shutdown. It is impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the higher in radiation levels is not a concern of this IC. The SEC must consider the source or cause of the higher levels and determine if any other ICs may be involved. For example, a dose rate of 15 mR/hr in the Control Room may be a problem in itself. However, the higher reading may also be indicative of high dose rates in the containment due to LOCA. In this latter case, an SAE or GE may be indicated based on the fission product barrier matrix ICs.

These EALs could result in declaration of an Alert at one unit due to a radioactivity release or radiation shine resulting from a major accident at the other unit. This is appropriate if the higher levels impair operations at the operating unit. This IC is not meant to apply to higher levels in the containment dome radiation monitor as these are events which are addressed in the fission product barrier matrix ICs, nor is it intended to apply to anticipated temporary higher levels due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfer, etc.).

Reference	PMP-2080-EPP-101	Rev. 19	Page 78 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: ALERT – RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Release of radioactive material or higher in-plant radiation levels within the facility that impede operation of systems required to maintain safe operation or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Unexpected radiation levels > 15 mR/hr in any of the following areas.
 - U1 Control Room
 - U2 Control Room
 - Central Alarm Station

-OR-

2. Radiation level of > 100 mR/hr at any station required by plant procedure OHP-4025-001-001, Emergency Remote Shutdown, and associated subtier procedures.

BASIS (References)

This IC addresses higher radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually, in order to maintain safe operation or perform a safe shutdown. It is impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the higher in radiation levels is not a concern of this IC. The SEC must consider the source or cause of the higher levels and determine if any other ICs may be involved. For example, a dose rate of 15 mR/hr in the Control Room may be a problem in itself. However, the higher reading may also be indicative of high dose rates in the containment due to LOCA. In this latter case, an SAE or GE may be indicated based on the fission product barrier matrix ICs.

These EALs could result in declaration of an Alert at one unit due to a radioactivity release or radiation shine resulting from a major accident at the other unit. This is appropriate if the higher levels impair operations at the operating unit. This IC is not meant to apply to higher levels in the containment dome radiation monitor as these are events which are addressed in the fission product barrier matrix ICs, nor is it intended to apply to anticipated temporary higher levels due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfer, etc.).

Reference	PMP-2080-EPP-101	Rev. 19	Page 79 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Procedure OHP-4025-001-001, Emergency Remote Shutdown, refers to the emergency remote shutdown procedures for the Donald C. Cook Nuclear Plant. The procedure provides an alternate method of achieving safe shutdown with and without offsite power available in the event that control of plant equipment is not available from the control room or hot shutdown panel. The procedure gives priority to achieving reactor and turbine trip, establishing auxiliary feedwater for heat removal, and establishing charging for the reactor coolant pump seal injection and reactivity control. Special consideration is given to establishing primary and secondary system isolation and preventing FIRE induced spurious operation of plant equipment. In event that CVCS, AFW, CCW, and ESW crossties are utilized to achieve safe shutdown, special consideration is given to maintaining the opposite unit in safe configuration.

Threshold 2 refers to the specific locations throughout the plant that are necessary to man to perform the functions cited in procedure OHP-4025-001-001, Emergency Remote Shutdown, and related subtier procedures.

TERMINATION/RECOVERY CRITERIA

The source of the higher radiation levels is determined and levels have dropped to below their threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 79 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

Procedure OHP-4025-001-001, Emergency Remote Shutdown, refers to the emergency remote shutdown procedures for the Donald C. Cook Nuclear Plant. The procedure provides an alternate method of achieving safe shutdown with and without offsite power available in the event that control of plant equipment is not available from the control room or hot shutdown panel. The procedure gives priority to achieving reactor and turbine trip, establishing auxiliary feedwater for heat removal, and establishing charging for the reactor coolant pump seal injection and reactivity control. Special consideration is given to establishing primary and secondary system isolation and preventing FIRE induced spurious operation of plant equipment. In event that CVCS, AFW, CCW, and ESW crossties are utilized to achieve safe shutdown, special consideration is given to maintaining the opposite unit in safe configuration.

Threshold 2 refers to the specific locations throughout the plant that are necessary to man to perform the functions cited in procedure OHP-4025-001-001, Emergency Remote Shutdown, and related subtier procedures.

TERMINATION/RECOVERY CRITERIA

The source of the higher radiation levels is determined and levels have dropped to below their threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 80 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: UNUSUAL EVENT – LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

An UNCONTROLLED water level drop in the reactor refueling cavity, the spent fuel pit, and/or the fuel transfer canal with all irradiated fuel assemblies covered by water.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Inability to maintain water level in the spent fuel pit and/or transfer canal at $> 643' 4''$ with irradiated fuel present.

-OR-

2. Inability to maintain refueling cavity level $> 643' 4''$ with irradiated fuel in containment.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications or related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNCONTROLLED – A change that is not the result of a planned evolution.

The above EALs indicate events which have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low. Classification as an Unusual Event is warranted as a precursor to a more serious event.

The level of $643' 4''$ refers to the water level that is 23 feet above the top of the spent fuel, the plant technical specification limit. Prior to that water level being reached, the operators will be warned that the level decrease is occurring via the spent fuel pit low level alarm (RLA-500 at $644' 9''$ or $24' -5 \frac{1}{2}''$ above the top of the fuel) and low-low level alarm (RLA-501 $644' -2 \frac{1}{2}''$ or $23' -11''$ above the top of the fuel). Local visual confirmation that the level has dropped below the technical specification limit is possible since much less water than 23 feet is needed for protection of the plant staff from excessive radiological doses. Twenty-three feet of water is required to protect members of the public from the anticipated radiological consequences of a fuel handling accident.

TERMINATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful.

Reference	PMP-2080-EPP-101	Rev. 19	Page 80 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: UNUSUAL EVENT – LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

An UNCONTROLLED water level drop in the reactor refueling cavity, the spent fuel pit, and/or the fuel transfer canal with all irradiated fuel assemblies covered by water.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Inability to maintain water level in the spent fuel pit and/or transfer canal at > 643' 4" with irradiated fuel present.

-OR-

2. Inability to maintain refueling cavity level > 643' 4" with irradiated fuel in containment.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications or related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNCONTROLLED – A change that is not the result of a planned evolution.

The above EALs indicate events which have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low. Classification as an Unusual Event is warranted as a precursor to a more serious event.

The level of 643' 4" refers to the water level that is 23 feet above the top of the spent fuel, the plant technical specification limit. Prior to that water level being reached, the operators will be warned that the level decrease is occurring via the spent fuel pit low level alarm (RLA-500 at 644'9" or 24'-5 ½" above the top of the fuel) and low-low level alarm (RLA-501 644'-2 ½" or 23'-11" above the top of the fuel). Local visual confirmation that the level has dropped below the technical specification limit is possible since much less water than 23 feet is needed for protection of the plant staff from excessive radiological doses. Twenty-three feet of water is required to protect members of the public from the anticipated radiological consequences of a fuel handling accident.

TERMINATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful.

