Progress Energy	I INFORMATION USE

SHEARON HARRIS NUCLEAR POWER PLANT

PROCEDURE TYPE: EP Guidelines

NUMBER: **EP-EAL**

TITLE: **Emergency Action Level Guidelines**

APPROVED BY:

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PREFACE

The purpose of this document is to provide a summary of the Technical Basis and additional clarifying information on the HNP Emergency Action Levels as described in Plant Emergency Procedure PEP-110, "Emergency Classification and Protective Action Recommendations". This document is to be used for reference purposes only and **is not to be used in place of existing procedures**.

In many cases the format of PEP-110 does not allow for additional explanatory material and does not provide for the capture of the technical basis for the Emergency Action Level. This document is intended to capture the technical basis and provide the additional explanatory material that may provide insight to assist in the classification of events where some judgment is needed. It will also include some information from previous events.

Because changes in this document have the potential of introducing a decrease in effectiveness as they affect EAL classifications, any revisions will be reviewed and documented in accordance with REG-NGGC-0010.

The HNP EALs have three digit reference numbers assigned. These are in the format (X-Y-Z) where X = Category (1 - 11), Y = Identifier within Category, and Z = Classification (1-4).

The Category numbers are:

1 = Radiological Events
2 = Fuel Damage
3 = Loss of Secondary Coolant
4 = Loss of Reactor Coolant
5 = Loss of Power
6 = Loss of Indications/Communications
7 = Security Events
8 = Other Plant or Equipment Problems
9 = Natural Events
10 = Other Hazards
11 = Operator Judgment

The Classification numbers are:

1 = Unusual Event,
2 = Alert,
3 = Site Area Emergency,
4 = General Emergency.

These EAL reference numbers aid in communication of events between facilities and are linked to an EAL Reference Manual provided to offsite authorities which aids them in understanding the event, in layman's terms with graphical representations as applicable.

2.0 DEFINITIONS

To facilitate consistent interpretation and implementation of the EALs, the meaning of the following terms is presented in the context of their use.

1. Adverse Met Data: is defined as “G” stability class and a wind speed of 1.0 MPH.

2. Aircraft: Any weight-carrying structure that either under its own buoyancy or by dynamic energy is used to travel through the air. Examples include: hot-air balloon, blimp, airplane, glider, missile, helicopter, etc. An aircraft, excluding airliners, is not expected to cause significant damage to the plant.

3. Airliner: A large aircraft with the potential for causing significant damage to the plant. Specifically an airliner is a commercial aircraft used for passenger or cargo transport and is meant to be interpreted as aircraft as large as or larger than a 737, DC9, MD80, MD90, or 717, etc.

4. Cannot Be Determined: The current value or status of an identified parameter relative to that specified in the EAL cannot be ascertained using all available indications (direct and indirect, singly or in combination).

5. Cannot Be Maintained Above/Below: The value of the identified parameter(s) cannot be kept above/below specified limits. This determination is based upon an evaluation that considers both current and future system performance in relation to the current value and trend of the parameters. It does not imply that the actual value of the parameter must first pass beyond the specified limit.

6. Cannot Be Restored Above/Below: The value of the identified parameter(s) cannot be returned to above/below specified limits after having passed those limits. This determination is based upon an evaluation that considers both current and future system performance in relation to the current value and trend of the parameter(s). It does not imply any specific time interval, but does not permit prolonged operation beyond the limit without declaring the specified emergency classification. (May be used in combination with "C" above.)

7. Credible Imminent Security Threat exists if information has been received from a reliable offsite source indicating that a threat condition is about to happen.

8. Controlled Process: A planned activity for which the conditions specified in an EAL are anticipated to be or intentionally exceeded as part of an approved Procedure.

9. Exclusion Area Boundary (EAB): A circle of approximately 7000 ft. radius (1.3 miles).

10. Extraordinary Means: Actions not described in approved plant procedures. These include actions taken in accordance with 10CFR50.54(x).

11. Functional: A system or component is capable of performing its desired task under current conditions. A system or component may be declared inoperable per Technical Specifications and still be functional if it is still capable of operating and performing its desired task without the use of EXTRAORDINARY MEANS.

12. Hostile Action: An act toward the HNP 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 EAB). (NRC Bulletin 2005-02)

13. 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. (NEI Industry White Paper, November 15, 2005)

14. Loss Of: The system or component identified in the EAL cannot perform its intended function in any manner. This determination is less stringent than Operability under Technical Specifications. A system or component may be considered Inoperable in accordance with Technical Specifications and not be considered lost. A system or component may be declared inoperable while testing or maintenance is being performed, but if it can be restored to service, it is not lost. If a system or component can still perform its intended function, it is not lost.

15. Power Block: The following buildings and the Duct Banks serving them:

Containment	Reactor
Auxiliary Building	Turbine Building
Intake Structures	Waste Processing Building
Diesel Generator Building	Diesel Fuel Oil Storage
Fire House	Tank Area
Fuel Handling Building (including the “K” Area)	

16. Protected Area: The plant area inside the security fence including the Intake Structures.

17. Reactor Coolant System: The Reactor Coolant System (RCS) barrier is the RCS pressure boundary and includes the reactor vessel and all RCS piping up to the isolation valves.

18. Site Boundary (SB): A circle of approximately 2500 ft. radius (0.47 miles).

19. Shutdown: Reactor trip breakers open with reactor power less than 5% with a negative sustained startup rate.

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

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

3.0 FISSION PRODUCT BARRIER ANALYSIS

3.1 General

Each of the Fission Product Barriers is analyzed to determine if it is breached or in jeopardy. The first indication of either event results in declaring the specific barrier to be either breached or jeopardized. From an EAL declaration standpoint, it does not matter whether the barrier is breached or in jeopardy. However, it effects actions executed by other plant documents; therefore, the breach indicators are examined before the jeopardy indicators.

The assessment of plant conditions, performed as a part of plant operators progressing through the Emergency Operating Procedure (EOP) Network, identifies indications that would prove one or more of the Fission Product Barriers to be breached. The plant staff has analyzed the EOP Network to determine those points at which any one (or more) of the barriers indicates a breach. These points are identified in the EAL Flowpath as entry points T, U, and V. If a Fuel breach is indicated in the EOP Network, the EOP Network orders the operators to enter the EAL Flowpath at ENTRY POINT T. The same process is used for entry points U (RCS breached) and V (Containment breached).

EOP network references to EAL Flowpath Entry Points T, U, and V include the following conditions:

- Containment Hydrogen (H_2) concentration $\geq$ 4% results in Entry Points T and V for Fuel and Containment breach. Four percent H_2 is indicative of zirconium water reaction associated with inadequate core cooling and fuel damage. The Containment is classified as breached with H_2 in Containment being at the flammability threshold. This classification occurs well below the explosive limit of 18.2%.

- Procedure steps that have identified a Steam Generator Tube Rupture reference EAL Entry Point U, for a breach of the Reactor Coolant System fission product barrier.

- If the procedures identify an increase in Reactor Auxiliary Building radiation levels and a loss of primary coolant outside Containment, then EAL Entry Point V is also referenced for a loss of the Containment fission product barrier.

- Functional Restoration Procedures that direct the operations staff to vent the Reactor Coolant System (RCS) to Containment or to otherwise initiate a bleed path from the RCS to Containment refer to EAL Entry Point U for a breach of the RCS fission product barrier.

These entry points serve two purposes:

1. They force a reentry into the EAL Flowpath in case the Emergency Action Level may need to be upgraded.

2. Since the entry point, as determined by the EOP's, has already determined that one of the Fission Product Barriers is breached, it reduces the time necessary to arrive at the correct Emergency Classification.

The assessment of the three fission product barriers is performed using the first column of Side 1 of the EAL flow path. The decision blocks used to evaluate the fission product barriers are grouped together such that the Fuel, then Reactor Coolant System, and lastly the Containment are evaluated.

Some parameters or conditions are indicative of a breach of more than one barrier. In these cases, two or all three barriers affected are indicated in the action block following the applicable response from the flow path decision block.

3.2 Fission Product Barrier Analysis, Fuel

1. ANY RAD MONITOR EAL TABLE 1 IN HIGH ALARM? - If none of the Rad monitors are in alarm, the next 3 decision blocks can be bypassed which minimizes the time needed to go through the Flowpath.

2. PLANT VENT STACK #1 WRGM EFFL CHNL >3.6 E5 :Ci/sec? - This is an indication that all 3 FPBs are breached. The stack effluent monitor would exceed this level if the Containment airborne concentration of radioactivity was due to an RCS activity of 300 :Ci/cc (I-131) with a 50 gpm RCS leak. Containment is assumed breached via the purge system running at 1500 CFM with no credit taken for cleanup systems. This includes the dilution effects that are predicted to occur during the release through the Plant Vent Stack release path.

3. EITHER CNMT HI RANGE ACCIDENT MON >17.5 R/HR? - The CNMT monitors would not indicate this level of radiation unless a fuel breach and an RCS breach had occurred. This radiation level is based upon 300 :Ci/cc RCS activity (I-131) (Alert level) and 40 gpm leakage from the RCS to Containment in addition to the 10 gpm allowable by Technical Specifications.

4. ANY EAL TABLE 2 MONITOR >1000 TIMES NORMAL? - The 1000 x normal EAL Table 2 value was taken directly from the NUREG-0654 recommendations.

5. WAS ENTRY POINT AT T? - If the entry point was at T, the fuel fission product barrier is indicating breached, based upon the EOP Network determination. The remainder of the fuel fission product barrier evaluation is bypassed.

6. GFFD INCREASED >1.0E5 CPM IN 30 MINUTES? - An increase of this magnitude indicates that the fuel fission product barrier is breached. The set point is below the NUREG-0654 "Alert" classification (based on 1% failed fuel in 30 minutes or 5% failed fuel). Only two set points were provided by Westinghouse on the Gross Failed Fuel Detector (the lower set point was used for the Unusual Event Declaration).

7. RCS ACTIVITY (I-131 DOSE EQUIVALENT) >300 :Ci/cc? - The value of 300 :Ci/cc (I-131) was taken directly from NUREG-0654.

8. CORE COOLING CSF RED? - A Red on this Critical Safety Function (CSF-2) would be due to either core temperatures above 1200^{o} F or core temperatures above 730^{o} F and RVLIS less than 39%. In either case, the fuel is in jeopardy.

3.3 Fission Product Barrier Analysis, RCS

1. EOP PATH-2 ENTERED? - This is an indication of a SG tube rupture with safety injection (RCS initial leak rate of >120 gpm). This indicates that the RCS is breached. If EOP PATH 2 has been entered, the SG radiation monitor levels are an indication that both the fuel and the RCS barriers are breached. The limit of 10 mR/HR is based upon having 300 :Ci/cc RCS activity (I-131) leaking at 40 gpm into a Steam Generator. A 40 gpm leak rate was utilized as a conservative threshold to allow for an assumed 10 gpm of RCS leakage to the Containment atmosphere (total RCS leakage therefore equal 50 gpm).

2. CNMT LEAK DET RAD MON NOBLE GAS CHNL >8.0 E-3 :Ci/cc? - With normal activity in the RCS, if the Containment Leak Detection Radiation Monitor noble gas channel increases to greater than 8.0 E-3 :Ci/cc, the RCS is leaking at a rate greater than 40 gpm in addition to the Tech. Spec. limit of 10 gpm. The RCS is then classified as being breached.

3. WAS ENTRY AT POINT U? - If the entry point, into the EAL Network, was at entry point U, then the EOP Flow Path has already determined that the RCS boundary is breached and the FPB status board was so indicated upon EAL entry. Time is saved by bypassing other steps which evaluate the RCS fission product barrier. Steps which evaluated more than one barrier were not bypassed.

4. RCS LEAKAGE >50 GPM? - This is an indication of an RCS breach (The RCS barrier is defined as the RCS pressure boundary and includes the reactor vessel and all RCS piping up to the isolation valves.), regardless of the activity level in the system. This was taken directly from NUREG-0654.

5. INTEGRITY CSF ORANGE OR RED? - If the RCS Integrity Critical Safety Function (CSF-4) does not indicate green or yellow, the RCS FPB is in jeopardy. This would occur when RCS temperature is <240^{o} F and low temperature overpressure or cooldown limitations were exceeded. This ensures that a pressurized thermal shock event will be classified at least as an Alert.

3.4 Fission Product Barrier Analysis, Containment

1. WAS ENTRY AT POINT V? - The EOP Flow Path has ready determined that the CNMT FPB has been breached and was indicated so upon EAL flow path entry. Steps to evaluate the Containment FPB are bypassed.

2. IS CNMT PHASE A OR VENT ISOLATION REQUIRED? - If plant conditions are such that isolation of the containment is designed to occur, then an evaluation of the effectiveness of the isolation is performed. If a pathway from the containment exists, the FPB is declared breached. Releases from Containment through the secondary plant are evaluated separately and are not considered in this assessment.

3. BOTH FUEL AND RCS INTACT ON FPB STATUS BOARD? - If either the Fuel or RCS fission product barriers are in jeopardy or breached the status of the containment penetrations is evaluated to determine if a pathway exists. Releases from Containment through the secondary plant are evaluated separately and are not considered in this assessment.

4. PRIMARY TO SECONDARY LEAKAGE IN ANY SG >10 GPM? - Containment is not considered breached by stuck open SG safeties or PORVs or non-isolable secondary system breaks unless there is a release pathway caused by primary to secondary leakage in the affected SG. If leakage does not exceed the 10 gpm threshold, the related evaluations are bypassed.

5. AFFECTED SG SAFETY VALVES SHUT? - An open Steam Generator Safety Valve is one indication of a Main Steam break outside of Containment and with >10 gpm primary to secondary leakage the Containment is declared breached.

6. AFFECTED SG PORV SHUT? - This is normally the case following a Reactor Trip. The PORVs may open momentarily, but quickly close as the energy is dissipated. If the PORV is open, the ability to close the valve or its block valve is evaluated. If the SG PORV or its block valve can not be shut and >10 gpm primary to secondary leakage exists, the Containment is declared breached.

7. UNISOLABLE STEAM AND/OR FEED BREAK OUTSIDE CNMT IN AFFECTED SG? - An unisolable steam and/or feed break outside of the Containment are a breach of the Containment FPB if a release pathway via primary to secondary leakage exists. A note is provided to aid in distinguishing between a minor leak, such as valve packing, and a break that could produce a significant radiological release.

8. SG PRESS >1230 PSIG? - If SG pressure is below 1230 PSIG, then the SGs are acting as a normal heat sink. Following a Reactor trip, the SG pressure rapidly increases, but remains below 1100 PSIG. If it increases above this, the PORVs and Safeties lift to restore the pressure. If the pressure cannot be maintained below 1230 PSIG, a SG tube rupture has occurred that is severe enough to challenge SG integrity. The RCS will already be considered breached because EOP PATH-2 will be entered. The SG level is then evaluated to determine if an overfill condition is occurring. A value of 78% was chosen as a threshold to declaring the Containment as being in jeopardy.

9. CNMT >3 PSIG? - If Containment pressure is greater than 3 psig, a LOCA greater than normal charging capacity may have occurred since this is the action point for Safety Injection. At this pressure the Containment, per design, is not breached. A jeopardy status is assigned. This question will also result in an Alert declaration for main steam or feedwater ruptures inside containment.

4.0 RULES OF USAGE

Only one Emergency Action Level (EAL) classification should be made at a time. If two EALs are clearly met, then choose the EAL of highest priority as determined by the flow chart or as in the case of unusual events, choose the first one that was met and declare on the basis of the chosen EAL. Additional information may be placed in the remarks section on the Emergency Notification Form (ENF).

The preferred method during plant recovery concerning EALs is to terminate the declared event when the plant has recovered from the effects of the initiating events rather than reducing the EAL level as recovery is completed. It is not required that emergency declarations be reduced and lower EALs declared as plant conditions improve.

It is not necessary to note lower level EALs or equivalent EALs on the ENF that may be met during a declared event.

An event should be declared when the EAL is met even if it is momentary unless a time is specified in the EAL. If an event is declared and then the conditions improve so that the EAL is no longer exceeded prior to notification of any offsite authority then a declaration and a termination can be made on the same ENF and/or phone call. If an Alert or higher is declared and the Emergency Response Organization has been notified by Dialogics, even if in error, then the event is required to be terminated by the ERM acting as the SEC after EOF activation no matter how unnecessary it may seem.

