

PWR CONTAINMENT BARRIER THRESHOLDS:

The containment barrier includes the containment building and connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown line extensions outside the containment building up to and including the outermost secondary side isolation valve. Containment barrier thresholds are used as criteria for escalation of the ECL from Alert to a Site Area Emergency or a General Emergency.

1. RCS or SG Tube Leakage

Loss 1.A

This threshold addresses a leaking or RUPTURED Steam Generator (SG) that is also FAULTED outside of containment. The condition of the SG, whether leaking or RUPTURED, is determined in accordance with the thresholds for RCS Barrier Potential Loss 1.A and Loss 1.A, respectively. This condition represents a bypass of the containment barrier.

FAULTED is a defined term within the NEI 99-01 methodology. ~~This determination is not necessarily dependent upon entry into, or diagnostic steps within, an EOP.~~ For example, if the pressure in a steam generator is decreasing uncontrollably [*part of the FAULTED definition*] and the faulted steam generator isolation procedure is not entered because EOP user rules are dictating implementation of another procedure to address a higher priority condition, the steam generator is still considered FAULTED for emergency classification purposes.

The FAULTED criterion establishes an appropriate lower bound on the size of a steam release that may require an emergency classification. Steam releases of this size are readily observable with normal Control Room indications. The lower bound for this aspect of the containment barrier is analogous to the lower bound criteria specified in IC SU3 for the fuel clad barrier (i.e., RCS activity values) and IC SU4 for the RCS barrier (i.e., RCS leak rate values).

This threshold also applies to prolonged steam releases necessitated by operational considerations such as the forced steaming of a leaking or RUPTURED steam generator directly to atmosphere to cooldown the plant, or to drive an auxiliary (emergency) feed water pump. These types of conditions will result in a significant and sustained release of radioactive steam to the environment (~~and are thus~~ similar to a FAULTED condition). The inability to isolate the steam flow without an adverse effect on plant cooldown meets the intent of a loss of containment.

Steam releases associated with the expected operation of a SG power operated relief valve or safety relief valve do not meet the intent of this threshold. Such releases may occur intermittently for a short period of time following a reactor trip as operators process through emergency operating procedures to bring the plant to a stable condition and prepare to initiate a plant cooldown. Steam releases associated with the unexpected operation of a valve (e.g., a stuck-open safety valve) do meet this threshold.

PWR CONTAINMENT BARRIER THRESHOLDS:

Following an SG tube leak or rupture, there may be minor radiological releases through a secondary-side system component (e.g., air ejectors, gland seal exhausters, valve packing, etc.). These types of releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

The emergency classification levels resulting from primary-to-secondary leakage, with or without a steam release from the FAULTED SG, are summarized below.

P-to-S Leak Rate	Affected SG is FAULTED Outside of Containment?	
	Yes	No
Less than or equal to 25 gpm (or other value per SU4 Developer Notes)	No classification	No classification
Greater than 25 gpm (or other value per SU4 Developer Notes)	Unusual Event per SU4	Unusual Event per SU4
Requires operation of a standby charging (makeup) pump (RCS barrier potential loss)	Site Area Emergency per FS1	Alert per FA 1
Requires an automatic or manual ECCS (SI) actuation (RCS barrier loss)	Site Area Emergency per FS1	Alert per FA 1

There is no potential loss threshold associated with RCS or SG Tube Leakage.

Developer Notes:

Loss 1.A

A steam generator power operated relief valve may also be referred to as an atmospheric steam dump valve or other appropriate site specific term.

Developers may include an additional site specific threshold(s) to address prolonged steam releases necessitated by operational considerations if AOPs or EOPs could require that a leaking or RUPTURED steam generator be used to support plant cooldown.

Developers may wish to consider incorporating the above table into user aids (e.g., a wallboard) or other locations within their basis document.

PWR CONTAINMENT BARRIER THRESHOLDS:

2. Inadequate Heat Removal

There is no loss threshold associated with inadequate heat removal.

Potential Loss 2.A

This condition represents an IMMEDIATE core melt sequence ~~which~~that, if not corrected, could lead to vessel failure and an increased potential for containment failure. For this condition to occur, there must already have been a loss of the RCS barrier and the fuel clad barrier. If implementation of a procedure(s) to restore adequate core cooling is not effective (successful) within 15 minutes, it is assumed that the event trajectory will likely lead to core melting and a subsequent challenge of the containment barrier.