Reference	PMP-2080-EPP-101	Rev. 19	Page 81 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: ALERT – LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

Major damage to irradiated fuel or loss of water level that has or will uncover irradiated fuel outside of the Reactor Vessel.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Report of visual observation of irradiated fuel uncovered in the spent fuel pit, transfer canal, or refueling cavity.
- OR-**
2. An UNPLANNED VALID alarm on one of the following radiation monitors.
 - VRS – 1101/1201 (Unit 1) (Upper Containment)
 - VRS – 2101/2201 (Unit 2) (Upper Containment)
 - R-5 and VRS-5006 (SFP)
 - Portable radiation monitors
- OR-**
3. Water level < 632'4" in the spent fuel pit, transfer canal or reactor cavity that will result in fuel uncover.

BASIS (References)

UNPLANNED – Not anticipated as part of a scheduled testing, surveillance, or maintenance activity.

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

There is time available to take corrective actions, and there is little potential for substantial fuel damage. In addition, NUREG/CR-4982 indicates that even if corrective actions are not taken, no prompt fatalities are predicted, and that risk of injury is low. Thus, an Alert classification for this event is appropriate.

Reference	PMP-2080-EPP-101	Rev. 19	Page 81 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: ALERT – LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

Major damage to irradiated fuel or loss of water level that has or will uncover irradiated fuel outside of the Reactor Vessel.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Report of visual observation of irradiated fuel uncovered in the spent fuel pit, transfer canal, or refueling cavity.
- OR-**
2. An UNPLANNED VALID alarm on one of the following radiation monitors.
 - VRS – 1101/1201 (Unit 1) (Upper Containment)
 - VRS – 2101/2201 (Unit 2) (Upper Containment)
 - R-5 and VRS-5006 (SFP)
 - Portable radiation monitors
- OR-**
3. Water level < 632'4" in the spent fuel pit, transfer canal or reactor cavity that will result in fuel uncover.

BASIS (References)

UNPLANNED – Not anticipated as part of a scheduled testing, surveillance, or maintenance activity.

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

There is time available to take corrective actions, and there is little potential for substantial fuel damage. In addition, NUREG/CR-4982 indicates that even if corrective actions are not taken, no prompt fatalities are predicted, and that risk of injury is low. Thus, an Alert classification for this event is appropriate.

Reference	PMP-2080-EPP-101	Rev. 19	Page 82 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

632'4" refers to the water level that is 12 feet above the top of the spent fuel. Prior to that water level being reached, the operators will be warned that the level drop is occurring via the spent fuel pit low level alarm (RLA-500 at 644'9" or 24'-5 ½" above the top of the fuel) and low-low level alarm (RLA-501 644'-2 ½" or 23'-11" above the top of the fuel). Local visual confirmation that the level has dropped below 632'4" is possible since 12 feet of water provides adequate radiation shielding for staff personnel from excessive radiation doses in the area of the spent fuel pit.

VRS 1101/1201 and 2101/2201 are the upper containment area radiation monitors, and are set to alarm at ≤54 mR/hr. R-5 (RCC-330) and VRS-5006 are monitors in the spent fuel pit area. R-5 and VRS-5006 are set to alarm between 5 and 15 mr/hr.

In addition to the above radiation monitors, during refueling operations, portable area radiation monitors are located on the manipulator crane inside containment and on the spent fuel bridge crane. These monitors are set to alarm at radiation levels equal to about twice the background radiation, and thus provide early warning of any fuel uncover problems.

Due to the potential of high personal radiation exposure, actual observation of an irradiated fuel assembly without benefit of shielding is not considered likely. If (as indicated under threshold #1 above) this should occur, it is appropriate that an ALERT be declared.

TERMINATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 82 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

632'4" refers to the water level that is 12 feet above the top of the spent fuel. Prior to that water level being reached, the operators will be warned that the level drop is occurring via the spent fuel pit low level alarm (RLA-500 at 644'9" or 24'-5 ½" above the top of the fuel) and low-low level alarm (RLA-501 644'-2 ½" or 23'-11" above the top of the fuel). Local visual confirmation that the level has dropped below 632'4" is possible since 12 feet of water provides adequate radiation shielding for staff personnel from excessive radiation doses in the area of the spent fuel pit.

VRS 1101/1201 and 2101/2201 are the upper containment area radiation monitors, and are set to alarm at ≤54 mR/hr. R-5 (RCC-330) and VRS-5006 are monitors in the spent fuel pit area. R-5 and VRS-5006 are set to alarm between 5 and 15 mr/hr.

In addition to the above radiation monitors, during refueling operations, portable area radiation monitors are located on the manipulator crane inside containment and on the spent fuel bridge crane. These monitors are set to alarm at radiation levels equal to about twice the background radiation, and thus provide early warning of any fuel uncover problems.

Due to the potential of high personal radiation exposure, actual observation of an irradiated fuel assembly without benefit of shielding is not considered likely. If (as indicated under threshold #1 above) this should occur, it is appropriate that an ALERT be declared.

TERMINATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 83 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: ALERT – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was successful.

MODE APPLICABILITY

1, 2, and 3

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

This condition indicates failure of the automatic reactor protection system to trip the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus, plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded (rather than limiting safety system setpoint being exceeded) is specified here because failure of the automatic protection system is the issue.

A manual reactor trip is any set of actions by the reactor operator(s) in the control room which cause control rods to be rapidly inserted into the core and brings the reactor subcritical (e.g., reactor trip switches). Failure of manual trip would escalate the event to a Site Area Emergency.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 83 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: ALERT – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was successful.

MODE APPLICABILITY

1, 2, and 3

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

This condition indicates failure of the automatic reactor protection system to trip the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus, plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded (rather than limiting safety system setpoint being exceeded) is specified here because failure of the automatic protection system is the issue.

A manual reactor trip is any set of actions by the reactor operator(s) in the control room which cause control rods to be rapidly inserted into the core and brings the reactor subcritical (e.g., reactor trip switches). Failure of manual trip would escalate the event to a Site Area Emergency.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 84 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: SITE AREA EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was NOT successful.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was NOT terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

Automatic and manual trips are not considered successful if action away from the reactor control console was required to trip the reactor.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and as assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 84 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: SITE AREA EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was NOT successful.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was NOT terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

Automatic and manual trips are not considered successful if action away from the reactor control console was required to trip the reactor.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and as assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 85 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: GENERAL EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) to complete an automatic trip and manual trip was NOT successful and there is indication of an extreme challenge to the ability to cool the core.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

1. ATWS was NOT terminated by manual reactor trip from the control room.

-AND-

2. Subcriticality AND Core Cooling CSFSTs are RED.

-OR-

Subcriticality AND Heat Sink CSFSTs are RED.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

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

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

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200°F or that the reactor vessel water level is at approximately three feet and the core exit thermocouples are greater than 757°F. This GE EAL equates to a Core Cooling RED condition.

Reference	PMP-2080-EPP-101	Rev. 19	Page 85 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: GENERAL EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) to complete an automatic trip and manual trip was NOT successful and there is indication of an extreme challenge to the ability to cool the core.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

1. ATWS was NOT terminated by manual reactor trip from the control room.

-AND-

2. Subcriticality AND Core Cooling CSFSTs are RED.

-OR-

Subcriticality AND Heat Sink CSFSTs are RED.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

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

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

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200°F or that the reactor vessel water level is at approximately three feet and the core exit thermocouples are greater than 757°F. This GE EAL equates to a Core Cooling RED condition.

Reference	PMP-2080-EPP-101	Rev. 19	Page 86 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Another consideration is the inability to initially remove heat during the early stages of this sequence. If emergency feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. This EAL equates to a Heat Sink RED condition.