If an event has been declared (current EAL) and one or more but not all Warning Points (WP's) and/or the State EOF have not been notified of the current EAL and then the EAL escalates to a higher level (subsequent EAL) e.g., Alert to a SAE, then continue to notify the remaining WP's and/or the State EOF of the current EAL. After all WP's and the State EOF have been notified of the current EAL, then re-notify all WP's and the State EOF of the subsequent (higher level) EAL. Then continue to notify all other required organizations. All other organizations may be notified of only the higher subsequent EAL in this case.

5.0 BASIS

The remainder of this document lists, in EAL Number order, all EALs for HNP.

Each page of the attachment reproduces the text of the EAL from PEP-110 "Emergency Classification and Protective Action Recommendations" and then follows the EAL text with a description of the Basis for the EAL and then provides Classification Guidance to assist in the interpretation of the EAL.

PEP-110 remains the governing document for the classification of events at HNP and shall be used for making event classifications. This document provides additional, amplifying information that may be used to enhance understanding of the EALs contained in PEP-110.

1.0 GASEOUS OR LIQUID EFFLUENT(S) EXCEEDING TECHNICAL SPECIFICATIONS

1.1 EAL 1-1-1

1) GASEOUS OR LIQUID EFFLUENT(S) EXCEEDING TECHNICAL SPECIFICATIONS

1-1-1 VALID HIGH ALARM OCCURS ON ANY OF THE MONITORS IN EAL TABLE 5 AND THE RELEASE HAS NOT BEEN TERMINATED. (UNUSUAL EVENT EXISTS UNTIL EFFLUENT DISCHARGE IS TERMINATED AND WHEN ALL REQUIRED NOTIFICATIONS ARE MADE)

Basis:

Table 5 lists the plant effluent monitors. The alarm set points for these monitors are set below the T. S. effluent limit. If the alarm set point is exceeded, a T.S. Limit is being approached and an Unusual Event is declared if automatic isolation does not occur. The criterion for terminating NOUE extends the condition until notifications are completed.

Classification Guidance:

The significant portion of this EAL is that, in addition to an effluent radiation monitor alarm; there must be a concurrent failure of the automatic isolation of the associated effluent flow path to warrant classification. If an effluent radiation monitor alarm occurs and the associated automatic isolation also occurs, there is no classifiable event.

Once an event is declared using this EAL, it is to continue until such time as both the release is terminated and all required notifications are completed. This requirement to extend the event until the notifications are completed is included to limit confusion on the part of offsite individuals and agencies receiving the notification.

1.2 EAL 1-1-2

1) GASEOUS OR LIQUID EFFLUENT(S) EXCEEDING TECHNICAL SPECIFICATIONS

1-1-2 MONITOR IN EAL TABLE 5 READING >10 TIMES THE HIGH ALARM SETPOINT

Basis:

This EAL addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments. The occurrence of uncontrolled radioactive releases to the environment is indicative of degradation in the level of safety of the plant.

While the multiple corresponds to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

The EAL addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed ten times the alarm setpoint. This alarm setpoint may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the RETS. Indexing the EAL threshold to the ODCM setpoints in this manner insures that the EAL threshold will never be less than the setpoint established by a specific discharge permit.

Classification Guidance:

EAL Table 5 lists the plant liquid and gaseous effluent radiation monitors. The setpoints for these monitors are less than or equal to the RETS instantaneous limits.

An Alert is declared if any of these monitors exceeds its alarm setpoints by a factor of ten.

1.3 EAL 1-1-3

1-1-3 PROJECTED DOSE >50 MREM TEDE AT OR BEYOND SITE BOUNDARY USING ADVERSE MET DATA with ESTIMATED DURATION OF RELEASE >30 MINs, or

PROJECTED DOSE >250 MREM THYROID CDE AT OR BEYOND SITE BOUNDARY USING ADVERSE MET DATA with ESTIMATED DURATION OF RELEASE >30 MINs, or

PROJECTED DOSE >500 MREM TEDE AT OR BEYOND SITE BOUNDARY USING ADVERSE MET DATA with ESTIMATED DURATION OF RELEASE >2 MINs, or

PROJECTED DOSE >2500 MREM THYROID CDE AT OR BEYOND SITE BOUNDARY USING ADVERSE MET DATA with ESTIMATED DURATION OF RELEASE >2 MINs

Basis:

The longer duration projected doses correspond to 10% of the EPA PAGs. These values are consistent with the Site Area Emergency definition of releases being small fraction of EPA PAGs.

Classification Guidance:

Operators have indications that people outside the immediate area may be or are being exposed to small amounts of radiation. Actual meteorological readings should result in doses which are significantly less than the criteria using adverse meteorological conditions.

ADVERSE MET DATA is defined as “G” stability class and a wind speed of ≤ 1.0 MPH.

1.4 EAL 1-2-3

1-2-3 MEASURED DOSE RATE >50 MREM/HR AT OR BEYOND SITE BOUNDARY with MEASURED LEVEL HAS EXISTED >30 MINs, or

MEASURED I-131 EQUIV CONC >1.9E-7 uCi/cc AT OR BEYOND SITE BOUNDARY with MEASURED LEVEL HAS EXISTED >30 MINs, or

MEASURED DOSE RATE >500 MREM/HR AT OR BEYOND SITE BOUNDARY with MEASURED LEVEL HAS EXISTED >2 MINs, or

MEASURED I-131 EQUIV CONC >1.9E-6 uCi/cc AT OR BEYOND SITE BOUNDARY with MEASURED LEVEL HAS EXISTED >2 MINs

Basis:

The Thyroid dose values are listed in Equivalent 1-131 concentration which corresponds to the 250 MREM/HR and 2500 MREM/HR, utilizing the dose conversion factors contained in the HNP dose projection methodology in order to speed up the reporting process.

Classification Guidance:

These values are measured dose rates in the environment for Whole Body Doses. The I-131 Equivalent Concentrations correspond to an exposure period equal to the duration of release.

1.5 EAL 1-1-4

1-1-4 PROJECTED DOSE >1000 MREM TEDE AT OR BEYOND SITE BOUNDARY, or

PROJECTED DOSE >5000 MREM THYROID CDE AT OR BEYOND SITE BOUNDARY

Basis:

The revised EPA (EPA-400) Protective Action Guidelines are expressed in terms of total effective dose equivalent, which includes the 50 year internal dose commitment from inhalation of the plume. The internal dose commitment cannot be expressed as a dose rate without the period of time of exposure (inhalation) to the plume being stated for the point of interest. To convert the EAL to a dose rate of 1 Rem/hour (TEDE) in a meaningful way, the assumed duration of inhalation must be one hour.

Similarly, a "Committed Effective Dose Rate" to the thyroid of 5 Rem/hour must assume an inhalation period of 1 hour. Any other periods of time for inhalation result in rates different than these, which could, or could not, exceed the EPA 400 Protective Action Guidelines for total exposure, and would not be consistent with the definition of a General Emergency.

Classification Guidance:

Projected Dose Calculations are performed using effluent rad monitors in accordance with PEP-340. If the levels of 1000 mREM TEDE or 5000 MREM Thyroid CDE are exceeded, a General Emergency is declared.

To perform these calculations, a period of exposure must be assumed. For performing the calculations for the purposes of determining classification, the assumed period of exposure is one hour.

Projected Dose Calculations also include projections based on Containment radiation levels when pressure is above 0 psig and SG radiation level based on Main Steam Line radiation. If levels of 1000 MREM TEDE or 5000 MREM Thyroid CDE are exceeded, a General Emergency is declared.

1.6 EAL 1-2-4

1-2-4 MEASURED DOSE RATE >1000 MREM/HR AT OR BEYOND SITE BOUNDARY, or MEASURED I -131 EQUIV CONC >3.9 E-6 :Ci/cc AT OR BEYOND SITE BOUNDARY

Basis:

A measured dose rate >1000 mRem/HR at or beyond the site boundary corresponds to a Protective Action Guide Exposure of 1 REM TEDE for a 1-hour exposure period.

A measurement of 3.9 E-6 :Ci/cc at/or beyond the site boundary is the equivalent of a dose rate to the thyroid of 5000 MREM/HR, assuming a 1 hour inhalation period. The information is provided in this manner because it does not require conversion and can quickly be reported to the Site Emergency Coordinator, in this form.

Classification Guideline:

This condition could place members of the public in danger and therefore protective action recommendations will be made. The amount of radiation specified in this EAL is at or above levels at which federal guidelines recommend protective actions like evacuation or sheltering.

FUEL DAMAGE INDICATION

1.7 EAL 2-1-1

2-1-1 GROSS FAILED FUEL DETECTOR INDICATES AN INCREASE > 2E4 CPM WITHIN 30 MINUTES

Basis:

An increase of 2×10^4 CPM within thirty minutes in the reading of the Gross Failed Fuel Detector is indication that fuel is starting to fail. Westinghouse provided this value along with a higher value that is used for the Alert Classification.

Classification Guidance:

While the EAL does contain a 30 minute time specification for the increase of the Gross Failed Fuel Detector, if there is a reasonable expectation that the limit will be reached or exceeded, refer to EAL 11-1-1, SSO or SEC judgment.

1.8 EAL 2-2-1

2-2-1 RCS SPECIFIC ACTIVITY EXCEEDS TECHNICAL SPECIFICATION 3.4.8 LIMITS FOR DOSE EQUIVALENT I-131 OR GROSS RADIOACTIVITY. (FOR DOSE EQUIVALENT I -131 THE EAL IS NOT EXCEEDED UNLESS THE 48 HOUR TIME INTERVAL LIMIT IS EXCEEDED.)

Basis:

Exceeding Technical Specification limits for a period designated in the action statement is an analyzed condition of the plant and does not represent an emergency. Technical Specifications permit corrective action when the Limiting Condition of Operation of the Technical Specification is exceeded. This wording clarifies the intent to include corrective action steps as being an integral part of the Technical Specification.

Classification Guidance:

Classification should not occur until there is a reasonable expectation that the action statements associated with the Limiting Condition of Operation will not be completed in the time period allowed. As above, if there is a reasonable expectation that the limit will be reached or exceeded,.

1.9 EAL 2-1-2

2-1-2 1 FPB BREACHED/JEOPARDIZED

Basis:

The breach or jeopardy of being breached of any one of the three major Fission Product Barriers is sufficient to declare and Alert

Refer to Fission Product Barrier Analysis, for assessment of the Fuel Fission Product Barrier analysis:

a. The Fission Product Barrier Analysis contains a step asking if RCS Dose Equivalent I-131 activity is > 300 :Ci/cc. If the answer is YES, then the Fuel Fission Product Barrier is declared to be breached. With one fission product barrier breached, an Alert would be declared.

b. The Fission Product Barrier Analysis contains a step to evaluate the Gross Failed Fuel Detector (Side 1, column 1). The value used for the determination that the fuel FPB is breached was supplied by Westinghouse.

Refer to Fission Product Barrier Analysis, section II.C, for assessment of the RCS Fission Product Barrier analysis:

Several of the RCS Fission Product Barrier questions would result in declaration of the RCS breached if a Steam Generator tube leak occurred.

- This would happen with a leak rate much less than the design leakage associated with the failure of one tube.
- An RCS leak rate in excess of 50 gpm or entering EOP PATH-2 (Steam Generator Tube Rupture response) would result in the declaration of an Alert condition. This is done whether or not offsite power is available.

Refer to Fission Product Barrier Analysis, Section II.D, for assessment of the Containment Fission Product Barrier analysis:

Primary to secondary leakage in any SG >10 gpm with a nonisolable steam and/or feed break outside containment would result in the Containment being classified as breached. An Alert would be declared for one fission product barrier breached (EAL 2-1-2).

The HNP EALs evaluate feed line breaks in addition to steam line breaks.

Additionally if the primary to secondary leak rate exceeds 50 gpm the RCS would also be classified as breached and the emergency classification would be upgraded to Site Area Emergency due to a breach of two fission product barriers (EAL 2-1-3).

Refer to Fission Product Barrier Analysis, Section II.C, for assessment of the RCS Fission Product Barrier analysis:

The RCS barrier assessment specifically asks if the RCS leakage is greater than 50. It also refers to other plant indications that would indicate a breach of the RCS barrier. If any indicator shows that the RCS is breached or in jeopardy, an Alert is declared unless a higher level declaration is warranted.

The 50 gpm leak rate is based on the requirements of NUREG-0654.

1.10 EAL 2-4-2

2-4-2 DAMAGE TO SPENT FUEL with ANY SPENT FUEL POOL AREA RAD MON > 100 mR/HR

Basis:

The 100 mR/HR set point is based on dropping one spent fuel assembly and is used to actuate the FHB emergency ventilation system. Trigger points for the FHB area radiation monitors were calculated to provide a symptomatic indication of damage to the affected assembly. These readings are projected to exist at the Radiation Monitor closest to the dropped assembly.

Reference Calculation HPN-M/MECH-1071 – The design basis FHA is basically the hottest (high peaking factor), short cooldown (100 hours since shutdown) fuel assembly being dropped onto a similarly worst case HPN PWR fuel assembly, and then falling over onto the BWR fuel rack and damaging 52 BWR fuel assemblies shipped from Brunswick. One hundred percent of the GAP activity from all damaged fuel is assumed to be released into the Spent Fuel Pool. This results in an expected detector response set of approximately 1510 mrem/h and 446 mrem/h (for an accident which creates Pools 1 and 4 exhaust vent source) and 1800 mrem/h and 564 mrem/h (Pools 2 and 3 exhaust vent source). The selected value of 100 mR/HR conservatively assesses this event and is more representative of a single damaged PWR Fuel Assembly.

Classification Guidance:

A dropped spent fuel assembly is not sufficient to declare an Alert. There must be resultant damage sufficient to cause a Spent Fuel Pool Radiation Monitor to exceed 100 mR/HR. The damage may not be to the dropped assembly; there may be damage to an impacted fuel assembly. In either case, if the damage is sufficient to cause a Spent Fuel Pool Radiation Monitor to exceed 100 mR/HR, an Alert should be declared.

Damage to multiple assemblies would be associated with higher radiation levels (700 mR/HR) and would result in escalation to a Site Area Emergency (EAL 2-4-3).

1.11 EAL 2-5-2

2-5-2 PLANT IS IN MODE 6 with VALID CNMT VENT ISOL ACTUATION

Basis:

Fuel damage accident in Containment could only occur during Mode 6 (Refueling), so the sequence is bypassed if the plant is not in Mode 6.

The Containment Ventilation Actuation signal is established based on the activity release that would occur if one spent fuel assembly was dropped after removal from the core. If fuel was damaged during refueling, a minor release would result in a Containment Ventilation Isolation and an Alert would be declared.

Reference Calculation – HNP-M/MECH-1072- The design basis FHA is the hottest (high peaking factor), short cooldown (100 hours since shutdown) fuel assembly being dropped onto the reactor vessel flange by the manipulator crane inside Containment. One hundred percent of the GAP activity from the damaged fuel assembly is assumed to be released into the pool. This results in a worst-case detector response of 4.92 Rem/h. The Containment Ventilation Isolation setpoint is 150 mrem/h. Since Containment Isolation requires 2 out of 4 logic, and the worst case detector response of 4.92 Rem/hr calculated in the accident analysis is significantly above the Containment isolation setpoint, it is assumed that the indications of the detectors that input into the Containment isolation signal will be satisfactory since their response is expected to be more sensitive to a dropped fuel assembly accident in containment.

Classification Guidance:

A dropped spent fuel assembly is not sufficient to declare an Alert. There must be resultant damage sufficient to cause a Containment Ventilation Isolation Actuation. The damage may not be to the dropped assembly; there may be damage to an impacted fuel assembly. In either case, if the damage is sufficient to cause a Containment Ventilation Isolation Actuation, an Alert should be declared.

Damage to multiple assemblies would be associated with higher radiation levels (6.5 R/HR) and would result in escalation to a Site Area Emergency (EAL 2-5-3).