The restoration procedure is considered "effective" if core exit thermocouple readings are decreasing ~~and~~or if reactor vessel level is increasing. Whether ~~or not~~the procedure(s) will be effective should be apparent within 15 minutes. The emergency director should escalate the emergency classification level as soon as it is determined that the procedure(s) will not be effective.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation in a significant fraction of core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide 15 minutes beyond the required entry point to determine if procedural actions can reverse the core melt sequence.

Developer Notes:

~~Some site specific EOPs and/or EOP user guidelines may establish decision making criteria concerning the number or other attributes of thermocouple readings necessary to drive actions (e.g., 5 CETs reading greater than 1,200°F is required before transitioning to an inadequate core cooling procedure). To maintain consistency with EOPs, these decision-making criteria may be used in the core exit thermocouple reading thresholds.~~

Potential Loss 2.A.1

~~Enter site specific criteria requiring entry into a core cooling restoration procedure or prompt implementation of core cooling restoration actions. A reading of 1,200°F on the CETs may also be used.~~

~~For plants that have implemented Westinghouse Owners Group Emergency Response Guidelines, enter the parameters and values used in the Core Cooling Red Path.~~

~~PWR CONTAINMENT BARRIER THRESHOLDS:~~

Westinghouse ERG Plants

~~Developers should consider including a threshold the same as, or similar to, "Core Cooling Red entry conditions met for 15 minutes or longer" in accordance with the guidance at the front of this section.~~

3. RCS Activity-/Containment Radiation

There is no loss threshold associated with RCS activity-/containment radiation.

Potential Loss 3.A

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the containment, assuming that ~~20% percent~~ of the fuel cladding has failed. This level of fuel clad failure is well above that used to determine the analogous fuel clad barrier loss and RCS barrier loss thresholds.

NUREG-1228, *Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents*, indicates the fuel clad failure must be greater than approximately ~~20% percent~~ in order for there to be a major release of radioactivity requiring offsite protective actions. For this condition to exist, there must already have been a loss of the RCS barrier and the fuel clad barrier. It is therefore prudent to treat this condition as a potential loss of containment ~~which-that~~ would then escalate the emergency classification level to a General Emergency.

Developer Notes:

Potential Loss 3.A

~~NUREG-1228, *Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents*, provides the basis for using the 20% fuel cladding failure value. Unless there is a site-specific analysis justifying a different value, the reading should be determined assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with 20% fuel clad failure into the containment atmosphere.~~

4. Containment Integrity or Bypass

Loss 4.A

These thresholds address a situation where containment isolation is required and one of two conditions exists as discussed below. ~~Users are reminded that t~~There may be accident and release conditions that simultaneously meet both thresholds 4.A.1 and 4.A.2.

PWR CONTAINMENT BARRIER THRESHOLDS:

4.A.1 – Containment integrity has been lost, i.e., the actual containment atmospheric leak rate likely exceeds that associated with allowable leakage (~~or~~ sometimes referred to as design leakage). Following the release of RCS mass into containment, containment pressure will fluctuate based on a variety of factors; a loss of containment integrity condition may (or may not) be accompanied by a noticeable drop in containment pressure. Recognizing the inherent difficulties in determining a containment leak rate during accident conditions, it is expected that the emergency director will assess this threshold using judgment, and with due consideration given to current plant conditions, and available operational and radiological data (e.g., containment pressure, readings on radiation monitors outside containment, operating status of containment pressure control equipment, etc.).

~~Refer to the~~ Two simplified examples are provided in the middle piping run of Figure 96-F-41. ~~Two simplified examples are provided.~~ One is leakage from a penetration and the other is leakage from an in-service system valve. Depending upon radiation monitor locations and sensitivities, the leakage could be detected by any of the four monitors depicted in the figure.

Another example ~~would be~~ is a loss or potential loss of the RCS barrier, and the simultaneous occurrence of two FAULTED locations on a steam generator where one fault is located inside containment (e.g., on a steam or feedwater line) and the other outside of containment. In this case, the associated steam line provides a pathway for the containment atmosphere to escape to an area outside the containment.