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (5% power as represented by a RED condition on the subcriticality CSFST), a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 86 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

Another consideration is the inability to initially remove heat during the early stages of this sequence. If emergency feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. This EAL equates to a Heat Sink RED condition.

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (5% power as represented by a RED condition on the subcriticality CSFST), a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

TERMINATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 87 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: UNUSUAL EVENT – LOSS OF AC POWER

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. ALL of the OFFSITE power sources indicated by the following list of transformers are LOST to the T-buses for > 15 minutes. NOTE: Evaluate each unit's power supply separately.
 - a. Normal Auxiliary Power Source (Auxiliary Transformer)
 - TR 1AB / TR 2AB
 - TR 1CD / TR 2CD
 - b. Preferred Offsite Power Sources (Reserve Transformer)
 - TR 101AB / TR 201AB
 - TR 101CD / TR 201CD
 - c. Emergency Offsite Power Source (69Kv Transformer)
 - T-12-EP-1
2. At least two emergency diesel generators per unit are supplying power to the emergency buses.

BASIS (References)

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

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. Backfeed through the unit auxiliary transformers is also considered an adequate source of offsite power.

TERMINATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 87 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: UNUSUAL EVENT – LOSS OF AC POWER

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. ALL of the OFFSITE power sources indicated by the following list of transformers are LOST to the T-buses for > 15 minutes. NOTE: Evaluate each unit's power supply separately.
 - a. Normal Auxiliary Power Source (Auxiliary Transformer)
 - TR 1AB / TR 2AB
 - TR 1CD / TR 2CD
 - b. Preferred Offsite Power Sources (Reserve Transformer)
 - TR 101AB / TR 201AB
 - TR 101CD / TR 201CD
 - c. Emergency Offsite Power Source (69Kv Transformer)
 - T-12-EP-1
2. At least two emergency diesel generators per unit are supplying power to the emergency buses.

BASIS (References)

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

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. Backfeed through the unit auxiliary transformers is also considered an adequate source of offsite power.

TERMINATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 88 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: ALERT – LOSS OF AC POWER

INITIATING CONDITION

AC Power capability to essential buses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in a station blackout.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

Power to the T-buses has been degraded to a single source of AC power consisting of only one of the following transformers or diesel generators for greater than 15 minutes.

- TR-101AB/TR-201AB
- TR-101CD/TR-201CD
- TR-1AB/TR-2AB
- TR-1CD/TR-2CD
- EDG 1AB/EDG 2AB
- EDG 1CD/EDG 2CD
- TR-12-EP-1

BASIS (References)

In Modes 1, 2, 3, and 4, the condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of all offsite power with a concurrent failure of the emergency to supply power to its emergency bus or failure of emergency diesels and four of the five offsite power transformers. The subsequent loss of another single power source would escalate the event to a Site Area Emergency.

TERMINATION/RECOVERY CRITERIA

Restore power from at least one additional source.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 88 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: ALERT – LOSS OF AC POWER

INITIATING CONDITION

AC Power capability to essential buses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in a station blackout.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

Power to the T-buses has been degraded to a single source of AC power consisting of only one of the following transformers or diesel generators for greater than 15 minutes.

- TR-101AB/TR-201AB
- TR-101CD/TR-201CD
- TR-1AB/TR-2AB
- TR-1CD/TR-2CD
- EDG 1AB/EDG 2AB
- EDG 1CD/EDG 2CD
- TR-12-EP-1

BASIS (References)

In Modes 1, 2, 3, and 4, the condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of all offsite power with a concurrent failure of the emergency to supply power to its emergency bus or failure of emergency diesels and four of the five offsite power transformers. The subsequent loss of another single power source would escalate the event to a Site Area Emergency.

TERMINATION/RECOVERY CRITERIA

Restore power from at least one additional source.

DEVIATION FROM NUMARC: None

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: SITE AREA EMERGENCY – LOSS OF AC POWER

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

1. Loss of both of the following T-buses for > 15 minutes

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

BASIS (References)

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency.

Per ECA-0.0, "Loss of All AC Power", no specific time limitation is given for restoration of power to the emergency buses. Therefore, Cook uses the NUMARC/NESP 007 generic limit of 15 minutes.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC S-2A, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

TERMINATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

Reference	PMP-2080-EPP-101	Rev. 19	Page 89 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: SITE AREA EMERGENCY – LOSS OF AC POWER

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

1. Loss of both of the following T-buses for > 15 minutes

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

BASIS (References)

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency.

Per ECA-0.0, "Loss of All AC Power", no specific time limitation is given for restoration of power to the emergency buses. Therefore, Cook uses the NUMARC/NESP 007 generic limit of 15 minutes.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC S-2A, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

TERMINATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

Reference	PMP-2080-EPP-101	Rev. 19	Page 90 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: GENERAL EMERGENCY – LOSS OF AC POWER

INITIATING CONDITION

Prolonged loss of ALL offsite power and ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

1. Loss of both of the following T-buses on a unit AND Core Cooling CSFST is ORANGE

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

-OR-

2. Loss of both of the following T-buses that is expected to last for > 4 hours

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

BASIS (References)

PROLONGED – Restoration of at least one emergency bus within four (4) hours is not likely.

Loss of all AC power compromises all plant safety systems requiring electric power including RHR ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power could lead to loss of fuel clad, RCS, and containment. In accordance with letters AEP:NRC:0537D, dated April 14, 1989, and AEP:NRC:0537E, dated March 30, 1990, Cook Nuclear Plant falls within the four hour station blackout (SBO) coping category.

Reference	PMP-2080-EPP-101	Rev. 19	Page 90 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: GENERAL EMERGENCY – LOSS OF AC POWER

INITIATING CONDITION

Prolonged loss of ALL offsite power and ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

NOTE: Evaluate each unit's power supply separately.

1. Loss of both of the following T-buses on a unit AND Core Cooling CSFST is ORANGE

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

-OR-

2. Loss of both of the following T-buses that is expected to last for > 4 hours

a. T11A, T11D (Unit 1)

-OR-

b. T21A, T21D (Unit 2)

BASIS (References)

PROLONGED – Restoration of at least one emergency bus within four (4) hours is not likely.

Loss of all AC power compromises all plant safety systems requiring electric power including RHR ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power could lead to loss of fuel clad, RCS, and containment. In accordance with letters AEP:NRC:0537D, dated April 14, 1989, and AEP:NRC:0537E, dated March 30, 1990, Cook Nuclear Plant falls within the four hour station blackout (SBO) coping category.

Reference	PMP-2080-EPP-101	Rev. 19	Page 91 of 114
Emergency Classification			
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This IC is specified to assure that in the unlikely event of a prolonged station blackout timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

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

TERMINATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established and other initiating conditions requiring maintenance of the general alert status are not present.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

Reference	PMP-2080-EPP-101	Rev. 19	Page 91 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

This IC is specified to assure that in the unlikely event of a prolonged station blackout timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

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

TERMINATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established and other initiating conditions requiring maintenance of the general alert status are not present.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

Reference	PMP-2080-EPP-101	Rev. 19	Page 92 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-3: SITE AREA EMERGENCY – LOSS OF DC POWER

INITIATING CONDITION

Loss of all vital DC power for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Loss of DC buses AB AND CD as indicated by bus voltage \leq 220 volts DC for greater than 15 minutes.