1.12 EAL 2-1-3

2-1-3 2 FPBs BREACHED/JEOPARDIZED

Basis:

The High Head Centrifugal Charging Pumps at HNP can supply several hundred gpm flow at normal operating pressure with significantly higher flow rates if system pressure decreases. A Reactor Coolant System leak of this magnitude would result in a Site Area Emergency (EAL 2-1-3) declaration as a result of several potential paths. With the plant at normal operating temperature, an RCS leak of this magnitude will result in a rise of Containment pressure to greater than 3.0 psig within a few minutes. Reactor Coolant System leakage >50 gpm and >3.0 psig in containment results in classifying two fission product barriers as breached or jeopardized and a resultant Site Area Emergency event declaration. Any of six other methods for identification of an RCS Breach and at least two other methods for identification of a second Fission Product Barrier being breached or jeopardized would also be possible dependent on the specifics associated with the RCS leak.
A separate situation is possible if no CSIPs are available. In this situation the leak rate at which makeup pump capacity would be exceeded would be much lower. This is addressed in the HNP EAL scheme via the Loss of Functions Needed to Achieve Shutdown, which would require declaration of a Site Area Emergency for the loss of Charging Capability function, a function required for Mode 3. (EAL 8-2-3).

Classification Guidance:

Refer to Fission Product Barrier Analysis. Several indicators would be available to identify a breach or jeopardy condition for two or possibly all three fission product barriers. This condition would be associated with a loss of coolant accident. For example: the RCS could indicate breached by RCS leakage > 50 gpm (or CNMT leak detection rad monitor > 8E-3 :Ci/cc). Fuel could indicate jeopardized by elevated thermocouple temperatures and/or reduced RVLIS level or breached by Gross Failed Fuel Detector 7E+5 CPM increase within 30 minutes. Containment may indicate jeopardized due to pressure > 3 psig.

1.13 EAL 2-2-3 - Deleted

1.14 EAL 2-3-3

2-3-3 SPENT FUEL POOL LEVEL ≤ 1 FT ABOVE TOP OF FUEL

Basis:

If the level is less than one foot above the spent fuel assemblies, the spent fuel is about to become uncovered and any fuel that has recently been removed from the reactor may be susceptible to damage. It is assumed that normal methods to restore and maintain Spent Fuel Pool level have failed.

CLASSIFICATION GUIDANCE:

Classification should not occur until there is a reasonable expectation that the Spent Fuel Pool Level will not be maintained above the level specified. However, if there is a reasonable expectation that efforts to restore level will not be successful, emergency declaration should occur prior to the level specified being reached.

1.15 EAL 2-4-3

2-4-3 DAMAGE TO SPENT FUEL with ANY SPENT FUEL POOL AREA RAD MON > 700 mR/HR

Basis:

Damage to spent fuel in the Fuel Handling Building is assessed to determine if a single or multiple assemblies are affected. Trigger points for the FHB area radiation monitors were calculated to provide a symptomatic indication of damage the affected assembly(s). The 700 mR/HR criteria is the dose rate expected at the monitor nearest the damaged assembly(s) based on the expected dose rate from damaging more than 1 spent fuel assembly that had recently been removed from the reactor.

CLASSIFICATION GUIDANCE:

Fuel handling accidents are analyzed as part of the HNP Licensing Basis. These accidents (as demonstrated through evaluation) are not expected to exceed Part 100 limits. Emergency filtration units are available to mitigate the consequences of these accidents.

1.16 EAL 2-5-3

2-5-3 PLANT IS IN MODE 6 with VALID CNMT VENT ISOL ACTUATION and BOTH CNMT HI RANGE ACCIDENT MON > 6.5 R/HR

Basis:

Fuel damage accident in Containment could only occur during Mode 6 (Refueling), so the sequence is bypassed if the plant is not in Mode 6.

- The Containment Ventilation Actuation signal is established based on the activity release that would occur if one spent fuel assembly was dropped after removal from the core.
- DAMAGE to more than one assembly would warrant upgrading the classification. The 6.5 R/HR reading is based on the expected reading from the radiation monitors due to damaging two spent fuel assemblies that have just been removed from the core.

CLASSIFICATION GUIDANCE:

There are three conditions that must be met to warrant this classification.

1. Mode 6
2. Valid Containment Ventilation Isolation Actuation
3. BOTH Containment high range radiation monitors reading greater than 6.5 R/HR.

1.17 EAL 2-1-4

2-1-4 3 FPBs BREACHED/JEOPARDIZED

Basis:

Refer to the analysis of the Fission Product Barriers for a detailed analysis of each barrier.

Classification Guidance:

Refer to the Fission Product Barriers for a detailed discussion of each barrier.

2.0 LOSS OF SECONDARY COOLANT OR COOLING

2.1 EAL 3-1-1

3-1-1 RAPID DEPRESSURIZATION OF STEAM GENERATOR SECONDARY SIDE

Basis:

This EAL captures any leak or failure that results in an uncontrolled decrease in steam generator pressure or the steam generator being completely depressurized.

CLASSIFICATION GUIDANCE:

There are four criteria in this EAL, all of which must be met to classify:

1. Reactor is shutdown.
2. Steam generator pressure is rapidly dropping.
3. Break cannot be isolated from the control room.
4. Depressurization is not due to steam generator safety or PORV operation.

While this EAL is primarily associated with leaks, any event or failure not captured elsewhere that results in an uncontrolled or complete depressurization of a steam generator secondary side should be classified under this EAL.

Use this EAL if the leak or failure occurs while the reactor is shutdown because the leak or break would result in a rapid depressurization or complete depressurization of the SG. This may also result in exceeding the T.S. cooldown limits, but EAL 3-1-1 is more applicable than 3-3-1 for these conditions. If EAL 3-3-1 was already declared, it is not necessary to declare this EAL after the reactor is shutdown.

Unusual Events are declared for a loss of secondary coolant or cooling because they are a precursor to jeopardizing or breaching the fission product barriers. A loss of secondary coolant can cause excessive RCS cooldown creating pressurized thermal shock concerns which could threaten the integrity of the RCS or it can create a pathway for the release of radioactive material that bypasses containment. A loss of secondary cooling (heat sink) can threaten the integrity of the fuel. Notification of an Unusual Event allows for the site to augment on-shift resources as needed; assess and respond to the event and escalate to a more severe class if appropriate. Notification of the State and Local authorities allows them to provide assistance if requested and puts them in a standby status such that they can escalate to a more severe class if appropriate.

For a steamline or feedline break or leak that occurs while at power, refer to EAL 3-3-1.

For a steamline or feedline break or leak that cannot be isolated from the main control room and occurs on the SG blowdown line, refer to EAL 3-4-1.

For steam generator depressurization due to safety or PORV operation refer to EAL 3-2-1.

2.2 EAL 3-2-1

3-2-1 FAILURE OF A SG SAFETY OR PORV TO FULLY RESET AFTER OPERATION

Basis:

The valves of concern are the Safety and Power Operated Relief Valves (PORV) on the Steam Generators. If these valves fail to operate as designed they can significantly impact the ability of the systems to control heat removal from the reactor. Failure of these valves to fully reset, particularly if they fail to fully close after opening (i.e. reseat) could result in a challenge to the plant safety systems (e.g., Safety Injection, overcooling the reactor) and therefore require notification of an Unusual Event.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Steam release cannot be isolated from the control room.
2. Steam generator safety or PORV remains open or does not fully shut after operation. (However, a determination that the safety valve or PORV actually operated (lifted) is not necessary to classify under this EAL.)
3. Leakage is greater than the allowable design leakage.

If the Safety and Relief valve(s) on the Steam Generators operate (open and shut) as designed, there is no event declaration necessary. For this classification to occur there must be a failure of the valve(s) to fully shut after opening or to fully reset after operating and the valve cannot be shut or isolated from the main control room (MCR). Additionally this classification occurs if leakage develops after valve operation greater than the allowable design leakage which is defined as clearly audible steam leakage having forced flow. This does not include drifting wisps of steam.

Failure of the automatic PORV controller where the PORV can be shut by selecting Manual on the controller and then shutting the PORV from the MCR would not result in an event declaration.

Unusual Events are declared for a loss of secondary coolant or cooling because they are a precursor to jeopardizing or breaching the fission product barriers. A loss of secondary coolant can cause excessive RCS cooldown creating pressurized thermal shock concerns which could threaten the integrity of the RCS or it can create a pathway for the release of radioactive material that bypasses containment. A loss of secondary cooling (heat sink) can threaten the integrity of the fuel. Notification of an Unusual Event allows for the site to augment on-shift resources as needed; assess and respond to the event and escalate to a more severe class if appropriate. Notification of the State and Local authorities allows them to provide assistance if requested and puts them in a standby status such that they can escalate to a more severe class if appropriate.

(Continued on next page.)

For a steamline or feedline break or leak that occurs while at power or if it has been determined that the steam generator safety or relief valve has **not** actually operated (e.g. valve seat develops leak due to steam cuts), refer to EAL 3-3-1.

For a steamline or feedline break or leak that occurs while shutdown, refer to EAL 3-1-1.

For a steamline or feedline break or leak that cannot be isolated from the MCR and occurs on the SG blowdown line, refer to EAL 3-4-1.

2.3 EAL 3-3-1

3-3-1 MAIN STEAM LINE OR FEEDWATER LINE BREAK.
(A BREAK IS A LEAK WHICH EXCEEDS THE OPERATORS ABILITY TO SHUTDOWN THE PLANT IN A CONTROLLED MANNER OR TO NOT EXCEED TECH. SPEC COOLDOWN LIMITS)

Basis:
Main Steam or Feedwater Leakage greater than that which could exceed the operators ability to shutdown the plant in a controlled manner or to not exceed Technical Specification cooldown limits are significant enough to warrant classification as an Unusual Event.

CLASSIFICATION GUIDANCE:

There are two criteria in this EAL, both of which must be met to classify:

1. Reactor is initially at power.
2. Break cannot be isolated from the Main Control Room without causing an RPS or ESF actuation or if following the shutdown, it would result in an ESF actuation or result exceeding T.S. cooldown limits.

A reactor trip is not considered a “Controlled Shutdown”; therefore, any Main Steam or Feedwater Leakage of sufficient magnitude to warrant a reactor trip should be classified under this EAL.

This EAL applies when the break cannot be isolated from the Main Control Room (MCR) without causing an RPS or ESF actuation or if following the shutdown, it would result in an ESF actuation, such as an SI, or result exceeding T.S. cooldown limits. Examples would include a leak or a break of a steam line downstream of the MSIVs while at 100% power. In this case, an MSIV could be shut, but it would result in the need to trip the reactor or a reactor trip would occur automatically. If power was low enough, and a trip would not result from shutting the MSIV or the leak was small enough that the plant could be shutdown before the MSIV was shut, an event declaration would not be necessary because a controlled shutdown could be performed. Conversely, if during a turbine startup, a leak was identified on the turbine, tripping the turbine without resulting in a reactor trip would not require declaration of an event.

Unusual Events are declared for a loss of secondary coolant or cooling because they are a precursor to jeopardizing or breaching the fission product barriers. A loss of secondary coolant can cause excessive RCS cooldown creating pressurized thermal shock concerns which could threaten the integrity of the RCS or it can create a pathway for the release of radioactive material that bypasses containment. A loss of secondary cooling (heat sink) can threaten the integrity of the fuel. Notification of an Unusual Event allows for the site to augment on-shift resources as needed; assess and respond to the event and escalate to a more severe class if appropriate. Notification of the State and Local authorities allows them to provide assistance if requested and puts them in a standby status such that they can escalate to a more severe class if appropriate.

For a steamline or feedline break or leak that occurs while shutdown, refer to EAL 3-1-1.

For a steamline or feedline break or leak that cannot be isolated from the MCR and occurs on the SG blowdown line, refer to EAL 3-4-1.

2.4 EAL 3-4-1

3-4-1 STEAM GENERATOR BLOWDOWN LINE BREAK (MODES 1, 2, & 3).

Basis:

The rupture of a Steam Generator (SG) blowdown line is a specific method of secondary plant depressurization that would require declaration of an Unusual Event.

CLASSIFICATION GUIDANCE:

There are three criteria in this EAL, all of which must be met to classify:

1. Break is determined to be in the SG blowdown line.
2. Break cannot be isolated from the control room.
3. Plant must be in Mode 1, 2 or 3.

This EAL applies when the break cannot be isolated from the Main Control Room (MCR). The consequences of this event could be the same as any other loss of secondary coolant as it could result in an ESF actuation, such as an SI, or result exceeding T.S. cooldown limits. In addition, steam in the turbine building or auxiliary building could pose a hazard to personnel and equipment.

Unusual Events are declared for a loss of secondary coolant or cooling because they are a precursor to jeopardizing or breaching the fission product barriers. A loss of secondary coolant can cause excessive RCS cooldown creating pressurized thermal shock concerns which could threaten the integrity of the RCS or it can create a pathway for the release of radioactive material that bypasses containment. A loss of secondary cooling (heat sink) can threaten the integrity of the fuel. Notification of an Unusual Event allows for the site to augment on-shift resources as needed; assess and respond to the event and escalate to a more severe class if appropriate. Notification of the State and Local authorities allows them to provide assistance if requested and puts them in a standby status such that they can escalate to a more severe class if appropriate.

For a steamline or feedline break or leak that occurs while at power, refer to EAL 3-3-1.

For a steamline or feedline break or leak that occurs while shutdown, refer to EAL 3-1-1.

3.0 LOSS OF REACTOR COOLANT

3.1 EAL 4-1-1

4-1-1 FAILURE OF A PRESSURIZER SAFETY OR PORV TO CLOSE FOLLOWING REDUCTION OF APPLICABLE PRESSURE.

Basis:

The valves of concern are the Safety and Relief valves on the Pressurizer. If these valves fail to operate as designed, e.g., if they fail to fully close after opening, they can significantly impact the ability of the systems to remove heat from the reactor. Failure of these valves to fully reset after operation could result in a challenge to the plant safety systems and require notification of an Unusual Event.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Pressurizer safety or PORV remains open or does not fully shut after operation.
2. Pressurizer pressure cannot be maintained by Pressurizer heaters.
3. Leak cannot be isolated in a timely manner using the PORV or PORV block valve.

If the Safety and Relief valves on the Pressurizer operate as designed, there is no event declaration necessary. For this classification to occur there must be a failure of the valves to fully shut after opening or to fully reset after operating and an inability to timely isolate the leakage using the PORV block valve. Any post operation leakage must be small enough that RCS pressure can be maintained by Pressurizer heaters or the valve should be considered to have failed to fully reset or close.

Timely is defined as prior to reaching the low pressurizer pressure setpoint for a Safety Injection (1850 psig) or initiating a manual safety injection due to low pressurizer pressure.

Unusual Events are declared for a loss of primary coolant because they are a precursor to jeopardizing or breaching the fission product barriers. A pathway from the Pressurizer steam space can cause excessive RCS depressurization resulting in loss of subcooling which could threaten the integrity of the fuel. Notification of an Unusual Event allows for the site to augment on-shift resources as needed; assess and respond to the event and escalate to a more severe class if appropriate. Notification of the State and Local authorities allows them to provide assistance if requested and puts them in a standby status such that they can escalate to a more severe class if appropriate.

3.2 EAL 4-2-1

4-2-1 ANY RCS PRESSURE BOUNDARY LEAKAGE

Basis

Technical Specification 3.4.6.2 addresses RCS allowed leakage. Technical Specifications, for other than Pressure Boundary leakage permit corrective action when the Limiting Condition of Operation of the Technical Specification is exceeded. The intent is to include corrective action steps as being an integral part of the Technical Specification. Exceeding Technical Specification limits for a period designated in the action statement is an analyzed condition of the plant and does not represent an emergency.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Reactor Coolant System (RCS) pressure boundary leakage greater than Technical Specifications.
2. Limiting Condition of Operation will not be completed in the time period allowed.

The RCS pressure boundary is defined as the reactor vessel and all RCS piping up to the containment isolation valves.

Classification should not occur until there is a reasonable expectation that the action statements associated with the Limiting Condition of Operation will not be completed in the time period allowed. However, if there is a reasonable expectation that the limit will be reached or exceeded, emergency declaration should occur prior to the actual time the limit is reached or exceeded.

3.3 EAL 4-3-1

4-3-1 ANY OTHER RCS LEAKAGE IN EXCESS OF TECHNICAL SPECIFICATION 3.4.6.2 WITH THE 4 HOUR CORRECTIVE ACTIONS NOT SATISFIED.

Basis:

Technical Specification 3.4.6.2 addresses RCS allowed leakage. Technical Specifications, for other than Pressure Boundary leakage permit corrective action when the Limiting Condition of Operation of the Technical Specification is exceeded. The intent is to include corrective action steps as being an integral part of the Technical Specification. Exceeding Technical Specification limits for a period designated in the action statement is an analyzed condition of the plant and does not represent an emergency.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Leakage is not pressure boundary leakage.
2. Leakage greater than Technical Specifications.
3. Limiting Condition of Operation is not completed in the time period.

Classification should not occur until the action statements associated with the Limiting Condition of Operation is exceeded.

If leakage is RCS pressure boundary leakage then refer to EAL 4-2-1.

4.0 LOSS OF POWER

4.1 EAL 5-1-1

5-1-1 LOSS OF ALL OFFSITE POWER

BASIS:

The offsite electrical system provides a backup means of power for safety-related and plant producing equipment. This equipment is normally powered by the plants turbine-generator. Safety-related equipment can also be supplied power from the standby emergency diesel generators. A loss of offsite power reduces the power sources to plant equipment. However, a loss of offsite power is not significant to the health and safety of the public and as such is considered an unusual event.

CLASSIFICATION GUIDANCE:

There are two criteria in this EAL, both of which must be met to classify:

1. Loss of offsite power is not preplanned and restored in accordance with Tech Specs.
2. Loss of offsite power is not momentary due to electrical switching or short-duration transients.

There are no specific time limits established for the loss of all offsite power, therefore, an Unusual Event should be declared at any time a loss of all offsite power occurs. However, losses due to electrical switching or short-duration transients should not be considered if restoration of offsite power is reasonably assured. Additionally, preplanned maintenance should not be considered “a loss of offsite power” if it is restored commensurate with plant technical specifications.

4.2 EAL 5-2-1

5-2-1 LOSS OF BOTH EMERGENCY DIESEL GENERATORS.

Basis:

The loss of both Emergency Diesel Generators affects the redundancy of the safety related on site power, the power of concern. Loss of only one Diesel Generator is covered by the Tech. Spec. Action statement.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Operability of both diesel generators is lost.
2. Loss of operability is due to the actual failure of the diesel generators to operate and not because of administrative declarations.

There are no specific time limits established for the loss of both Diesel Generators, therefore, if both Diesel Generators are lost, an Unusual Event is declared regardless of the status of the Main Generator or offsite power, the normal power supplies to the safety related onsite power.

An emergency diesel generator should not be considered “lost” if it is inoperable due to purely administrative means (such as a missed surveillance). In this case, it should coincide with the ability of the emergency diesel generator to perform its required standby function.

Refer to EAL 5-1-2 if loss of both diesel generators results in both 1A-SA and 1B-SB busses deenergized.

4.3 EAL 5-1-2

5-1-2 1A-SA AND 1B-SB not ENERGIZED

Basis:

Power availability to the safety related buses is used as the screening criteria for this condition. The safety related AC buses can receive power from the turbine through the Unit Auxiliary Transformers, from offsite power through the Start Up Transformers, (or backfeed through the Unit Auxiliary Transformers) or from the Emergency Diesel Generators. If both 1A-SA and 1B-SB are deenergized then an Alert, at a minimum, is declared.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Both 1A-SA and 1B-SB are deenergized.
2. An actual loss of power to both 1A-SA and 1B-SB buses has occurred and they are not functional.
3. Loss has occurred for less than 15 minutes.

Reduced bus voltage is not sufficient to classify an emergency using this EAL. As long as buses remain functional, an Alert has not occurred. An SEC or SSO may preemptively declare a site area emergency (SAE) by declaring an SAE based on EAL 11-1-3, SSO or SEC judgment, if he or she determines that the required bus(es) will not be reenergized within the required time.

CONTINUING ACTION:

If an extended loss (>15 minutes) of both 1A-SA and 1B-SB occurs then refer to EAL 5-1-3.

If an extended loss of both 1A-SA and 1B-SB occurs resulting in a loss of secondary system feed flow with reduction in core inventory then refer to EAL 5-1-4.

4.4 EAL 5-2-2

5-2-2 LOSS OF ALL ONSITE ESF DC BUSSES (125VDC 1ASA AND 1BSB)

Basis:

The capabilities lost due to a complete loss of the Engineered Safety Features DC busses are sufficiently serious to warrant the declaration of an Alert.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Both 125VDC 1A-SA and 1B-SB are deenergized.
2. An actual loss of power to both 125VDC 1A-SA and 1B-SB buses has occurred and they are not functional.
3. Loss has occurred for LESS than 15 minutes.

Reduced bus voltage is not sufficient to classify an emergency using this EAL. As long as buses remain functional, an Alert has not occurred.

CONTINUING ACTION:

If condition continues for >15 minutes, then refer to EAL 5-1-3.
If it is determined that the required bus(es) will not be reenergized within 15 minutes refer to EAL 11-1-3, SSO or SEC judgment.

4.5 EAL 5-1-3

5-1-3 1A-SA AND 1B-SB LOST FOR >15 MIN

Basis:

Power availability to the safety related buses is used as the screening criteria for this condition. The safety related AC buses can receive power from the turbine through the Unit Auxiliary Transformers, from offsite power through the Start Up Transformers, (or backfeed through the Unit Auxiliary Transformers) or from the Emergency Diesel Generators.

15 minutes provides sufficient time for immediate corrective actions. If power cannot be restored within 15 minutes, the situation is more severe and warrants the declaration of a Site Area Emergency.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Both 1A-SA and 1B-SB are deenergized.
2. An actual loss of power to both 1A-SA and 1B-SB buses has occurred and they are not functional.
3. Loss has occurred for greater than 15 minutes.

Reduced bus voltage is not sufficient to classify an emergency using this EAL. As long as buses remain functional, a Site Area Emergency has not occurred.

If the loss of both 1A-SA and 1B-SB has not exceeded 15 minutes then refer to EAL 5-1-2.

If an extended loss of both 1A-SA and 1B-SB occurs resulting in a loss of secondary system feed flow with reduction in core inventory then refer to EAL 5-1-4.

If it is determined that the required bus(es) cannot be reenergized within 15 minutes and it is desired to declare an event prior to the expiration of the 15-minute time limit refer to EAL 11-1-3, SSO or SEC judgment.

4.6 EAL 5-2-3

5-2-3 ALL ON-SITE ESF DC LOST FOR > 15 MINs

Basis:

There are three criteria in this EAL, all of which must be met to classify:

1. Both 125VDC 1A-SA and 1B-SB are deenergized.
2. An actual loss of power to both 125VDC 1A-SA and 1B-SB buses has occurred and they are not functional.
3. Loss has occurred for greater than 15 minutes.

The capabilities lost due to a complete loss of the Engineered Safety Features DC busses for more than 15 minutes are sufficiently serious to warrant the declaration of a Site Area Emergency.

15 minutes provides sufficient time for immediate corrective actions. If power cannot be restored within 15 minutes, the situation is more severe and warrants the declaration of a Site Area Emergency.

Classification Guidance:

Reduced bus voltage is not sufficient to classify an emergency using this EAL. As long as buses remain functional, a Site Area Emergency has not occurred.

4.7 EAL 5-1-4

5-1-4 1A-SA OR 1B-SB NOT ENERGIZED with RCS PRESSURE >360 PSIG with >210 KPPH FEED FLOW NOT AVAILABLE with FULL RANGE RVLIS LEVEL NOT >62%

Basis:

If AC power is not available, (1A-SA and 1B-SB Emergency Busses are deenergized) then the possibility of a total loss of feedwater exists.

The 62% Valve is conservative in that it is much higher than the 39% level at which, concurrent with an elevated thermocouple temperature of 730 ^{0}F, the fuel fission product barrier would become jeopardized.

Classification Guidance:

There are five criteria in this EAL, all of which must be met to classify:

1. Both 1A-SA and 1B-SB are deenergized.
2. An actual loss of power to both 1A-SA and 1B-SB buses has occurred and they are not functional.
3. RCS pressure is greater than 360 PSIG.
4. Feedwater flow to the steam generators is less than 210 KPPH and NOT available.
5. Full range RVLIS level is less than 62%.

If the plant is in a condition where Feedwater flow, or secondary heat sink, is required (i.e., "RCS PRESSURE >360 PSIG") (reference EAL Table 3) and 210 KPPH OF FEED FLOW is not AVAILABLE[1] (Loss of Steam Driven AFW pump) then core inventory is evaluated.

A General Emergency is declared when RVLIS indicates <62% Full Range level.

If the loss of both 1A-SA and 1B-SB has not exceeded 15 minutes and/ or a total loss of feedwater does not yet exist then refer to EAL 5-1-2.

If an extended loss of both 1A-SA and 1B-SB has not yet resulted in full range RVLIS level is less than 62% then refer to EAL 5-1-3.

[1] The EOP Setpoint Study has calculated (under the guidance of the Westinghouse Owners Group) that this is sufficient flow to ensure that a heat sink exists.

5.0 LOSS OF MCB ANNUNCIATORS OR COMMUNICATIONS CAPABILITY

5.1 EAL 6-1-1

6-1-1 UNPLANNED LOSS OF >75% OF MCB ANNUNCIATORS (ALBs) FOR >15 MINUTES AS DEFINED BY:

- MODE 1-4, TOTAL # ALBs = 30
- MODES 5-6, TOTAL #ALBs = 20 (ALB 1, 2, 4-13, 15, 22, 23, EITHER 24 OR 25 BASED ON EDG OPERABILITY, 26-28, & 30)

Basis:

This EAL recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation equipment. The selection of 75% as a threshold for this EAL is based on the presumption that if 75% of the safety system annunciators are lost, there is an increased risk that a degraded plant condition could go undetected.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Loss of > 75% of annunciators (ALBs) for the applicable mode.
2. Loss has occurred for greater than 15 minutes.

It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators.

The loss of specific, or several, safety system indicators remains a function of that specific system or component operability status. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, refer to EAL 8-1-1 "Inability to Reach Required Shutdown (Mode 3) Condition within Tech. Spec. Time Limits."

If it is determined that the required annunciators will not be reenergized within the required time refer to EAL 11-1-1, SSO or SEC judgment.

5.2 EAL 6-2-1

Note: **6-2-1** previously was a loss of ERFIS (which has been deleted). ERFIS NOUE has been deleted. Loss of site telephones was renumbered from 6-3-1 to 6-2-1

6-2-1 FAILURE OF BOTH SITE TELEPHONE AND EMERGENCY (HE&EC) TELEPHONE SWITCHES.

Basis:

The purpose of this EAL is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one telephone system is sufficient to inform state and local authorities of plant problems.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. A complete loss of the PABX telephone system (desk phones in the MCR, TSC and OSC).
2. A complete loss of the HE&EC PABX telephone system (desk phones in the EOF).

The SITE TELEPHONE switch refers to the Private Automatic Branch Exchange (PABX) telephone system (desk phones) in the MCR, TSC and OSC and the EMERGENCY (HE&EC) telephone switch refers to the HE&EC Private Automatic Branch Exchange (PABX) telephone system. The phones used to the contact the NRC would also be lost if both PABX switches were lost. The selective signaling system is not covered under this EAL.

If the onsite PABX telephone system becomes inoperable, use the guidelines found in EPL-001, Emergency Phone List, Section 2.0, for using the backup phones that link to the HEEC PABX phone lines.

There is no time limit specified for this event. Once an event is declared using this EAL, it is to continue until such time as at least one telephone system is restored to service and all required notifications are completed. This requirement to extend the event until the notifications are completed is included to limit confusion on the part of offsite individuals and agencies receiving the notification.

5.3 EAL 6-3-1

Deleted

5.4 EAL 6-1-2

6-1-2 LOSS OF >75% OF MCB ANNUNCIATOR'S (ALB's) for >15 minutes (with additional conditions as described below).

AFFECTED SYSTEMS' ERFIS DATA AVAILABLE, a SIGNIFICANT TRANSIENT (EOP PATH 1 ENTERED, >25% RUNBACK OR >10% POWER OSCILLATIONS) in progress and LOSS OF ALBs not PREPLANNED

OR

AFFECTED SYSTEMS' ERFIS DATA not AVAILABLE, a SIGNIFICANT TRANSIENT (EOP PATH 1 ENTERED, >25% RUNBACK OR >10% POWER OSCILLATIONS) not in progress and LOSS OF ALBs not PREPLANNED

Basis:

The selection of 75% as a threshold for this EAL is based on the presumption that if approximately 75% of the safety system annunciators are lost, there is an increased risk that a degraded plant condition could go undetected. A note on the EAL Flowchart indicates the total number of annunciator light boxes (ALBs) to aid in determining 75%. When shutdown 10 ALBs are not associated with operating/operable systems and the total number of ALBs should be considered as 20.

Classification Guidance:

There are 4 imbedded criteria in this EAL, all of which must be met to classify:

1. Loss of >75% of ALBs
2. The loss of annunciators is unplanned.
3. ERFIS not available OR a Significant Transient in progress
4. ALBs lost for > 15 minutes

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The "Unplanned" criterion excludes scheduled maintenance and testing activities.

It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. "Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators."

A "significant transient" is defined by EOP Path 1 entry (Reactor Trip or Safety Injection), Turbine runbacks greater than 25% or power oscillations greater than 10%.

(Continued on next page.)

Credit is provided for the availability of computer based indication equipment (SPDS/ ERFIS plant computer) to mitigate the impact from the loss of alarm capabilities.

Careful tracking through the Side 1 flowchart will aid in proper classification.

For an extended loss of most annunciators, with a transient in progress, without ERFIS data available refer to EAL 6-1-3.

If it is determined that the required annunciators will not be reenergized within 15 minutes refer to EAL 11-1-2, SSO or SEC judgment.

5.5 EAL 6-1-3

6-1-3 LOSS OF >75% OF MCB ANNUNCIATORS (ALBs), with AFFECTED SYSTEMS ERFIS DATA not AVAILABLE and SIGNIFICANT TRANSIENT (EOP PATH 1 ENTERED, >25% RUNBACK, OR >10% POWER OSCILLATIONS), and ALBs LOST FOR > 15 MINs

Basis:

The selection of 75% as a threshold for this EAL is based on the presumption that if approximately 75% of the safety system annunciators are lost, there is an increased risk that a degraded plant condition could go undetected. A note on the EAL Flowchart indicates the total number of annunciator light boxes (ALBs) to aid in determining 75%.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

A “significant transient” is defined by EOP Path 1 entry (Reactor Trip or Safety Injection), turbine runbacks greater than 25% or power oscillations greater than 10%.

Classification Guidance:

There are 4 imbedded criteria in this EAL, all of which must be met to classify:

1. Loss of >75% of ALBs
2. ERFIS is not available
3. Significant Transient is in progress
4. ALBs are lost for > 15 minutes

This EAL applies whether or not the annunciators were out of service as a pre-planned activity or not.

It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators.

If it is determined that the required annunciators will not be reenergized within the required time refer to EAL 11-1-3, SSO or SEC judgment.

6.0 SECURITY THREAT

6.1 EAL 7-1-1

7-1-1 CONFIRMED SECURITY EVENT WHICH INDICATES A POTENTIAL DEGRADATION IN THE LEVEL OF SAFETY OF THE PLANT AS INDICATED BY:

- UNAUTHORIZED ALTERATION OR TAMPERING HAS OR IS OCCURRING AFFECTING PLANT EQUIPMENT
- HOSTAGE/EXTORTION SITUATION THAT THREATENS TO INTERRUPT NORMAL PLANT OPERATIONS
- CREDIBLE THREAT AGAINST THE HARRIS PLANT
- A VALIDATED NOTIFICATION FROM THE NRC PROVIDING INFORMATION OF AN AIRCRAFT THREAT.

Basis:

This EAL is based on the HNP Security Plan. 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. The specific security events listed indicate potential degradation in the level of safety of the plant.

Classification Guidance:

Security Shift Supervision should be conferred with prior to classification because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred.

The intent of a CREDIBLE THREAT AGAINST THE HARRIS PLANT is to ensure that appropriate notifications for the security threat are made in a timely manner.

The notification must be considered credible. Notifications from offsite agencies concerning security would normally come from the NRC or other valid government agency such a Federal Bureau of Investigation (FBI), North American Aerospace Defense Command (NORAD), Department of Homeland Security (DHS), Federal Aviation Authority (FAA), local or state enforcement agencies. Site Security conjoined with the NRC will attempt to verify the threat information and determine credibility.