BASIS (References)

VITAL – All 250 volt DC power.

The loss of all vital DC power compromises the ability to monitor and control plant functions required for the protection of the public and is considered a loss of these functions. A prolonged loss of control power may result in core uncovering and loss of containment integrity if there is sufficient decay heat generated by the core and sensible heat in the RCS.

The threshold value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. This value is high enough to provide reasonable assurance that the 250 volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 210 volts.

The N Train battery supplies TDAFW control bus and the AMSAC inverter. Since these are backup systems, this bus is not included in this EAL.

TERMINATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 92 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-3: SITE AREA EMERGENCY – LOSS OF DC POWER

INITIATING CONDITION

Loss of all vital DC power for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Loss of DC buses AB AND CD as indicated by bus voltage \leq 220 volts DC for greater than 15 minutes.

BASIS (References)

VITAL – All 250 volt DC power.

The loss of all vital DC power compromises the ability to monitor and control plant functions required for the protection of the public and is considered a loss of these functions. A prolonged loss of control power may result in core uncovering and loss of containment integrity if there is sufficient decay heat generated by the core and sensible heat in the RCS.

The threshold value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. This value is high enough to provide reasonable assurance that the 250 volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 210 volts.

The N Train battery supplies TDAFW control bus and the AMSAC inverter. Since these are backup systems, this bus is not included in this EAL.

TERMINATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 93 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-5: SITE AREA EMERGENCY – LOSS OF SYSTEMS NEEDED TO ACHIEVE OR MAINTAIN HOT SHUTDOWN

INITIATING CONDITION

Complete loss of function needed to achieve or maintain Hot Shutdown.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Entry into one of the following procedures has occurred:

OHP 4023.FR-H1, “Response to Loss of Secondary Heat Sink”

-OR-

OHP 4023.FR-C1, “Response to Inadequate Core Cooling”

BASIS (References)

This EAL addresses complete loss of functions, including ultimate heat sink and reactivity control, required for hot shutdown with the reactor at pressure and temperature. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted.

Escalation to General Emergency would be via Abnormal Rad Levels/Radiological Effluent, Site Emergency Coordinator Judgment, or Fission Product Barrier Degradation ICs.

This threshold does not apply if OHP-4023.FR-H.1, Response to Loss of secondary Heat Sink, entry was created through operator action directed by an EOP.

TERMINATION/RECOVERY CRITERIA

Hot Shutdown operation is capable of being maintained.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 93 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-5: SITE AREA EMERGENCY – LOSS OF SYSTEMS NEEDED TO ACHIEVE OR MAINTAIN HOT SHUTDOWN

INITIATING CONDITION

Complete loss of function needed to achieve or maintain Hot Shutdown.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Entry into one of the following procedures has occurred:

OHP 4023.FR-H1, “Response to Loss of Secondary Heat Sink”

-OR-

OHP 4023.FR-C1, “Response to Inadequate Core Cooling”

BASIS (References)

This EAL addresses complete loss of functions, including ultimate heat sink and reactivity control, required for hot shutdown with the reactor at pressure and temperature. Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted.

Escalation to General Emergency would be via Abnormal Rad Levels/Radiological Effluent, Site Emergency Coordinator Judgment, or Fission Product Barrier Degradation ICs.

This threshold does not apply if OHP-4023.FR-H.1, Response to Loss of secondary Heat Sink, entry was created through operator action directed by an EOP.

TERMINATION/RECOVERY CRITERIA

Hot Shutdown operation is capable of being maintained.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 94 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: UNUSUAL EVENT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of safety system annunciators and/or indications in the Control Room for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of either:

a. A safety system annunciator panel in a unit for > 15 minutes:

-OR-

b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:

-AND-

2. Additional surveillance is required to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Compensatory Indications are available.

Reference	PMP-2080-EPP-101	Rev. 19	Page 94 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: UNUSUAL EVENT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of safety system annunciators and/or indications in the Control Room for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of either:

a. A safety system annunciator panel in a unit for > 15 minutes:

-OR-

b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:

-AND-

2. Additional surveillance is required to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Compensatory Indications are available.

Reference	PMP-2080-EPP-101	Rev. 19	Page 95 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications. Two types of failures are considered; the failure of redundant panels of indications important to safety and the loss from all sources of any key safety indications as to the status of the nuclear steam supply system.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has been provided for. This allows the Shift Manager to decide if the specific indications which are unavailable are needed to monitor the transient in progress.

2. “Additional Monitoring” means: In the opinion of the Shift Manager, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

3. “PLANNED action” means: Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

- Planned maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicated herein.

4. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

TERMINATION/RECOVERY CRITERIA

The minimum number of required annunciators are restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 95 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications. Two types of failures are considered; the failure of redundant panels of indications important to safety and the loss from all sources of any key safety indications as to the status of the nuclear steam supply system.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has been provided for. This allows the Shift Manager to decide if the specific indications which are unavailable are needed to monitor the transient in progress.

2. “Additional Monitoring” means: In the opinion of the Shift Manager, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

3. “PLANNED action” means: Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

- Planned maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicated herein.

4. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

TERMINATION/RECOVERY CRITERIA

The minimum number of required annunciators are restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 96 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: ALERT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of most or all safety system annunciators or indications in the Control Room with either (1) a significant transient in progress, or (2) compensatory non-alarming indicators are unavailable.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of either:

a. A safety system annunciator panel in a unit for > 15 minutes:

-OR-

b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:

-AND-

2. Additional surveillance is required to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Either:

a. A significant transient is in progress

-OR-

b. Compensatory Indications are not available.

Reference	PMP-2080-EPP-101	Rev. 19	Page 96 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: ALERT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of most or all safety system annunciators or indications in the Control Room with either (1) a significant transient in progress, or (2) compensatory non-alarming indicators are unavailable.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of either:

a. A safety system annunciator panel in a unit for > 15 minutes:

-OR-

b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:

-AND-

2. Additional surveillance is required to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Either:

a. A significant transient is in progress

-OR-

b. Compensatory Indications are not available.

Reference	PMP-2080-EPP-101	Rev. 19	Page 97 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has been provided for. This allows the Shift Manager to decide if the specific indications which are unavailable are needed to monitor the transient in progress.

2. “Additional Monitoring” means: In the opinion of the Shift Manager, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

3. “PLANNED action” means: Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

- Planned maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicated herein.

4a. A significant transient is not intended to be strictly defined, however, the following examples of “Significant Transient” include:

- Reactor Trip
- Unanticipated power changes of greater than 10%
- Valid ESF actuation

4b. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

TERMINATION/RECOVERY CRITERIA

The minimum number of required annunciators is restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 97 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has been provided for. This allows the Shift Manager to decide if the specific indications which are unavailable are needed to monitor the transient in progress.

2. “Additional Monitoring” means: In the opinion of the Shift Manager, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

3. “PLANNED action” means: Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

- Planned maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicated herein.

4a. A significant transient is not intended to be strictly defined, however, the following examples of “Significant Transient” include:

- Reactor Trip
- Unanticipated power changes of greater than 10%
- Valid ESF actuation

4b. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

TERMINATION/RECOVERY CRITERIA

The minimum number of required annunciators is restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

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Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: SITE AREA EMERGENCY – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Inability to monitor a significant transient in progress.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of ability to monitor alarms during a transient indicated by:
 - a. A Loss of Safety system annunciator panel(s) for > 15 minutes.
 - AND-**
 - b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:
 - AND-**
 - c. Compensatory indications are not available (PPC,SPDS)
 - AND-**
 - d. A significant transient is in progress.