The intent of A VALIDATED NOTIFICATION FROM THE NRC PROVIDING INFORMATION OF AN AIRCRAFT THREAT is to ensure that notifications for the security threat are made in a timely manner and that Offsite Response Organizations and plant personnel are at a state of heightened awareness regarding the credible threat. This EAL is met when a plant receives information regarding an aircraft threat from NRC. It is not the intent of this EAL to replace existing non-terrorist related EALs involving aircraft. Refer to EAL 10-2-1 for potential or actual non-terrorist aircraft crashes.

The determination of Acredible≅ is made through use of information found in the HNP Safeguards Contingency Plan and will be determined by Security or the NRC.

An aircraft is defined as any weight-carrying structure that either under its own buoyancy or by dynamic energy is used to travel through the air. Examples include: hot-air balloon, blimp, airplane, glider, missile, helicopter, etc. An aircraft, excluding airliners, is not expected to cause significant damage to the plant.

An airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. Specifically an airliner is defined as a commercial aircraft used for passenger or cargo transport and is meant to be interpreted as aircraft as large as or larger than a 737, DC9, MD80, MD90, or 717, etc. An airliner less than 30 minutes away from the plant would require an Alert classification (refer to EAL 7-1-2). If the aircraft was identified as an aircraft, then a UE would remain appropriate as the aircraft approaches the plant and is less than 30 minutes away. For classification purposes, an airliner is considered an aircraft until it is within 30 minutes of the plant. The status and size of the plane may be provided by NORAD through the NRC.

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. Should the threat involve an airliner then escalation to an Alert would be appropriate if the airliner is less than 30 minutes away from the plant. Refer to EAL 7-1-2.

6.2 EAL 7-1-2

7-1-2 AN ONGOING SECURITY COMPROMISE AS INDICATED BY ANY OF THE FOLLOWING:

- A NOTIFICATION FROM THE SITE SECURITY FORCE OF AN ARMED ATTACK, EXPLOSIVE ATTACK, AIRLINER IMPACT, OR OTHER HOSTILE ACTION WITHIN THE EAB.
- BOMB DISCOVERED WITHIN THE PA POTENTIALLY AFFECTING SAFETY RELATED EQUIPMENT
- A VALIDATED NOTIFICATION FROM NRC OF AN AIRLINER ATTACK THREAT LESS THAN 30 MIN. AWAY

Basis:

This EAL is based on the HNP Safeguards Contingency Plan and related security procedures and training. This EAL is intended to address the potential for a very rapid progression of events due to a terrorist attack.

Classification Guidance:

Unless the notification is directly from the NRC, Security Shift Supervision should be consulted prior to classification because these individuals are the designated on-site personnel qualified and trained to confirm that a security event is occurring or has occurred.

The notification must be considered credible. Notifications from offsite agencies concerning security would normally come from the NRC or other valid government agency such a Federal Bureau of Investigation (FBI), North American Aerospace Defense Command (NORAD), Department of Homeland Security (DHS), Federal Aviation Authority (FAA), local or state enforcement agencies. Site Security conjoined with the NRC will attempt to verify the threat information and determine credibility.

Federal agencies are expected to assist in the determination whether the aircraft impact was accidental or an attack. However, the declaration should not be unduly delayed pending Federal notification. 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.

This EAL is not intended to address incidents that are accidental or acts of civil disobedience, such as hunters or physical disputes between employees within the EAB or PA. That initiating condition is adequately addressed by other EALs. Refer to EAL 10-5-1 for civil disturbances.

This EAL is not premised solely on adverse health effects caused by a radiological release. Rather the issue is the immediate need for assistance due to the nature of the event and the potential for significant and indeterminate damage. Although HNP security officers are well trained and prepared to protect against HOSTILE ACTION, it is appropriate for Offsite Response Organizations to be notified to be prepared should it be necessary to consider further actions.

(Continued on next page.)

This EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time. The fact that the site is an identified attack candidate with minimal time available for further preparation requires a heightened state of readiness and implementation of protective measures that can be effective (onsite evacuation, dispersal or sheltering) before arrival or impact.

A HOSTILE ACTION is defined as an act toward the HNP or its personnel that include 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 EAB).

The EXCLUSION AREA BOUNDARY (EAB) is a circle of approximately 7000 ft. radius (1.3 miles).

The protected area (PA) is defined as the plant area inside the security fence including the Intake Structures.

Safety-related/ESF equipment is defined as equipment contained in the following systems or components.

Auxiliary Feedwater	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Analyzers	Diesel Fuel Oil	Reactor Auxiliary Building ESF Equipment Cooling
Hydrogen Recombiners	Electrical Equipment Protection Room HVAC	Reactor Auxiliary Building Ventilation
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Coolant System
Containment Cooling	Essential Switchgear Room Cooling	Reactor Makeup
Containment Isolations	Emergency Service Water	Reactor Protection System
Containment Spray	Emergency Service Water Intake Structure Ventilation	Residual Heat Removal (RHR)
Containment Vacuum Relief	Fuel Handling Building Ventilation	Safety Injection System (SI)
Control Room Ventilation	Gas Decay Tank	125V DC Power
Chemical and Volume Control (CVCS)	Main Feedwater Isolations	120V Uninterruptible AC
Chilled Water	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup

An airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. Specifically an airliner is defined as a commercial aircraft used for passenger or cargo transport and is meant to be interpreted as aircraft as large as or larger than a 737, DC9, MD80, MD90, or 717, etc. The status and size of the plane may be provided by NORAD through the NRC.

Imminent loss of physical control of the plant or a notification from the site security force that an armed attack, explosive attack, airliner impact, or other HOSTILE ACTION is occurring or has occurred within the protected area would result in escalation to a Site Area Emergency (EAL 7-1-3).

6.3 EAL 7-1-3

7-1-3 A SECURITY EVENT WITHIN THE PROTECTED AREA AS INDICATED BY EITHER OF THE FOLLOWING:

- IMMINENT LOSS OF PHYSICAL CONTROL OF THE PLANT.
- A NOTIFICATION FROM THE SITE SECURITY FORCE THAT AN ARMED ATTACK, EXPLOSIVE ATTACK, AIRLINER IMPACT, OR OTHER HOSTILE ACTION IS OCCURRING OR HAS OCCURRED WITHIN THE PROTECTED AREA.

Basis:

This EAL is based on the HNP Safeguards Contingency Plan and related security procedures and training. These security events represent an escalated threat to plant safety above that contained in the Alert.

Classification Guidance:

Only those events that involve Actual or Likely Major failures of plant functions needed for protection of the public need to be considered. The following events would not normally meet this requirement; (e.g., failure by a member of the Security Force to carry out an assigned/required duty, internal disturbances, loss/compromise of safeguards materials or strike actions).

Security Shift Supervision should be conferred with prior to classification because these individuals are the designated on-site personnel 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 controls placed on the plant Security Plan.

Although HNP security officers are well trained and prepared to protect against HOSTILE ACTION, it is appropriate for Offsite Response Organizations to be notified to begin preparations for public protective actions should it be necessary to consider further actions.

This EAL is intended to address the potential for a very rapid progression of events due to a dedicated attack. It is not intended to address incidents that are accidental or acts of civil disobedience, such as hunters or physical disputes between employees within the EAB or PA. That initiating condition is adequately addressed by other EALs. Terrorist action identified above encompasses various acts including:

- ∃ air attack (airliner impacting the protected area)
- ∃ land-based attack (hostile force penetrating protected area)
- ∃ waterborne attack (hostile force on water penetrating protected area)
- ∃ bombs breaching the protected area

(Continued on next page.)

This EAL addresses the immediacy of a threat to impact site vital areas within a relatively short time. The fact that the site is under serious attack with minimal time available for additional assistance to arrive requires ERO readiness and preparation for the implementation of protective measures.

A HOSTILE ACTION is defined as an act toward the HNP or its personnel that include 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 EAB).

The protected area (PA) is defined as the plant area inside the security fence including the Intake Structures.

An airliner is meant to be a large aircraft with the potential for causing significant damage to the plant. Specifically an airliner is defined as a commercial aircraft used for passenger or cargo transport and is meant to be interpreted as aircraft as large as or larger than a 737, DC9, MD80, MD90, or 717, etc. The status and size of the plane may be provided by NORAD through the NRC.

Licensees should consider upgrading the classification to a General Emergency based on actual plant status after impact.

Loss of plant control would result in escalation to a General Emergency (EAL 7-1-4).

6.4 EAL 7-1-4

7-1-4 A HOSTILE FORCE HAS TAKEN CONTROL OF PLANT EQUIPMENT AND/OR VITAL AREA(S) SUCH THAT PLANT PERSONNEL ARE UNABLE TO OPERATE EQUIPMENT REQUIRED TO MAINTAIN SAFETY FUNCTIONS

Basis:

This EAL encompasses conditions under which a HOSTILE FORCE has taken physical control of VITAL Areas required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location. These safety functions are reactivity control, RCS inventory and secondary heat removal.

Classification Guidance:

FUNCTIONS NEEDED TO MAINTAIN SAFETY FUNCTIONS	
Safety Function	**Capability Needed**
Reactivity Control	Inability to insert control rods and/or boration capability to maintain reactor shutdown.
RCS inventory	Loss of both emergency diesel generators with loss of offsite power or both vital buses or all three charging pumps.
Secondary Heat Sink Capability	Loss of all three auxiliary feedwater pumps with no alternate means of supplying makeup water to the steam generators

Loss of physical control of the control room or remote shutdown capability alone may not prevent the ability to maintain safety functions per se. Design of the remote shutdown capability and the location of the transfer switches should be taken into account.

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

A HOSTILE FORCE is 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.

7.0 OTHER PLANT OR EQUIPMENT PROBLEMS

7.1 EAL 8-1-1

8-1-1 INABILITY TO REACH REQUIRED SHUTDOWN (MODE 3) CONDITION WITHIN TECH. SPEC. TIME LIMITS

Basis:

Exceeding Technical Specification limits for the period designated in the action statement is an analyzed condition of the plant and does not, by itself, represent an emergency. If plant conditions are outside of Technical Specification limits and those conditions do result in degradation in the level of plant safety, other initiating conditions would trigger an appropriate classification within an acceptable time frame.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Technical Specification Action Statement for Limiting Condition for Operation (LCO) has not been or will not be met.
2. LCO requires plant to be shutdown in Mode 3.

When the plant cannot be SHUTDOWN (Mode 3) within the allowable action statement time, then declaration of an Unusual Event is warranted. Classification should not occur until there is a reasonable expectation that the plant will not achieve Mode 3 in the time period allowed. However, if there is a reasonable expectation that the time limit will be reached or exceeded, refer to EAL 11-1-1, SSO or SEC judgment.

7.2 EAL 8-2-1

8-2-1 INADVERTENT CRITICALITY - EXTENDED AND UNPLANNED SUSTAINED POSITIVE STARTUP RATE (THIS DOES NOT INCLUDE CRITICALITY EARLIER THAN ESTIMATED DURING PLANNED REACTOR STARTUPS)

Basis:

While the primary concern of this EAL is criticality events that occur in Cold Shutdown or Refueling modes, the EAL is applicable in other modes in which inadvertent criticalities are possible. This EAL indicates a potential degradation of the level of safety of the plant, warranting an Unusual Event classification.

Inadvertent Boron dilution events are ANS Condition II events and are “self-limiting.” As such, event classifications above an Unusual Event would not be appropriate.

The term “extended” is used in order to allow exclusion of expected short-term positive periods/startup rates from planned control rod movements.

CLASSIFICATION GUIDANCE:

There are three criteria in this EAL, all of which must be met to classify:

1. Positive startup rate (SUR) must be unplanned and unexpected.
2. Inadvertent criticality has occurred.
3. Inadvertent criticality is not due to Estimated Critical Position (ECP) errors.

Extended is defined as 5 minutes or more of an unexpected, unplanned positive Startup Rate.

The EAL incorporates boron dilution events and inadvertent rod withdrawal events, the latter being the more limiting from an accident analysis perspective.

This EAL excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated).

If SUR is uncontrollable due to a loss of function associated with an inability to compensate for a dilution refer to EAL 8-2-2 or 8-2-3.

If fission product barriers are threatened then refer to fission product barrier analysis.

7.3 EAL 8-3-1

8-3-1 TURBINE ROTATING COMPONENT FAILURE RESULTING IN A REACTOR TRIP, CASING PENETRATION, OR SIGNIFICANT DAMAGE TO THE MAIN GENERATOR SEALS

BASIS:

This EAL addresses main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs.

This EAL is consistent with the definition of an Unusual Event while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment.

CLASSIFICATION GUIDANCE:

There are two criteria in this EAL, both of which must be met to classify:

1. Damage to the turbine casing or seals must be visible.
2. Damage was caused by failure of turbine rotating components.

Generator seal damage observed after generator purge does not meet the intent of this EAL.

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

If the turbine rotating component failure resulted in a missile that impacted another plant structure or component within the power block with the reactor in modes 1, 2, 3 or 4 then refer to EAL 10-2-2.

If a safety related piece of equipment or structure is affected then refer to EAL 10-2-3.

If a fire occurs then refer to EAL 10-1-1.

If a flammable gas release occurs then refer to EAL10-4-1.

7.4 EAL 8-1-2

8-1-2 ATWS WHILE IN MODE 1 OR 2

Basis:

The anticipated transient without scram (ATWS) indicates failure of the automatic 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 the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that may lead to potential loss of fuel clad or RCS. This condition is based on a reactor protection system setpoint being exceeded, rather than limiting safety system setpoint being exceeded, because failure of the automatic protection system is the issue.

A manual trip is any set of actions by the reactor operator(s) at the reactor control console that causes control rods to be rapidly inserted into the core and brings the reactor subcritical.

Classification Guidance

There are three criteria in this EAL, all of which must be met to classify:

1. Automatic reactor trip setpoint has been exceeded.
2. Reactor trip has not occurred.
3. Plant is in Mode 1 or 2.

Any ATWS is a significant plant transient and warrants declaration of an emergency.

If a manual reactor trip using the MCB trip switch is not successful, then refer to EAL 8-1-3.

7.5 EAL 8-2-2

8-2-2 COMPLETE LOSS OF ANY FUNCTION LISTED ON EAL TABLE 3

Basis:

EAL Table 3 provides guidance on what functions are needed to achieve shutdown. Ten (10) functions are listed and are identified as being required for hot or cold shutdown (Modes 4 - 5) or Hot Standby (Mode 3).

The functions listed in Table 3 are those necessary to achieve and maintain the desired Mode in a controlled manner without using EXTRAORDINARY MEANS.

A loss of power condition could result in a loss of a function. The loss of power (AC or DC) is addressed separately in the flow path. A loss of a function, if due to the loss of power is not classified per this section of the flow path; it is assessed under the cause (the loss of power).

Classification Guidance:

There are four criteria in this EAL, all of which must be met to classify:

1. System is not capable of performing its intended function without the use of EXTRAORDINARY MEANS.
2. Function cannot be restored by operator action within 30 minutes.
3. Affected functions are needed for Hot or Cold Shutdown (refer to EAL Table 3).
4. Loss of all AC or DC power is not the cause of the loss of function.

If the function is required for Hot Standby, a higher classification is warranted (EAL 8-2-3); otherwise, an Alert is declared.

A function can be performed if the system is capable of performing its intended function. A system is capable of performing its intended function if it can be operated without the use of EXTRAORDINARY MEANS. Extraordinary Means is defined as taking actions not described in approved plant procedures. A function should not be considered lost if it can be restored by operator action within a limited period of time (less than 30 minutes). The function should be considered available until indications are received that contradict that assumption.

Entering FRP-H.1, Response to Loss of Heat Sink should not result in declaration of a Loss of Secondary Heat Sink function. However, if RCS Bleed and Feed criterion is met then the Secondary Heat Sink function should be considered lost (AR 27896).