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has

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Emergency Classification			
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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: SITE AREA EMERGENCY – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Inability to monitor a significant transient in progress.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of ability to monitor alarms during a transient indicated by:
 - a. A Loss of Safety system annunciator panel(s) for > 15 minutes.
 - AND-**
 - b. A known loss of Attachment 2 Critical Parameters indication for > 15 minutes:
 - AND-**
 - c. Compensatory indications are not available (PPC,SPDS)
 - AND-**
 - d. A significant transient is in progress.

BASIS (References)

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications.

1a. Loss of one or more of the following annunciator panels meets this criterion:

- Unit 1: 104-114, 119, 120
- Unit 2: 204-214, 219, 220

1b. Loss of indications found in Attachment 2, Critical NUREG 0737 Parameters, which in the opinion of the shift manager significantly affects the ability to safely operate or shutdown the unit, meets this criterion.

- NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunciators become unavailable.
- To prevent over classifying an event to a Site Area Emergency, Shift Manager discretion has

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1c. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

1d. A significant transient is not intended to be strictly defined, however, the following examples of “Significant Transient” include:

- Reactor Trip
- Unanticipated power changes of greater than 10%
- Valid ESF actuation

TERMINATION/RECOVERY CRITERIA

Transient is terminated and ability to monitor plant parameters is restored.

DEVIATION FROM NUMARC: None

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1c. “Compensatory Indications” include:

- PPC/PSS/SPDS
- Other Control Room indicators/recorders/computer points
- Local process indicators

1d. A significant transient is not intended to be strictly defined, however, the following examples of “Significant Transient” include:

- Reactor Trip
- Unanticipated power changes of greater than 10%
- Valid ESF actuation

TERMINATION/RECOVERY CRITERIA

Transient is terminated and ability to monitor plant parameters is restored.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-7: UNUSUAL EVENT – FUEL CLAD DEGRADATION

INITIATING CONDITION

Indication of Fuel Clad Degradation in Active Fuel

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Activity > 1.0 $\mu\text{Ci}/\text{gram}$ I-131 dose equivalent for >48 hours in the RCS.

-OR-

2. RCS activity > 100/E-bar $\mu\text{Ci}/\text{gram}$

BASIS (References)

This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems.

Per Technical Specification 3.4.16, “RCS Specific Activity”, fuel clad degradation is indicated if dose equivalent I-131 levels are greater than 1 $\mu\text{Ci}/\text{gram}$ for greater than 48 hours, dose equivalent I-131 levels are greater than the limits of Tech Spec Figure 3.4.16-1, or gross radioactivity levels are > 100/E-bar $\mu\text{Ci}/\text{gram}$.

The coolant sample activity values indicate fuel clad degradation greater than technical specification allowable limits.

TERMINATION/RECOVERY CRITERIA

Technical specification 3.4.16 limits or action requirements are met.

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-7: UNUSUAL EVENT – FUEL CLAD DEGRADATION

INITIATING CONDITION

Indication of Fuel Clad Degradation in Active Fuel

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Activity > 1.0 $\mu\text{Ci}/\text{gram}$ I-131 dose equivalent for >48 hours in the RCS.

-OR-

2. RCS activity > 100/E-bar $\mu\text{Ci}/\text{gram}$

BASIS (References)

This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems.

Per Technical Specification 3.4.16, “RCS Specific Activity”, fuel clad degradation is indicated if dose equivalent I-131 levels are greater than 1 $\mu\text{Ci}/\text{gram}$ for greater than 48 hours, dose equivalent I-131 levels are greater than the limits of Tech Spec Figure 3.4.16-1, or gross radioactivity levels are > 100/E-bar $\mu\text{Ci}/\text{gram}$.

The coolant sample activity values indicate fuel clad degradation greater than technical specification allowable limits.

TERMINATION/RECOVERY CRITERIA

Technical specification 3.4.16 limits or action requirements are met.

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-8: UNUSUAL EVENT – EXCESSIVE RCS LEAKAGE

INITIATING CONDITION

Reactor Coolant System Leakage

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Reactor coolant system leakage exceeds one of the following values:

1. Pressure boundary leakage > 10 gpm
-OR-
2. SG tube leakage > 10 gpm
-OR-
3. Identified leakage > 25 gpm
-OR-
4. Unidentified leakage > 10 gpm

BASIS (References)

This IC is included as an Unusual Event because it may be a precursor of more serious conditions and as a result, is considered to be a potential degradation of the level of safety of the plant. The 10 gpm value for unidentified or pressure boundary leakage was selected because it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance test (e.g., mass balances). The generic EAL for identified leakage is set at a higher value (25 gpm) due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage.

Only operating modes in which there is fuel in the reactor coolant system and the system is pressurized are specified.

TERMINATION/RECOVERY CRITERIA

Leakage is isolated OR Cold Shutdown (Mode 5) is established.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-8: UNUSUAL EVENT – EXCESSIVE RCS LEAKAGE

INITIATING CONDITION

Reactor Coolant System Leakage

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Reactor coolant system leakage exceeds one of the following values:

1. Pressure boundary leakage > 10 gpm
-OR-
2. SG tube leakage > 10 gpm
-OR-
3. Identified leakage > 25 gpm
-OR-
4. Unidentified leakage > 10 gpm

BASIS (References)

This IC is included as an Unusual Event because it may be a precursor of more serious conditions and as a result, is considered to be a potential degradation of the level of safety of the plant. The 10 gpm value for unidentified or pressure boundary leakage was selected because it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance test (e.g., mass balances). The generic EAL for identified leakage is set at a higher value (25 gpm) due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage.

Only operating modes in which there is fuel in the reactor coolant system and the system is pressurized are specified.

TERMINATION/RECOVERY CRITERIA

Leakage is isolated OR Cold Shutdown (Mode 5) is established.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-9: UNUSUAL EVENT – TECHNICAL SPECIFICATION TIME LIMIT EXPIRED

INITIATING CONDITION

Inability to reach required shutdown within Technical Specification time limits.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Unit is NOT placed in required MODE within Technical Specification LCO action time limit.

BASIS (References)

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the technical specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the site technical specification requires a four hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shutdown within the allowable action statement time in the technical specifications. An immediate Notification of an Unusual Event is required when the plant is not brought to the required operating mode within the allowable action statement time in the technical specifications. Declaration of an Unusual Event is based on the time at which the LCO-specified action statement time period elapses under the site technical specifications and is not related to how long a condition may have existed. Other required technical specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

TERMINATION/RECOVERY CRITERIA

Unit has reached cold shutdown (Mode 5) or other mode as specified in the limiting condition for operation action statement.

-OR-

Unit has been placed in a Mode where the LCO no longer applies.

DEVIATION FROM NUMARC: None

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Emergency Classification			
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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-9: UNUSUAL EVENT – TECHNICAL SPECIFICATION TIME LIMIT EXPIRED

INITIATING CONDITION

Inability to reach required shutdown within Technical Specification time limits.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Unit is NOT placed in required MODE within Technical Specification LCO action time limit.