(Continued on next page)

EAL 8-2-2 Table 3

FUNCTIONS NEEDED TO ACHIEVE SHUTDOWN			
	Mode 4-5	**Mode 3**	**Capability Needed**
Capability for FW Flow ≥ 210 KPPH	If RCS Press. > 360 PSIG	X	Sufficient FW Flow to maintain Secondary Heat Sink Capability
Secondary Heat Sink Capability	If RCS Press. > 360 PSIG	X	Sufficient Secondary Heat Sink capability to maintain RCS Temperature within band appropriate to Mode.
RHR Capability	X		Sufficient RHR Capability to maintain RCS Temperature and Pressure within bands appropriate to Mode.
CCW Capability	X		Sufficient CCW capability to maintain cooled component Temperatures within normal bands
ESW Capability	X	X	Sufficient ESW capability to maintain cooled component Temperatures within Normal Bands
Charging Capability	X	X	Sufficient charging capability to maintain PZR level in band appropriate to Mode.
Steam Generator Safety Valves		X	Sufficient SG Safety Valve capability to maintain SG Pressure
Boration Capability	X	X	Sufficient Boration capability to maintain Boron Concentration within band appropriate to Mode
RCS Press. Control Capability		X	Sufficient RCS Pressure Control Capability to maintain RCS Pressure in the range of X to Y PSIG
Accum. Isol. Or Venting Capability	X		Prevent inadvertent discharge of nitrogen into the RCS
X= Required			

If a loss of all AC or DC power has occurred then refer to EAL 5-1-2 or 5-2-2.

If a loss of function occurs that is needed for Hot Standby (Mode 3), then refer to EAL 8-2-3.

7.6 EAL 8-1-3

8-1-3 ATWS WHILE IN MODE 1 OR 2 with MCB MANUAL REACTOR TRIP not SUCCESSFUL (EITHER SWITCH)

Basis:

If an ATWS event has occurred and the manual reactor trip from the Main Control Board, using either switch, was not successful the event is classified as a Site Area Emergency.

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 and RCS FPBs. Although this EAL may be viewed as redundant to the Fission Product Barrier EALs, its inclusion is necessary to better assure timely recognition and emergency response.

Classification Guidance:

There are four criteria in this EAL, all of which must be met to classify:

1. Automatic reactor trip setpoint has been exceeded or manual reactor trip has been attempted.
2. Reactor trip has not occurred.
3. Plant is in Mode 1 or 2.
4. The manual reactor trip from the Main Control Room, using either manual switch, was not successful.

Automatic and manual trips are not considered successful if action away from the reactor control console was required to trip the reactor.

The note following the declaration explains that the Site Area Emergency exists only as long as the rods remain out of the core (i.e., until the Reactor Trip is successfully executed, or sufficient rods are inserted by any means to bring the Reactor subcritical) unless other plant conditions warrant another emergency classification.

If a manual reactor trip using one of the manual reactor trip switches is successful, then refer to EAL 8-1-2

7.7 EAL 8-2-3

8-2-3 COMPLETE LOSS OF ANY FUNCTION LISTED ON EAL TABLE 3 and FUNCTION LOSS not DUE TO LOSS OF ALL AC OR ALL DC POWER and LOST FUNCTION REQUIRED FOR MODE 3

Basis:

EAL Table 3 is a listing of the plant functions required for hot or cold shutdown. Mode 3 is "Hot Standby" which is the plant condition where RCS temperature is greater than 350 ^{0}F and the Reactor is subcritical.

The functions listed in Table 3 are those necessary to achieve and maintain the desired Mode in a controlled manner without using EXTRAORDINARY MEANS.

A loss of power condition could result in a loss of a function. The loss of power (AC or DC) is addressed separately in the flow path. A loss of a function, if due to the loss of power is not classified per this section of the flow path; it is assessed under the cause (the loss of power).

Classification Guidance:

There are four criteria in this EAL, all of which must be met to classify:

1. System is not capable of performing its intended function without the use of EXTRAORDINARY MEANS.
2. Function cannot be restored by operator action within 30 minutes.
3. Affected functions are needed for Hot Standby (refer to EAL Table 3).
4. Loss of all AC or DC power is not the cause of the loss of function.

A function can be performed if the system is capable of performing its intended function. A system is capable of performing its intended function if it can be operated without the use of EXTRAORDINARY MEANS. Extraordinary Means is defined as taking actions not described in approved plant procedures. A function should not be considered lost if it can be restored by operator action within a limited period of time (less than 30 minutes). The function should be considered available until indications are received that contradict that assumption.

Entering FRP-H.1, Response to Loss of Heat Sink should not result in declaration of a Loss of Secondary Heat Sink function. However, if RCS Bleed and Feed criterion is met then the Secondary Heat Sink function should be considered lost (AR 27896).

7.8 EAL 8-1-4

8-1-4 ATWS WHILE IN MODE 1 OR 2 with MCB MANUAL REACTOR TRIP not SUCCESSFUL (EITHER SWITCH) with FUEL FPB BREACHED

Basis:

The basis for this EAL is an ATWS concurrent with Fuel damage. This event represents a significant degradation in the level of safety of the plant coincident with core damage. This combination of events and consequences is sufficient to warrant the declaration of a General Emergency.

Classification Guidance:

There are five criteria in this EAL, all of which must be met to classify:

1. Automatic reactor trip setpoint has been exceeded or manual reactor trip has been attempted.
2. Reactor trip has not occurred.
3. Plant is in Mode 1 or 2.
4. The manual reactor trip from the Main Control Room, using either manual switch, was not successful.
5. Fuel damage has occurred.

If an ATWS event has occurred and the manual reactor trip from the Main Control, using either switch, was not successful an assessment of core status is performed.

If the Fuel FPB is breached (core damage) a General Emergency is declared.

If Fuel damage has not yet occurred then refer to EAL 8-1-3.

8.0 NATURAL PHENOMENA

8.1 EAL 9-1-1

9-1-1 INDICATION OF ANY TWO VALID SEISMIC SYMPTOMS LISTED ON EAL TABLE 6

Basis:

An occurrence of this event would be of sufficient magnitude to be of concern to plant operators and to offsite personnel. While some damage may occur to some portions of the site, there should be no impact on safety related systems, structures, or components.

An earthquake meeting the threshold of EAL 9-1-1 may cause damage to some portions of the site, but should not affect ability of safety functions to operate. The notifications conducted as a part of the declaration provide some assurances to offsite personnel that the plant is in a safe and stable condition.

Classification Guidance:

There are two criteria in this EAL, either of which must be met to classify:

1. At least two seismic event symptoms from EAL Table 6 have occurred OR
2. Earthquake tremors or vibrations are felt by a consensus of the Control Room Staff.

In addition to seismic instrumentation, classification may include personal evaluation of the tremors or vibration by Control Room Staff. This evaluation is subjective and should be a consensus of personnel present. Reports from personnel outside the Control Room may provide additional confirmation of the event but are not necessary for classification

If any yellow light on Triaxial Response Spectrum annunciator is lit refer to EAL 9-1-2.

If any red light on Triaxial Response Spectrum annunciator is lit refer to EAL 9-1-3.

8.2 EAL 9-2-1

9-2-1 TORNADO REPORTED WITHIN THE EAB

Basis:

An occurrence of this event would be of sufficient magnitude to be of concern to plant operators and to offsite personnel. While some damage may occur to some portions of the site, there should be no impact on safety related systems, structures, or components. The specification of the Exclusion Area Boundary (EAB) defines the location of the event based on the potential for damage to equipment contained therein.

A tornado striking (touching down) within the EAB may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant.

CLASSIFICATION GUIDANCE:

There is one criterion in this EAL, which must be met to classify:

1. A tornado has entered the EAB as indicated by field or weather reports.

The EAB is defined as a circle from containment with a radius of approximately 1.3 miles.

Classification of this event is largely dependent on credible reports from personnel outside the Control Room. The Security Shift Supervisor may be the best source of information for this classification. Additional input may be available through CAS/SAS as the tornado may be visible on Security cameras.

Specifically structures that are covered by this EAL are the:

Containment Building
Reactor Auxiliary Building
Waste Processing Building
Tank Buildings
Diesel Generator Building
Turbine Building
Emergency Service Water System Structures (Main reservoir and auxiliary reservoir intakes)
Diesel Fuel Oil Storage Tanks
Fuel Handling Building

If the tornado strikes the power block then refer to EAL 9-2-2.

8.3 EAL 9-3-1

9-3-1 SUSTAINED WIND SPEED AT 10 METERS OF 74 MPH OR GREATER

Basis:

An occurrence of this event would be of sufficient magnitude to be of concern to plant operators and to offsite personnel. While some damage may occur to some portions of the site, there should be no impact on safety related systems, structures, or components.

The high wind value is the minimum value for a hurricane. Winds of this magnitude are not expected to damage plant buildings but may result in unsafe conditions outside and may impact site access.

Classification Guidance:

There is one criterion in this EAL, which must be met to classify:

1. Wind speed indication from the meteorological tower at 10 meters indicates ≥74 MPH.

Winds speed indications from the meteorological tower are 15-minute average values; therefore, any wind-speed readings obtained from the meteorological tower in excess of 74 mph at 10 meters are considered sustained winds.

If the wind speed indicates ≥95 MPH then refer to EAL 9-3-2.

8.4 EAL 9-1-2

9-1-2 ANY TWO INDICATIONS OF A SEISMIC EVENT LISTED ON EAL TABLE 6 with ANY YELLOW LIGHT ON TRIAXIAL RESPONSE SPECTRUM ANNUNCIATOR LIT

Basis:

The indications provided correspond to 70% of an Operating Basis Earthquake.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. At least two seismic event symptoms from EAL Table 6 have occurred including earthquake tremors or vibrations that are felt by a consensus of the Control Room Staff.
2. A yellow light on the Triaxial Response Spectrum Annunciator is lit.

EAL Table 6 lists all available plant indications of a seismic event including indication of tremors or vibration. Any two of these indications are adequate for the operators to determine if an OBE has occurred. A yellow light on the Triaxial Response Spectrum Annunciator indicates that the event has exceeded 70% of the OBE level.

If a Yellow annunciator is lit, but not a Red one, then an Alert is declared.

If any red light on the Triaxial Response Spectrum annunciator is lit refer to EAL 9-1-3.

If a Red annunciator is lit, then the OBE level has been reached or exceeded and an assumption that an SSE has occurred and, if the plant is in Modes 1-4, the event is upgraded to a Site Area Emergency (EAL 9-1-3).

8.5 EAL 9-2-2

9-2-2 ADVERSE WEATHER with TORNADO HAS HIT THE POWER BLOCK

Basis:

A tornado striking the Power Block has the potential to cause damage to safety related structures. Declaration of an Alert at this occurrence provides the additional resources necessary to fully evaluate any damage resulting from the event.

Classification Guidance:

There is one criterion in this EAL, which must be met to classify:

1. A tornado has struck the power block as indicated by field or weather reports.

Classification of this event is largely dependent on credible reports from personnel outside the Control Room. The Security Shift Supervisor may be the best source of information for this classification. Additional input may be available through CAS/SAS as the tornado may be visible on Security cameras.

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the “K” area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.

If the tornado damages safety related equipment and the plant is in Mode 1-4 then refer to EAL 9-2-3.

8.6 EAL 9-3-2

9-3-2 ADVERSE WEATHER with PROJECTED OR MEASURED SUSTAINED WIND SPEED AT 10 METERS > 95 MPH

Basis:

The 95 MPH wind speed is based on the 100-year reoccurrence described in the FSAR.

Classification Guidance:

There is one criterion in this EAL, which must be met to classify:

1. Projected or measured wind speed indication from the meteorological tower at 10 meters indicates ≥95 MPH.

Winds speed indications from the meteorological tower are 15-minute average values; therefore, any wind-speed readings obtained from the meteorological tower in excess of 95 mph at 10 meters are considered sustained winds.

If the plant is in Modes 1-4 and 1) wind speeds increase to >155 MPH, or 2) safety related equipment of structures are damaged, refer to EAL 9-3-3).

8.7 EAL 9-1-3

9) NATURAL PHENOMENA

9-1-3 ANY TWO INDICATIONS OF A SEISMIC EVENT LISTED ON EAL TABLE 6 with ANY RED LIGHT ON TRIAXIAL RESPONSE SPECTRUM ANNUNCIATOR LIT and PLANT IN MODES 1, 2, 3 OR 4

Basis:

The indications provided correspond to an OBE and may indicate an SSE has occurred. This is conservative.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. At least two seismic event symptoms from EAL Table 6 have occurred including earthquake tremors or vibrations that are felt by a consensus of the Control Room Staff.
2. A red light on the Triaxial Response Spectrum Annunciator is lit.
3. Plant is in Mode 1-4.

EAL Table 6 lists all available plant indications of a seismic event including indication of tremors or vibration. If any two of these indications are present the operators determine if an OBE or SSE has occurred. HNP has no specific annunciation associated with assessment of seismic activity exceeding the SSE level. If a Red annunciator is lit then the OBE level has been reached or exceeded, and it is assumed that an SSE may have been exceeded, and if the plant is in Modes 1-4, then a Site Area Emergency (EAL 9-1-3) is declared.

8.8 EAL 9-2-3

9-2-3 ADVERSE WEATHER with TORNADO HAS HIT THE POWER BLOCK with DAMAGE TO SAFETY RELATED EQUIPMENT OR STRUCTURES and PLANT IN MODES 1, 2, 3 OR 4

Basis:

A tornado striking the Power Block and causing damage to safety related equipment or structures. Declaration of Site Area Emergency at this occurrence provides the additional resources necessary to fully evaluate the damage resulting from the event.

HNP's tornado loading design (in the Fujita scale F5 range) is nearly three (3) times the maximum measurable velocity (approx. 100 MPH) of the HNP Anemometer. Evaluating for damage to equipment and systems (designed to not be damaged by a tornado) provides a more accurate indication of an event that is "in excess of design limits."

The plant Seismic Category I structures are designed to withstand the effects of the design wind, a maximum wind of 179 mph at 30 feet above plant grade. The design wind is based on a 1000-year return period "fastest mile of wind."

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. Tornado has struck the power block.
2. Visible damage to safety related equipment or structures has occurred.
3. Plant is in Mode 1, 2, 3 or 4.

Classification of this event is, in part, dependent on credible reports from personnel outside the Control Room. The Security Shift Supervisor may be the best source of information for this classification. Additional input may be available through CAS/SAS as the tornado may be visible on Security cameras.

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

The evaluation of damage to structures should be superficial, further evaluation will be conducted once the additional resources mobilized by the event declaration are in place. Safety related equipment damage might be evaluated through instrumentation available in the Control Room; credible reports of visible damage to safety related equipment is sufficient to declare the event.

(Continued on next page.)

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the "K" area), Waste Processing Building, Diesel Generator Building,

Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas. If visible damage has not occurred to safety related equipment or structures refer to EAL 9-2-2.

8.9 EAL 9-3-3

9-3-3 ADVERSE WEATHER with PLANT IN MODES 1, 2, 3 OR 4 and either

1) PROJECTED OR MEASURED SUSTAINED WIND SPEED AT 10 METERS > 95 MPH with DAMAGE TO SAFETY RELATED EQUIPMENT OR STRUCTURES or
2) PROJECTED OR MEASURED SUSTAINED WIND SPEED AT 10 METERS > 155 MPH

Basis:

The 95 MPH wind speed is based on the 100-year reoccurrence described in the FSAR.

HNP's tornado loading design (in the Fujita scale F5 range) is nearly three (3) times the maximum measurable velocity (approx. 100 MPH) of the HNP Anemometer. Evaluating for damage to equipment and systems (designed to not be damaged by a tornado) provides a more accurate indication that an event that is "in excess of design limits."

Classification Guidance:

There are two criteria in this EAL, either of which may be met to classify:

1. Plant in Modes 1, 2, 3 or 4

AND

2. Wind speed indication from the meteorological tower at 10 meters indicates ≥95 MPH and visible damage has occurred to safety related equipment or structures.

OR

3. Projected or measured sustained wind speeds at 10 meters is >155 MPH.

Classification of this event is, in part, dependent on credible reports from personnel outside the Control Room. The Security Shift Supervisor may be the best source of information for this classification. Additional input may be available through CAS/SAS as the tornado may be visible on Security cameras.

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

(Continued on next page.)

The evaluation of damage to structures should be superficial, further evaluation will be conducted once the additional resources mobilized by the event declaration are in place. Safety related equipment damage might be evaluated through instrumentation available in the Control Room; credible reports of visible damage to safety related equipment is sufficient to declare the event.

For 95 mph winds:

Winds speed indications from the meteorological tower are 15-minute average values; therefore, any wind-speed readings obtained from the meteorological tower in excess of 95 mph at 10 meters are considered sustained winds.

For 155 mph winds:

Winds speed indications from the meteorological tower will not be available; therefore, any wind-speed reports for the plant area obtained from any credible source in excess of 155 mph are considered sustained winds.

Safety-related structures are defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the "K" area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.

Safety-related/ESF equipment is defined as equipment contained in the following systems or components.

Auxiliary Feedwater	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Analyzers	Diesel Fuel Oil	Reactor Auxiliary Building ESF Equipment Cooling
Hydrogen Recombiners	Electrical Equipment Protection Room HVAC	Reactor Auxiliary Building Ventilation
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Coolant System
Containment Cooling	Essential Switchgear Room Cooling	Reactor Makeup
Containment Isolations	Emergency Service Water	Reactor Protection System
Containment Spray	Emergency Service Water Intake Structure Ventilation	Residual Heat Removal (RHR)
Containment Vacuum Relief	Fuel Handling Building Ventilation	Safety Injection System (SI)
Control Room Ventilation	Gas Decay Tank	125V DC Power
Chemical and Volume Control (CVCS)	Main Feedwater Isolations	120V Uninterruptible AC
Chilled Water	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup

If the plant is in Modes 1-4 and 1) wind speeds increase to >155 MPH, or 2) safety related equipment of structures are damaged, refer to EAL 9-3-3).

9.0 OTHER HAZARDS

9.1 EAL 10-1-1

10-1-1 FIRE WITHIN THE PROTECTED AREA NOT EXTINGUISHED WITHIN 15 MINUTES OF CONTROL ROOM NOTIFICATION OR VERIFICATION OF A CONTROL ROOM ALARM

(THIS DOES NOT INCLUDE FIRES WITHIN OFFICE AREAS, TRASH BIN FIRES, H2 TANK VENT STACK FIRES EXTINGUISHED PER OP-152.02, OR OTHER SMALL FIRES OF NO PLANT SAFETY CONSEQUENCE).

Basis:

The Protected Area includes the plant and all areas within the security fence.

H_2 Vent Stack Fires have been exempted from event declaration due to their being a preplanned evolution and in accordance with plant design.

The purpose of this EAL is to address the magnitude and extent of Fires that may be potentially significant precursors to damage to safety systems.

Classification Guidance:

There are five criteria in this EAL, all of which must be met to classify:

1. At least two indications of a fire (alarms, fire pump start, field report, etc.).
2. Fire continues for at least 15 minutes.
3. Fire is within the protected area in buildings or areas that are in contact with or immediately adjacent to plant Vital Areas.
4. Fire has not visibly (by observation or instrumentation) affected safety-related or ESF equipment.
5. A loss of a safety related function has not occurred due to the fire.

The intent of this 15-minute duration is to define the size of the Fire and to discriminate against small Fires that are readily extinguished (e.g., smoldering waste paper basket). Also, the intent of this EAL is to include only buildings or areas that are contiguous (in actual contact with or immediately adjacent) to plant Vital Areas. This includes the following:

Containment Building
Reactor Auxiliary Building
Waste Processing Building
Tank Buildings
Diesel Generator Building
Turbine Building
Emergency Service Water System Structures (Main reservoir and auxiliary reservoir intakes)
Diesel Fuel Oil Storage Tanks
Fuel Handling Building

(Continued on next page.)

This excludes Fires within administration buildings, warehouses, wastebasket Fires, and other small Fires of no safety consequence.

The 15-minute time period begins with a credible notification that a Fire is occurring, or verification of a Control Room fire detection system alarm. Verification of a fire detection system alarm includes actions that can be taken by the control room or other nearby site-specific location to ensure that the alarm is not spurious.

A verified alarm is assumed to be an indication of a FIRE unless personnel dispatched to the scene disprove it within the 15-minute period. In other words, a personnel report from the scene may be used to disprove a sensor alarm if received within 15 minutes of the alarm, but is not be required to verify the alarm.

If the fire may affect a Safety Related System, then refer to EAL 10-1-2.

9.2 EAL 10-2-1

10-2-1 AIRCRAFT, TRAIN OR OTHER VEHICLE CRASH THAT MAY DAMAGE PLANT STRUCTURES CONTAINING FUNCTIONS OR SYSTEMS REQUIRED FOR SAFE SHUTDOWN OF THE PLANT

BASIS:

This EAL addresses such items as a plane, helicopter or train crash that impact plant structures and may result in potential damage to those structures containing functions and systems required for safe shutdown of the plant.

HNP receives spent fuel shipments by rail car.

CLASSIFICATION GUIDANCE:

There are two criteria in this EAL, both of which must be met to classify:

1. An aircraft, train or other vehicle crash has occurred.
2. Plant structures containing functions or systems required for safe shutdown of the plant have been visibly damaged.

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

Classification of this type of event may be determined without detailed inspections or analysis to determine if significant damage has actually occurred to these structures.

This EAL applies only to plant structures within the Protected Area. Specifically structures that are covered by this EAL are the:

Containment Building
Reactor Auxiliary Building
Waste Processing Building
Tank Buildings
Diesel Generator Building
Turbine Building
Emergency Service Water System Structures (Main reservoir and auxiliary reservoir intakes)
Diesel Fuel Oil Storage Tanks
Fuel Handling Building

9.3 EAL 10-3-1

10-3-1 UNPLANNED EXPLOSION WITHIN THE PROTECTED AREA RESULTING IN VISIBLE DAMAGE TO PERMANENT STRUCTURES OR EQUIPMENT

BASIS:

This EAL applies only to those explosions of sufficient force to damage permanent structures or equipment within the Protected Area. 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. The word "Unplanned" was included to eliminate unwarranted declarations due to planned explosions (Ex. Plugging SG tubes with explosive plugs).

CLASSIFICATION GUIDANCE:

There are four criteria in this EAL, all of which must be met to classify:

1. An explosion of sufficient force to damage permanent structures or equipment within the Protected Area has occurred.
2. Plant structures or equipment have been visibly damaged.
3. Explosion must have been unplanned.
4. The explosion has not affected safety related equipment or a power block structure.

No attempt is made in this 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.

While some explosions may also result in fires that exceed EAL No. 10-1-1, no fire is necessary to declare an emergency in the event of an explosion. If a fire also occurs as a result or with an explosion, declare the Unusual Event based on the explosion and monitor the progress of the fire for potential escalation due to fire damage.

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

The Protected Area includes the plant and all areas within the security fence.

If the explosion has occurred within the power block then refer to EAL 10-2-2.

If the explosion has affected safety related equipment or a power block structure then refer to EAL 10-2-3.

9.4 EAL 10-4-1

10-4-1 UNPLANNED TOXIC OR FLAMMABLE GAS RELEASE WITHIN THE EAB (REFERENCE EAL TABLE 7)

BASIS:

- EAL Table 7 lists only Toxic, Flammable, and Asphyxiant Gases stored in bulk at HNP. It is also used for evaluating the applicability of this initiating condition.
- This EAL is intended only for events occurring inside the Exclusion Area Boundary (EAB) unless events outside the EAB directly affect plant operations.

CLASSIFICATION GUIDANCE:

There are three imbedded criteria in this EAL, all of which must be met to classify:

1. A toxic, asphyxiant or flammable gas release has occurred within EAB or has occurred offsite and affected the EAB.
2. The gas release is unplanned.
3. The gas has an effect on personnel or affects access to or habitability of areas of the power block or is confirmed to be greater than minimum detectable concentration.

At times, planned releases of toxic or flammable gases occur. These are controlled releases and must be done to continue safe and efficient plant operations. This type of release does not require an Unusual Event declaration because it is done on purpose and in a controlled manner.

Also very small quantities of gas that have no effect on personnel or access to areas of the power block or are confirmed to be less than minimum detectable are not required to be declared under this EAL. SSO judgment may be used to determine applicability of this EAL when very small quantities of gas are released.

Any other type of uncontrolled release of toxic or flammable gas at any location within the EAB, which includes the power block, such that the area around the release becomes uninhabitable, even if it does not immediately place plant personnel at risk, should be declared under this EAL. For example, a non-isolable leak develops on a liquid nitrogen truck within the EAB resulting in a local area evacuation that does not affect the power block should be classified under this EAL.

Events that occur outside the EAB may also be classified under this EAL if they directly affect plant operations. To directly affect plant operations means to limit or prevent access to plant structures such that continued plant operations are jeopardized. This does not include limiting access to administration areas.

The EAB is defined as a circle from containment with a radius of approximately 1.3 miles.

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the “K” area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.
(Continued on next page.)

Gases listed in Table 7:

Chemical Name	IDLH Level	Flammability Level
Acetylene	No Data	2.5% - 80%
Carbon Dioxide	40,000 ppm	N/A
P-10	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Nitrogen	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Helium	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Hydrogen	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	4% - 75%
Ammonia	300 ppm	N/A
Oxygen	N/A	Not flammable but increases the flammability of materials
Argon	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Freon (Tetrachloro-difluoroethane)	2000 ppm	N/A

Halon is used in the Admin Building Vault and PABX Room, the 314 K Building in the PABX Room for the TSC and Construction Vaults. Halon is not an asphyxiant or toxic gas.

P-10 is a mixture of 90% argon and 10% methane. It is not flammable.

Information for a particular chemical may be obtained by accessing the National Institute for Occupational Safety and Health (NIOSH) Online Pocket Guide to Chemical Hazards at NIOSH/ Online NIOSH Pocket Guide to Chemical Hazards/chemical name and synonym index (http://www.cdc.gov/niosh/npg/npgdname.html) and clicking on the name of the chemical in question. The pocket guide contains other valuable information such as personal protection & sanitation, first aid, respirator recommendations, measurement methods and exposure symptoms.

Refer to EAL 10-3-2 for any uncontrolled toxic or flammable gas release within the power block.

9.5 EAL 10-5-1

10-5-1 CIVIL DISTURBANCE ONGOING BETWEEN THE SITE BOUNDARY AND THE PROTECTED AREA

BASIS:

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. This specific event indicates a Potential Degradation in the Level of Safety of the Plant.

CLASSIFICATION GUIDANCE:

Security Shift Supervision should be conferred with prior to classification because these individuals are the designated on-site personnel qualified and trained to confirm whether this would constitute a security event. Security events should be classified under Section 6.0, Security Threat.

The protected area (PA) is defined as the plant area inside the security fence including the Intake Structures.

The Site Boundary (SB) is a circle of approximately 2500 ft. radius (0.47 miles) from the center of the HNP containment dome.

9.6 EAL 10-1-2

10-1-2 FIRE MAY AFFECT SAFETY RELATED (ESF) EQUIPMENT

Basis:
This EAL addresses a FIRE and not the degradation in performance of affected systems. The reference to safety related (ESF) equipment is used to identify the magnitude of the fire and to discriminate against minor fires. The reference to safety related (ESF) equipment is included to discriminate against fires in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the fire was large enough to cause damage to these systems.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. At least two indications of a fire (alarms, fire pump start, field report, etc.).
2. Fire must have visibly (by observation or instrumentation) affected safety-related or ESF equipment.
3. A loss of a safety related function has not occurred.

The occurrence of the fire with reports of visible damage to safety related (ESF) equipment is sufficient for declaration. No attempt is made in this EAL to assess the actual magnitude of the damage. The declaration of an Alert and the activation of the Technical Support Center will provide the resources needed to perform these damage assessments.

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

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Safety-related/ESF equipment is defined as equipment contained in the following systems or components.

Auxiliary Feedwater	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Analyzers	Diesel Fuel Oil	Reactor Auxiliary Building ESF Equipment Cooling
Hydrogen Recombiners	Electrical Equipment Protection Room HVAC	Reactor Auxiliary Building Ventilation
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Coolant System
Containment Cooling	Essential Switchgear Room Cooling	Reactor Makeup
Containment Isolations	Emergency Service Water	Reactor Protection System
Containment Spray	Emergency Service Water Intake Structure Ventilation	Residual Heat Removal (RHR)
Containment Vacuum Relief	Fuel Handling Building Ventilation	Safety Injection System (SI)
Control Room Ventilation	Gas Decay Tank	125V DC Power
Chemical and Volume Control (CVCS)	Main Feedwater Isolations	120V Uninterruptible AC
Chilled Water	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup

If the results of the fire include a loss of any safety related function, refer to EAL 10-1-3.

9.7 EAL 10-2-2

10-2-2 AIRCRAFT CRASH, MISSILE IMPACT OR UNPLANNED EXPLOSION INSIDE POWER BLOCK.

Basis:

The EALs escalate from the Unusual Event EALs in 10-2-1 and 10-3-1 in that the event has occurred in the Power Block. The occurrence in the power block is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that an event occurred that was of sufficient magnitude to at least potentially cause damage within or to the power block. Escalation to higher classifications occurs on the basis of other initiating conditions (e.g., System Malfunction, actual damage to safety related systems or structures).

In general terms MISSILE IMPACT is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. This EAL is, therefore, consistent with the general definition of an ALERT (as stated in EAL 11-1-2) in that if missiles have been generated with enough force to potentially damage or penetrate areas containing safety-related equipment, the potential exists for substantial degradation of the level of safety of the plant.

Classification Guidance:

There are three criteria in this EAL, all of which must be met to classify:

1. An aircraft crash, missile impact or explosion of sufficient force to damage permanent structures or equipment within the Power Block has occurred.
2. The event must have been unplanned.
3. The event has not affected safety related equipment or a power block structure.

These conditions result in declaration of an Alert (EAL 10-2-2) unless Safety Related or ESF equipment or structures are affected with the plant in or above Mode 4 (Hot Shutdown, Tavg > 200^0), which would result in escalating the emergency classification to a Site Area Emergency (EAL 10-2-3).

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the “K” area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.

(Continued on next page)

Safety-related/ESF equipment is defined as equipment contained in the following systems or components.

Auxiliary Feedwater	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Analyzers	Diesel Fuel Oil	Reactor Auxiliary Building ESF Equipment Cooling
Hydrogen Recombiners	Electrical Equipment Protection Room HVAC	Reactor Auxiliary Building Ventilation
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Coolant System
Containment Cooling	Essential Switchgear Room Cooling	Reactor Makeup
Containment Isolations	Emergency Service Water	Reactor Protection System
Containment Spray	Emergency Service Water Intake Structure Ventilation	Residual Heat Removal (RHR)
Containment Vacuum Relief	Fuel Handling Building Ventilation	Safety Injection System (SI)
Control Room Ventilation	Gas Decay Tank	125V DC Power
Chemical and Volume Control (CVCS)	Main Feedwater Isolations	120V Uninterruptible AC
Chilled Water	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup

If the aircraft crash, missile impact or explosion has affected safety related or ESF equipment or a power block structure then refer to EAL 10-2-3.

9.8 EAL 10-3-2

10-3-2 UNCONTROLL'D OR UNPLANNED RELEASE OF TOXIC OR FLAMMABLE GAS INTO POWER BLOCK REF EAL TABLE 7

Basis:

This EAL is based on gases that affect the safe operation of the plant. This EAL applies only to the power block.

Classification Guidance:

There are three imbedded criteria in this EAL, all of which must be met to classify:

1. A toxic, asphyxiant or flammable gas release has occurred within the Power Block or has occurred offsite and affected the Power Block.
2. The gas release is unplanned and uncontrolled.
3. The gas has an effect on personnel or affects access to or habitability of areas of the power block or are confirmed to be greater than minimum detectable.

This condition results in declaration of an Alert (EAL 10-3-2) if the gas concentrations or conditions are below IDLH or flammability limits and the uncontrolled or unplanned gas release is within the power block. However, very small quantities of gas that have no effect on personnel or access to areas (habitability) of the power block or are confirmed to be less than minimum detectable are not required to be declared under this EAL. SSO judgment may be used to determine applicability of this EAL when very small quantities of gas are released. For example, a non-isolable leak develops on a liquid nitrogen truck within the EAB resulting in a local area evacuation that includes the lower level of the turbine building should be classified under this EAL due to elevated nitrogen levels.

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the "K" area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.

EAL Table 7 lists toxic, flammable, and asphyxiant gases stored in bulk at HNP. It also provides guidelines for evaluating the applicability of this initiating condition. Gases listed in Table 7:

(Continued on next page)

Chemical Name	IDLH Level	Flammability Level
Acetylene	No Data	2.5% - 80%
Carbon Dioxide	40,000 ppm	N/A
P-10	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Nitrogen	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Helium	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Hydrogen	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	4% - 75%
Ammonia	300 ppm	N/A
Oxygen	N/A	Not flammable but increases the flammability of materials
Argon	Simple asphyxiate - IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Freon (Tetrachloro-difluoroethane)	2000 ppm	N/A

Halon is used in the Admin Building Vault and PABX Room, the 314 K Building in the PABX Room for the TSC and Construction Vaults. Halon is not an asphyxiant or toxic gas.