BASIS (References)

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the technical specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the site technical specification requires a four hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shutdown within the allowable action statement time in the technical specifications. An immediate Notification of an Unusual Event is required when the plant is not brought to the required operating mode within the allowable action statement time in the technical specifications. Declaration of an Unusual Event is based on the time at which the LCO-specified action statement time period elapses under the site technical specifications and is not related to how long a condition may have existed. Other required technical specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

TERMINATION/RECOVERY CRITERIA

Unit has reached cold shutdown (Mode 5) or other mode as specified in the limiting condition for operation action statement.

-OR-

Unit has been placed in a Mode where the LCO no longer applies.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-10: UNUSUAL EVENT – LOSS OF COMMUNICATION SYSTEMS

INITIATING CONDITION

Unplanned loss of all onsite or offsite communications.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. UNPLANNED loss of ALL onsite electronic communication capabilities:

Telephone
Page System
Radios

-OR-

2. UNPLANNED loss of ALL offsite electronic communication capabilities:

Telephone (offsite)
Microwave transmission
NRC phone
State Police/Sheriff Department Emergency Radios

BASIS (References)

UNPLANNED – The loss of communication is not a result of planned testing, maintenance or surveillance activities.

The purpose of this IC and its associated generic EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks or the ability to communicate problems with offsite authorities. The loss of offsite communications capability is expected to be significantly more comprehensive than that addressed by 10 CFR 50.72. The loss of offsite communications capability is applicable when no direct means is available to communicate with or makes notifications to the load dispatcher or state and federal authorities.

TERMINATION/RECOVERY CRITERIA

At least one form of onsite and offsite communications has been established.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-10: UNUSUAL EVENT – LOSS OF COMMUNICATION SYSTEMS

INITIATING CONDITION

Unplanned loss of all onsite or offsite communications.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. UNPLANNED loss of ALL onsite electronic communication capabilities:

Telephone
Page System
Radios

-OR-

2. UNPLANNED loss of ALL offsite electronic communication capabilities:

Telephone (offsite)
Microwave transmission
NRC phone
State Police/Sheriff Department Emergency Radios

BASIS (References)

UNPLANNED – The loss of communication is not a result of planned testing, maintenance or surveillance activities.

The purpose of this IC and its associated generic EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks or the ability to communicate problems with offsite authorities. The loss of offsite communications capability is expected to be significantly more comprehensive than that addressed by 10 CFR 50.72. The loss of offsite communications capability is applicable when no direct means is available to communicate with or makes notifications to the load dispatcher or state and federal authorities.

TERMINATION/RECOVERY CRITERIA

At least one form of onsite and offsite communications has been established.

DEVIATION FROM NUMARC: None

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 UNUSUAL EVENT – LOSS OF AC POWER ALL OFFSITE POWER TO ESSENTIAL BUSES FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. ALL of the following OFFSITE power sources indicated by the following list of transformer are LOST to the T-buses for > 15 minutes.
 - a. Normal Auxiliary Power Source (Auxiliary Transformer)
 - TR 1AB / TR 2AB
 - TR 1CD / TR 2CD
 - b. Preferred Offsite Power Sources (Reserve Transformer)
 - TR 101AB / TR 201AB
 - TR 101CD / TR 201CD
 - c. Emergency Offsite Power Source (69Kv Transformer)
 - T-12-EP-1

-AND-

2. At least one emergency diesel generator per unit is supplying power to the emergency buses.

BASIS (References)

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

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. During outages, switchyard power may be supplied via the normal transformers aligned for “backfeed”. During outages, the backfeed alignment should be considered equivalent to

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 UNUSUAL EVENT – LOSS OF AC POWER ALL OFFSITE POWER TO ESSENTIAL BUSES FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. ALL of the following OFFSITE power sources indicated by the following list of transformer are LOST to the T-buses for > 15 minutes.
 - a. Normal Auxiliary Power Source (Auxiliary Transformer)
 - TR 1AB / TR 2AB
 - TR 1CD / TR 2CD
 - b. Preferred Offsite Power Sources (Reserve Transformer)
 - TR 101AB / TR 201AB
 - TR 101CD / TR 201CD
 - c. Emergency Offsite Power Source (69Kv Transformer)
 - T-12-EP-1

-AND-

2. At least one emergency diesel generator per unit is supplying power to the emergency buses.

BASIS (References)

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

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. During outages, switchyard power may be supplied via the normal transformers aligned for “backfeed”. During outages, the backfeed alignment should be considered equivalent to

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Emergency Classification			
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TERMINATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

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TERMINATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

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Emergency Classification			
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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 ALERT – LOSS OF AC POWER ALL OFFSITE POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

5, 6 or defueled

EAL THRESHOLD VALUE

1. Loss of both of the following T-buses for > 15 minutes when fuel is in the reactor.
 - a. T11A, T11D (Unit 1)

-OR-

 - b. T21A, T21D (Unit 2)
2. Loss of power to all the following buses when defueled T11A, T11D, T21A, T21D

BASIS (References)

In Modes 5 and 6, loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal, and ESW. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure. An Alert is declared in these modes due to the less severe threat to the protection of the health and safety of the public because of the much longer time available to restore power and decay heat removal systems. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Escalating to Site Area Emergency, if appropriate, is by Abnormal Rad Levels/Radiological Effluent, or SEC Judgment ICs.

When a unit is defueled, power from an essential bus on either unit will be sufficient to provide emergency power to required plant safety systems.

TERMINATION/RECOVERY CRITERIA

Restore power to at least one T-bus.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 ALERT – LOSS OF AC POWER ALL OFFSITE POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

5, 6 or defueled

EAL THRESHOLD VALUE

1. Loss of both of the following T-buses for > 15 minutes when fuel is in the reactor.
 - a. T11A, T11D (Unit 1)

-OR-

 - b. T21A, T21D (Unit 2)
2. Loss of power to all the following buses when defueled T11A, T11D, T21A, T21D

BASIS (References)

In Modes 5 and 6, loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal, and ESW. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure. An Alert is declared in these modes due to the less severe threat to the protection of the health and safety of the public because of the much longer time available to restore power and decay heat removal systems. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Escalating to Site Area Emergency, if appropriate, is by Abnormal Rad Levels/Radiological Effluent, or SEC Judgment ICs.

When a unit is defueled, power from an essential bus on either unit will be sufficient to provide emergency power to required plant safety systems.

TERMINATION/RECOVERY CRITERIA

Restore power to at least one T-bus.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: ALERT – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

Inability to maintain plant in Cold Shutdown.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling.”

-AND-

2. Temperature increase that either
 - a. exceeds Technical Specification cold shutdown limit of 200°F

-OR-

- b. results in an UNCONTROLLED increase in RCS temperature approaching the cold shutdown technical Specification limit of 200°F.

BASIS (References)

UNCONTROLLED – means a temperature increase that is not the result of a planned evolution. It is included to preclude the declaration of an emergency for circumstances where decay heat removal is intentionally removed from service and is controlled within the requirements of the technical specifications.

The threshold value indicates a substantial degradation in the level of safety of the plant by indicating a potential complete loss of the ability to removal decay heat in the Cold Shutdown and Refueling modes. NRC concerns expressed in Generic Letter 88-17, “Loss of Decay Heat Removal” are the basis for the threshold value as an anticipatory sequence leading to core uncover and clad damage.