P-10 is a mixture of 90% argon and 10% methane. It is not flammable.

IDLH levels may be determined for a particular chemical by accessing the Online NIOSH Pocket Guide to Chemical Hazards at NIOSH/ Online NIOSH Pocket Guide to Chemical Hazards/chemical name and synonym index (http://www.cdc.gov/niosh/npg/npgdname.html) and clicking on the name of the chemical in question. The pocket guide contains other valuable information such as personal protection & sanitation, first aid, respirator recommendations, measurement methods and exposure symptoms.

If the gas is at or above IDLH or flammable limits within an area that contains safety related equipment or lack of access is a safety problem with the plant in or above Mode 4 (Hot Shutdown, Tavg > 200^0), then this would result in escalating the emergency classification to a Site Area Emergency (EAL 10-3-3).

If the release is outside of the power block or below IDLH or flammable limits then EAL 10-4-1 must be considered.

9.9 EAL 10-4-2

10-4-2 CONTROL ROOM EVAC REQUIRED OR ANTICIPATED

Basis:

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facility is necessary.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Control room evacuation is required or anticipated.
2. Evacuation is not planned as a part of maintenance or a testing evolution.

Operational is defined as having operational transfer complete to the ACP.

Declaration should be made as soon as it is recognized that the Control Room must be evacuated.

If the evacuation is required or anticipated and the Auxiliary Control (Shutdown) Panel is not operational with the Control Room evacuated for >15 minutes, refer to EAL 10-4-3.

9.10 EAL 10-1-3

10-1-3 COMPLETE LOSS OF ANY SAFETY RELATED (ESF) FUNCTION DUE TO FIRE

Basis:
The basis is as described in NUREG-0654.

Classification Guidance:

This EAL addresses a FIRE and not the degradation in performance of affected systems. The loss of any safety related (ESF) function is used to identify the seriousness and safety implications of the fire. The significance here is that a fire was large or significant enough that it degraded the function of both trains of a safety system.

The occurrence of the fire and the resulting loss of safety related (ESF) equipment is sufficient for declaration. No attempt is made in this EAL to assess the actual magnitude of the damage. The declaration of a Site Area Emergency will provide the resources needed to perform these damage assessments.

If a component of the non-affected (by the fire) safety-related train was removed from service due to maintenance or other reason unrelated to the fire then it is not considered a complete loss of safety function under this EAL.

Safety-related/ESF function is defined as both trains of equipment contained in the following systems or components.

Auxiliary Feedwater	Chilled Water	Reactor Coolant System
Hydrogen Analyzers	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Recombiners	Diesel Fuel Oil	Reactor Makeup
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Protection System
Containment Cooling	Emergency Service Water	Residual Heat Removal (RHR)
Containment Isolations	Fuel Handling Building Ventilation	Safety Injection System (SI)
Containment Spray	Gas Decay Tank	125V DC Power
Containment Vacuum Relief	Main Feedwater Isolations	120V Uninterruptible AC
Control Room Ventilation	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup
Chemical and Volume Control (CVCS)	Reactor Auxiliary Building Ventilation	Radiation Monitoring

9.11 EAL 10-2-3

10-2-3 AIRCRAFT CRASH, MISSILE IMPACT OR UNPLANNED EXPLOSION INSIDE POWER BLOCK with PLANT IN MODES 1, 2, 3, OR 4 with SAFETY RELATED EQUIPMENT OR STRUCTURE AFFECTED

Basis:

The EAL escalates from the Alert EAL in that the event has caused damage to safety related or ESF equipment or structures in the Power Block. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage but only to establish the fact that visible damage has actually occurred to safety related systems or structures.

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

In general terms MISSILE IMPACT is intended to address damage to safety related equipment or structures from missiles generated by main turbine rotating component failures. Even though a determination is not made to establish actual magnitude of damage to safety related systems this EAL is consistent with the general definition of Site Area Emergency (as stated in EAL 11-1-3) in that if missiles have damaged safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

Classification Guidance:

There are four imbedded criteria in this EAL, all of which must be met to classify:

1. Aircraft crash, missile impact, or unplanned explosion has occurred.
2. Aircraft crash, missile impact, or unplanned explosion has occurred inside the Power Block
3. Plant is in Mode 1, 2, 3, or 4
4. Safety related equipment or structure is visibly affected.

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the “K” area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area, Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas.

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Specifically the safety related structures that are covered by this EAL are the

Containment Building
Fuel handling Building (including the “K” area)
Emergency Service Water System Structures (main and auxiliary service water)
Turbine Building
Diesel Fuel Oil Storage Tanks
Reactor Auxiliary Building
Waste Processing Building
Diesel Generator Building
Tank Buildings

Safety-related/ESF equipment is defined as equipment contained in the following systems or components.

Auxiliary Feedwater	Diesel Generator and support systems	Radiation Monitoring
Hydrogen Analyzers	Diesel Fuel Oil	Reactor Auxiliary Building ESF Equipment Cooling
Hydrogen Recombiners	Electrical Equipment Protection Room HVAC	Reactor Auxiliary Building Ventilation
Component Cooling Water	Emergency Power Sources (1A-SA & 1B-SB)	Reactor Coolant System
Containment Cooling	Essential Switchgear Room Cooling	Reactor Makeup
Containment Isolations	Emergency Service Water	Reactor Protection System
Containment Spray	Emergency Service Water Intake Structure Ventilation	Residual Heat Removal (RHR)
Containment Vacuum Relief	Fuel Handling Building Ventilation	Safety Injection System (SI)
Control Room Ventilation	Gas Decay Tank	125V DC Power
Chemical and Volume Control (CVCS)	Main Feedwater Isolations	120V Uninterruptible AC
Chilled Water	Main Steam Isolations (from Steam generators to MISVs)	Spent Fuel Pool Cooling and Cleanup

9.12 EAL 10-3-3

10-3-3 UNCONTROLL'D OR UNPLANNED RELEASE OF TOXIC OR FLAMMABLE GAS INTO POWER BLOCK REF EAL TABLE 7 and AFFECTED AREA HOUSES SAFETY RELATED EQUIPMENT and GAS IS FLAMMABLE OR LACK OF ACCESS IS A SAFETY PROBLEM with PLANT IN MODE 1, 2, 3 OR 4

Basis:

Uncontrolled or unplanned release of Toxic (or Asphyxiant) or Flammable gas into the Power Block, if the release endangers personnel or safety-related equipment, or if access to safety-related equipment required to operate the plant is impeded, and with the plant in or above Mode 4 (Mode 4 is Hot Shutdown with Tavg > 200^0) results in declaration of a Site Area Emergency.

Classification Guidance:

There are three imbedded criteria in this EAL, all of which must be met to classify:

1. A toxic, asphyxiant or flammable gas release has occurred within the Power Block or has occurred offsite and affected the Power Block.
2. The gas release in unplanned and uncontrolled.
3. The gas has an effect on personnel or affects access to, or habitability of, areas of the power block that house safety-related equipment or gas is flammable and are confirmed to be greater than Immediately Dangerous to Life and Health (IDLH).

This EAL is based on gas releases that affect the safe operation of the plant. This EAL applies only within areas of the power block where access is necessary for the operations of the plant.

EAL Table 7 lists Toxic, Flammable, and Asphyxiant Gases stored in bulk at HNP. It also provides guidelines for evaluating the applicability of this initiating condition.

The EAL is met if measurement of toxic gas concentration results in an atmosphere that is Immediately Dangerous to Life and Health (IDLH) within areas of the power block where access is necessary for the operations of the plant. Exposure to an IDLH atmosphere will result in immediate harm to unprotected personnel, and would preclude access to any such affected areas.

IDLH levels may be determined for a particular chemical by accessing the Online NIOSH Pocket Guide to Chemical Hazards at NIOSH/ Online NIOSH Pocket Guide to Chemical Hazards/chemical name and synonym index (http://www.cdc.gov/niosh/npg/npgdname.html) and clicking on the name of the chemical in question. The pocket guide contains other valuable information such as personal protection & sanitation, first aid, respirator recommendations, measurement methods and exposure symptoms.

The EAL is also met when the flammable gas concentration within areas of the power block where access is necessary for the operations of the plant exceed the LOWER FLAMMABILITY LIMIT.

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This EAL addresses concentrations at which gases can ignite/support combustion. An uncontrolled

release of flammable gasses within areas of the power block where access is necessary for the operations of the plant has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range.

For example, a non-isolable leak develops on a nitrogen bottle within a cable spreading room within the reactor auxiliary building (RAB) resulting in a restricted entry due to nitrogen levels reaching IDLH levels. Even if access is not currently required for operation of the plant this condition should be classified under this EAL.

The power block is defined as the Containment, Reactor Auxiliary Building, Turbine Building, Fuel Handling Building (including the "K" area), Waste Processing Building, Diesel Generator Building, Diesel Fuel Oil Storage, Fire House, Tank Area (tank buildings), Intake Structure and Duct Banks (underground raceways containing safety related power, control and instrumentation cables) serving these areas. The Emergency Service Water System Structures (main and auxiliary service water) are also covered under this EAL.

Gases listed in Table 7:

Chemical Name	IDLH Level	Flammability Level
Acetylene	No Data	2.5% - 80%
Carbon Dioxide	40,000 ppm	N/A
P-10	Simple asphyxiate IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Nitrogen	Simple asphyxiate IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Helium	Simple asphyxiate IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Hydrogen	Simple asphyxiate IDLH levels not established – Recommended to keep oxygen levels >19.5%	4% - 75%
Ammonia	300 ppm	N/A
Oxygen	N/A	Not flammable but increases the flammability of materials
Argon	Simple asphyxiate IDLH levels not established – Recommended to keep oxygen levels >19.5%	N/A
Freon (Tetrachloro-difluoroethane)	2000 ppm	N/A

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Halon is used in the Admin Building Vault and PABX Room, the 314 K Building in the PABX Room for the TSC and Construction Vaults. Halon is not an asphyxiant or toxic gas.

P-10 is a mixture of 90% argon and 10% methane. It is not flammable.

9.13 EAL 10-4-3

10-4-3 CONTROL ROOM EVAC REQUIRED OR ANTICIPATED and AUX CONTROL PANEL (ACP) not OPERATIONAL with CONTROL ROOM EVACUATED FOR >15 MIN's

Basis:

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facility is necessary. Failure to reestablish control from the Auxiliary Control Panel within 15 minutes indicates a severe degradation in the level of safety of the plant and warrants declaration of a Site Area Emergency.

Classification Guidance:

There are two criteria in this EAL, both of which must be met to classify:

1. Control room evacuation is required or anticipated.
2. The Auxiliary Control Panel (ACP) is not operational with the Control Room evacuated for >15 minutes.

Operational is defined as having operational transfer complete to the ACP.

This EAL applies to any and all Control Room evacuations. Declaration should be made as soon as it is recognized that control will not be reestablished within 15 minutes.

10.0 SITE EMERGENCY COORDINATOR JUDGMENT

10.1 EAL 11-1-1

11-1-1 OTHER PLANT CONDITIONS EXIST THAT WARRANT INCREASED AWARENESS ON THE PART OF THE PLANT OPERATING STAFF, CHATHAM COUNTY, HARNETT COUNTY, LEE COUNTY, WAKE COUNTY OR THE STATE OF NORTH CAROLINA.

Basis:

This EAL 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 Site Emergency Coordinator to fall under the Unusual Event class.

CLASSIFICATION GUIDANCE:

Classification under this EAL is a judgment call. The definition of an Unusual Event should be considered when classifying occurrences under this EAL.

UNUSUAL EVENT: Events are in process 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 systems occurs.

Discussion: Exceeding Technical Specification Limiting Condition of Operation (LCO) allowable action statement time for achieving required mode change indicates potential degradation of the level of safety of the plant. Precursors of more serious events should also be included because precursors do represent a potential degradation in the level of safety of the plant. Minor releases of radioactive materials are included. In this emergency class, however, releases do not require monitoring or offsite response (e.g., dose consequences of less than 10 millirem).

10.2 EAL 11-1-2

11-1-2 AIRBORNE RAD LEVELS INDICATE SEVERE DEGRADATION IN RADIOACTIVE MATERIAL CONTROL,

Or

ANY PLANT CONDITION EXISTS THAT IN THE JUDGEMENT OF THE SUPERINTENDENT SHIFT OPERATIONS OR SITE EMERGENCY COORDINATOR WARRANTS AN ALERT DECLARATION

Basis:

This EAL 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 Site Emergency Coordinator to fall under the Alert class.

CLASSIFICATION GUIDANCE:

Classification under this EAL is a judgment call. The definition of an Alert should be considered when classifying occurrences under this EAL.

ALERT: Events are in process 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 intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Discussion: Rather than discussing the distinguishing features of "potential degradation" and "potential substantial degradation," a comparative approach would be to determine whether increased monitoring of plant functions is warranted at the Alert level as a result of safety system degradation. This addresses the operations staff's need for help, independent of whether an actual decrease in plant safety is determined. This increased monitoring can then be used to better determine the actual plant safety state, whether escalation to a higher emergency class is warranted, or whether de-escalation or termination of the emergency class declaration is warranted. Dose consequences from these events are small fractions of the EPA PAG plume exposure levels, i.e., about 10 millirem to 100 millirem TEDE.

10.3 EAL 11-1-3

11-1-3 ANY PLANT CONDITION THAT IN THE JUDGEMENT OF THE SUPERINTENDENT - SHIFT OPERATIONS OR SITE EMERGENCY COORDINATOR WARRANTS A SITE AREA EMERGENCY DECLARATION

Basis:

This EAL 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 Site Emergency Coordinator to fall under the Site Area Emergency class.

CLASSIFICATION GUIDANCE:

Classification under this EAL is a judgment call. The definition of a Site Area Emergency should be considered when classifying occurrences under this EAL.

SITE AREA EMERGENCY: Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevents 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.

Discussion: The discriminator (threshold) between Site Area Emergency and General Emergency is whether or not the EPA PAG plume exposure levels are expected to be exceeded outside the site boundary. This threshold, in addition to dynamic dose assessment considerations discussed in the EAL guidelines, clearly addresses NRC and offsite emergency response agency concerns as to timely declaration of a General Emergency.

10.4 EAL 11-1-4

11-1-4 ANY RADIOLOGICAL CONDITION WARRANTING RECOMMENDATION TO EVACUATE OR SHELTER THE PUBLIC

Basis:

Offsite plans do not allow for the implementation of protective actions for the public at anything other than a General Emergency. Therefore, any condition that warrants public protective action recommendations of evacuation or shelter must be a General Emergency.

This option is provided to give the Site Emergency Coordinator the flexibility to declare a General Emergency and issue Protective Action Recommendations for the public in the event that some potential initiating condition was not previously addressed.

Classification Guidance:

Any condition that warrants the recommendation of either Shelter or Evacuation of the public must be classified as a General Emergency.

11.0 Revision Summary of EP-EAL, Rev. 06.

Section	Change Description:
1.0	Added statement to require any changes to this document to be covered by the 50.59 and 50.54q review process.
2.0	Added definition of “Shutdown”. (Editorial)
6-1-1	Added statement “Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators.” to clarify that use of annunciator light boxes are to be used for the percentage of loss of annunciators calculation because it is a faster method. CORR 00229229 Removed “approximately” to match basis to EAL and eliminate any possibility for confusion. (Editorial) Removed “Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.” in the Classification Guidance section as it is a redundant statement to one already made in the Basis section. (Editorial)
6-1-2	Added “annunciator light boxes” to Basis section clarify what ALB acronym means. (Editorial) Added statement **“**Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators.” to clarify that use of annunciator light boxes are to be used for the percentage of loss of annunciators calculation because it is a faster method. CORR 00229229
6-1-3	Added “annunciator light boxes” to Basis section clarify what ALB acronym means. (Editorial) Added statement **“**Annunciator light boxes (ALBs) are used because it is a faster way to calculate the percentage loss of annunciators.” to clarify that use of annunciator light boxes are to be used for the percentage of loss of annunciators calculation because it is a faster method. CORR 00229229