The threshold related to an uncontrolled temperature rise is necessary to preserve the anticipatory philosophy of NUREG-0654 for events starting from temperatures much lower than 200°F. The inability to reach cold shutdown is to include instances where decay heat removal capability is lost prior to reaching the cold shutdown mode.

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Emergency Classification			
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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: ALERT – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

Inability to maintain plant in Cold Shutdown.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling.”

-AND-

2. Temperature increase that either
 - a. exceeds Technical Specification cold shutdown limit of 200°F

-OR-

- b. results in an UNCONTROLLED increase in RCS temperature approaching the cold shutdown technical Specification limit of 200°F.

BASIS (References)

UNCONTROLLED – means a temperature increase that is not the result of a planned evolution. It is included to preclude the declaration of an emergency for circumstances where decay heat removal is intentionally removed from service and is controlled within the requirements of the technical specifications.

The threshold value indicates a substantial degradation in the level of safety of the plant by indicating a potential complete loss of the ability to removal decay heat in the Cold Shutdown and Refueling modes. NRC concerns expressed in Generic Letter 88-17, “Loss of Decay Heat Removal” are the basis for the threshold value as an anticipatory sequence leading to core uncover and clad damage.

The threshold related to an uncontrolled temperature rise is necessary to preserve the anticipatory philosophy of NUREG-0654 for events starting from temperatures much lower than 200°F. The inability to reach cold shutdown is to include instances where decay heat removal capability is lost prior to reaching the cold shutdown mode.

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TERMINATION/RECOVERY CRITERIA

Cold shutdown conditions have been established and can be maintained.

DEVIATION FROM NUMARC

None.

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Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

Cold shutdown conditions have been established and can be maintained.

DEVIATION FROM NUMARC

None.

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: SITE AREA EMERGENCY – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

LOSS of water level in the reactor vessel that has or will uncover fuel in the reactor vessel.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

Loss of reactor vessel water level as indicated by:

1. LOSS of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling.”
- AND-**
2. Core uncover as indicated by:
 - a. RVLIS NR < 46% - 0 RCPs
 - OR-**
 - b. Reactor Vessel Water Level < 614’

BASIS (References)

LOSS – Inability to restore RHR operability (e.g., restart the RHR pumps) when required.

The threshold values indicate that severe core damage can occur and RCS integrity may not be assured and thus indicate failures of functions needed for the protection of the public.

These conditions address prolonged boiling as a result of loss of decay heat removal.

TERMINATION/RECOVERY CRITERIA

Restoration of lost core inventory is in progress, level is above the top of the active fuel, and decay heat removal capability has been restored.

DEVIATION FROM NUMARC:

None.

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: SITE AREA EMERGENCY – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

LOSS of water level in the reactor vessel that has or will uncover fuel in the reactor vessel.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

Loss of reactor vessel water level as indicated by:

1. LOSS of shutdown cooling as evidenced by entry into OHP 4022.017.001, “Loss of RHR Cooling.”
- AND-**
2. Core uncover as indicated by:
 - a. RVLIS NR < 46% - 0 RCPs
 - OR-**
 - b. Reactor Vessel Water Level < 614’

BASIS (References)

LOSS – Inability to restore RHR operability (e.g., restart the RHR pumps) when required.

The threshold values indicate that severe core damage can occur and RCS integrity may not be assured and thus indicate failures of functions needed for the protection of the public.

These conditions address prolonged boiling as a result of loss of decay heat removal.

TERMINATION/RECOVERY CRITERIA

Restoration of lost core inventory is in progress, level is above the top of the active fuel, and decay heat removal capability has been restored.

DEVIATION FROM NUMARC:

None.

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ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-5: UNUSUAL EVENT – FUEL CLAD DEGRADATION

INITIATING CONDITION

Fuel clad degradation.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. Activity > 1.0 $\mu\text{Ci}/\text{gram}$ I-131 dose equivalent for >48 hours in the RCS.

-OR-

2. RCS activity > 100/E-bar $\mu\text{Ci}/\text{gram}$

BASIS (References)

This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems.

Per Technical Specification 3.4.16, “RCS Specific Activity”, fuel clad degradation is indicated if dose equivalent I-131 levels are greater than 1 $\mu\text{Ci}/\text{gram}$ for greater than 48 hours, dose equivalent I-131 levels are greater than the limits of Tech Spec Figure 3.4.16-1, or gross radioactivity levels are > 100/E-bar $\mu\text{Ci}/\text{gram}$.

The coolant sample activity values indicate fuel clad degradation greater than technical specification allowable limits.

TERMINATION/RECOVERY CRITERIA

Technical Specification 3.4.16 limits or action requirements are met.

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

Reference	PMP-2080-EPP-101	Rev. 19	Page 110 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-5: UNUSUAL EVENT – FUEL CLAD DEGRADATION

INITIATING CONDITION

Fuel clad degradation.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. Activity > 1.0 $\mu\text{Ci}/\text{gram}$ I-131 dose equivalent for >48 hours in the RCS.

-OR-

2. RCS activity > 100/E-bar $\mu\text{Ci}/\text{gram}$

BASIS (References)

This IC is included as an Unusual Event because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems.

Per Technical Specification 3.4.16, “RCS Specific Activity”, fuel clad degradation is indicated if dose equivalent I-131 levels are greater than 1 $\mu\text{Ci}/\text{gram}$ for greater than 48 hours, dose equivalent I-131 levels are greater than the limits of Tech Spec Figure 3.4.16-1, or gross radioactivity levels are > 100/E-bar $\mu\text{Ci}/\text{gram}$.

The coolant sample activity values indicate fuel clad degradation greater than technical specification allowable limits.

TERMINATION/RECOVERY CRITERIA

Technical Specification 3.4.16 limits or action requirements are met.

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

Reference	PMP-2080-EPP-101	Rev. 19	Page 111 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-6: UNUSUAL EVENT – UNPLANNED LOSS OF ALL ONSITE OR OFFSITE COMMUNICATION CAPABILITIES

INITIATING CONDITION

Unplanned loss of all onsite or offsite communications.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

4. UNPLANNED loss of ALL onsite electronic communication capabilities:

- Telephone
- Page System
- Radios

-OR-

5. UNPLANNED loss of ALL offsite electronic communication capabilities:

- Telephone (offsite)
- Microwave transmission
- NRC phone
- State Police/Sheriff Department Emergency Radios

BASIS (References)

UNPLANNED – The loss of communication is not a result of planned testing, maintenance or surveillance activities.

The purpose of this IC and its associated generic EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks or the ability to communicate problems with offsite authorities. The loss of offsite communications capability is expected to be significantly more comprehensive than that addressed by 10 CFR 50.72. The loss of offsite communications capability is applicable when no direct means is available to communicate with or makes notifications to the load dispatcher or state and federal authorities.

Reference	PMP-2080-EPP-101	Rev. 19	Page 111 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-6: UNUSUAL EVENT – UNPLANNED LOSS OF ALL ONSITE OR OFFSITE COMMUNICATION CAPABILITIES

INITIATING CONDITION

Unplanned loss of all onsite or offsite communications.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

4. UNPLANNED loss of ALL onsite electronic communication capabilities:

- Telephone
- Page System
- Radios

-OR-

5. UNPLANNED loss of ALL offsite electronic communication capabilities:

- Telephone (offsite)
- Microwave transmission
- NRC phone
- State Police/Sheriff Department Emergency Radios

BASIS (References)

UNPLANNED – The loss of communication is not a result of planned testing, maintenance or surveillance activities.

The purpose of this IC and its associated generic EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks or the ability to communicate problems with offsite authorities. The loss of offsite communications capability is expected to be significantly more comprehensive than that addressed by 10 CFR 50.72. The loss of offsite communications capability is applicable when no direct means is available to communicate with or makes notifications to the load dispatcher or state and federal authorities.

Reference	PMP-2080-EPP-101	Rev. 19	Page 112 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

At least one form of onsite and offsite communications has been established.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 112 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)		Pages: 25 - 114

TERMINATION/RECOVERY CRITERIA

At least one form of onsite and offsite communications has been established.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 113 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-7 UNUSUAL EVENT – UNPLANNED LOSS OF DC POWER FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

UNPLANNED loss of 250 volt DC buses AB AND CD as indicated by bus voltage \leq 220 volts DC for greater than 15 minutes.

BASIS (References)

The purpose of this IC and its associated generic EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control equipment needed to respond to the loss.

The threshold value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. This value is high enough to provide reasonable assurance that the 250 volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 210 volts.

UNPLANNED is included in this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely, plants will perform maintenance on a train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to Alert will be per C-4, “Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel.”

Plant Specific Information

DC systems are not shared between Cook Units 1 and 2.

Reference	PMP-2080-EPP-101	Rev. 19	Page 113 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-7 UNUSUAL EVENT – UNPLANNED LOSS OF DC POWER FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

UNPLANNED loss of 250 volt DC buses AB AND CD as indicated by bus voltage \leq 220 volts DC for greater than 15 minutes.

BASIS (References)

The purpose of this IC and its associated generic EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control equipment needed to respond to the loss.

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Plant Specific Information

DC systems are not shared between Cook Units 1 and 2.

Reference	PMP-2080-EPP-101	Rev. 19	Page 114 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

The Cook 250 VDC system includes three major battery groups for each unit.

- Station or Plant Battery Train A (supplies 250 Bus CD)
- Station or Plant Battery Train B (supplies 250 Bus AB)
- N Train Battery

The N train battery supplies TDAFW control bus and the AMSAC inverter. Since these are backup systems, this bus is not included in this EAL.

The above symptoms include equipment which may be used to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations (i.e., annunciators, PZR PORVs, steam dumps, SG PORVs).

TERMINATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

Reference	PMP-2080-EPP-101	Rev. 19	Page 114 of 114
Emergency Classification			
Attachment 3	Basis For Emergency Action Levels (NRC Commitment 6489)	Pages: 25 - 114	

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TERMINATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101

Rev. No.: 19

Title: Emergency Classification

Alteration	Justification
This procedure revision implements the Cook Emergency Plan. This process is wholly controlled under 10 CFR 50.54 (Q) and plant procedure RMA-2080-EPA-008, Emergency Plan Management, therefore a 50.59 review is not required.	
10 CFR 50.54(q) review was performed and is referenced in the workflow for this revision.	
The conclusion was that the changes in this revision do continue to comply with the requirements of §50.47(b) and §50 Appendix E and the changes do not constitute a reduction in effectiveness. Therefore, the Cook Emergency Plan Implementing Procedure can be implemented without prior approval.	
Updated NUMARC EAL Basis for FR-H.1 application when AFW is throttled by an EOP directed action. The following EAL basis pages were updated; S-5, page 93 2.5P page 33 1.1P page 25	From procedure FR-H1 (Loss of Secondary Heat Sink), the Caution before Step 1 in procedure states... “If total feed flow is less than 240×10^3 pph due to operator action, this procedure should not be performed.” Therefore, the EPlan entry would not be performed as no actual loss of heat sink due to direct system malfunction or loss of fission product barrier has occurred. Based on this detail provided in FR-H.1 The E-Plan should not be entered for this condition. AR 2015-16244-4
Updated NUMARC EAL Basis to include new site procedures for non-fire related Control Room Evacuations. The following EAL basis pages were updated; H-3 Alert page 57 H-3 SAE page 58	New site procedures, 1(2)-OHP-4022-CRE-001, Control Room Evacuation, for non-fire related Control Room Evacuations have been created. GT 2015-13170-1 GT 2015-2243-1
Removed “pool” from the following sentence in NUMARC EAL Basis for R-3. “632’4” refers to the water level that is 12 feet above the top of the spent fuel pool.” The following EAL basis page was updated; R-3 Basis page 82	632’4” is an elevation above the fuel, not above the pool. Reviewer(s) comment.

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REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101

Rev. No.: 19

Title: Emergency Classification

Alteration	Justification
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10 CFR 50.54(q) review was performed and is referenced in the workflow for this revision.	
The conclusion was that the changes in this revision do continue to comply with the requirements of §50.47(b) and §50 Appendix E and the changes do not constitute a reduction in effectiveness. Therefore, the Cook Emergency Plan Implementing Procedure can be implemented without prior approval.	
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REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101

Rev. No.: 19

Title: Emergency Classification

Replaced “pool” with “pit” throughout.	The correct name is Spent Fuel <u>Pit</u> at Cook Nuclear Plant. No margin marks were used for these changes. Reviewer comment.
Updated NUMARC EAL Basis for Loss of Alarms or Indication to provide clear guidance. The following EAL basis pages were updated; S-6 Unusual Event page 94, 95 S-6 ALERT page 96, 97 S-6 SAE page 98, 99	These changes were from reviewer comments. The EAL was copied from Attachment 1 into the basis. The existing wording was rearranged to improve readability.

REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101

Rev. No.: 19

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<p>Updated NUMARC EAL Basis for Loss of Alarms or Indication to provide clear guidance.</p> <p>The following EAL basis pages were updated;</p> <p>S-6 Unusual Event page 94, 95</p> <p>S-6 ALERT page 96, 97</p> <p>S-6 SAE page 98, 99</p>	<p>These changes were from reviewer comments.</p> <p>The EAL was copied from Attachment 1 into the basis. The existing wording was rearranged to improve readability.</p>

REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101 Rev. No.: 19
Title: Emergency Classification

IMPLEMENTATION PLAN

Summary of Change

Refer to the Revision Summary.

Reason for Change

Refer to the Revision Summary.

Implementation Schedule

- PORC Week of 4/11/16
- Implementation Week of 4/18/2016

Training Needs

None

Expiration Date

None

Required Basis Documents Update

None

Related Processes and Procedures

None

Transition Plan

None

Related Equipment Modifications

None

Communication Plan

Provide Operations with a Crew Noteworthy Event after PORC approval.

Special Tools, Aids, Permits, Etc.

None

Related Action Requests

None

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REVISION SUMMARY

Procedure No.: PMP-2080-EPP-101 Rev. No.: 19
Title: Emergency Classification

IMPLEMENTATION PLAN

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Reason for Change

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Implementation Schedule

- PORC Week of 4/11/16
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Training Needs

None

Expiration Date

None

Required Basis Documents Update

None

Related Processes and Procedures

None

Transition Plan

None

Related Equipment Modifications

None

Communication Plan

Provide Operations with a Crew Noteworthy Event after PORC approval.

Special Tools, Aids, Permits, Etc.

None

Related Action Requests

None

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