Following the leakage of RCS mass into containment and a rise in containment pressure, there may be minor radiological releases associated with allowable (design) containment leakage through various penetrations or system components. These releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

4.A.2 – Conditions are such that there is an UNISOLABLE pathway for the migration of radioactive material from the containment atmosphere to the environment. As used here, the term “environment” includes the atmosphere of a room or area, outside the containment, that may, in turn, communicate with the outside-the-plant atmosphere (e.g., through discharge of a ventilation system or atmospheric leakage). Depending upon a variety of factors, this condition may or may not be accompanied by a noticeable drop in containment pressure.

~~Refer to~~ See a simplified example in the top piping run of Figure 96-F-41. ~~In this simplified example,~~ the inboard and outboard isolation valves remained open after a containment isolation was required (i.e., containment isolation was not successful). There is now an UNISOLABLE pathway from the containment to the environment.

The existence of a filter is not considered in the threshold assessment. Filters do not remove fission product noble gases. In addition, a filter could become ineffective due to iodine and/or particulate loading beyond design limits (i.e., retention ability has been exceeded) or water saturation from steam/high humidity in the release stream.

PWR CONTAINMENT BARRIER THRESHOLDS:

Leakage between two interfacing liquid systems, by itself, does not meet this threshold.

~~Refer to~~ A simplified example is shown in the bottom piping run of Figure 96-F-41. ~~In this simplified example,~~ Leakage in an RCP seal cooler is allowing radioactive material to enter the Auxiliary Building. The radioactivity would be detected by the Process Monitor. If there is no leakage from the closed water cooling system to the Auxiliary Building, then no threshold has been met. If the pump or system piping developed a leak that allowed steam/water to enter the Auxiliary Building, then threshold 4.B would be met. Depending upon radiation monitor locations and sensitivities, this leakage could be detected by any of the four monitors depicted in the figure and cause threshold 4.A.1 to be met as well.

Following the leakage of RCS mass into containment and a rise in containment pressure, there may be minor radiological releases associated with allowable (design) containment leakage through various penetrations or system components. Minor releases may also occur if a containment isolation valve(s) fails to close but the containment atmosphere escapes to a closed system. These releases do not constitute a loss or potential loss of containment but should be evaluated using the Recognition Category R ICs.

The status of the containment barrier during an event involving steam generator tube leakage is assessed using loss threshold 1.A.

Loss 4.B

Containment sump, temperature, pressure and/or radiation levels will increase if reactor coolant mass is leaking into the containment. If these parameters have not increased, then the reactor coolant mass may be leaking outside of containment (i.e., a containment bypass sequence). Increases in sump, temperature, pressure, flow and/or radiation level readings outside of the containment may indicate that the RCS mass is being lost outside of containment.

Unexpected elevated readings and alarms on radiation monitors with detectors outside containment ~~should~~ will be corroborated with other available indications to confirm that the source is a loss of RCS mass outside of containment. If the fuel clad barrier has not been lost, radiation monitor readings outside of containment may not increase significantly. ~~h~~ However, other unexpected changes in sump levels, area temperatures or pressures, flow rates, etc. should be sufficient to determine if RCS mass is being lost outside of the containment.

~~Refer to~~ In the simplified example in the middle piping run of Figure 96-F-41. ~~In this simplified example,~~ a leak has occurred at a reducer on a pipe carrying reactor coolant in the Auxiliary Building. Depending upon radiation monitor locations and sensitivities, the leakage could be detected by any of the four monitors depicted in the figure and cause threshold 4.A.1 to be met as well.

To ensure proper escalation of the emergency classification, the RCS leakage outside of containment must be related to the mass loss that is causing the RCS loss and/or potential loss threshold 1.A to be met.

PWR CONTAINMENT BARRIER THRESHOLDS:

Potential Loss 4.A

If containment pressure exceeds the design pressure, there exists a potential to lose the containment barrier. To reach this level, there must be an inadequate core cooling condition for an extended period of time; therefore, the RCS and fuel clad barriers would already be lost. ~~Thus,~~† This threshold is a discriminator between a Site Area Emergency and General Emergency since there is now a potential to lose the third barrier.

Potential Loss 4.B

The existence of an explosive mixture means, at a minimum, that the containment atmospheric hydrogen concentration is sufficient to support a hydrogen burn (i.e., at the lower deflagration limit). A hydrogen burn will raise containment pressure and could result in collateral equipment damage leading to a loss of containment integrity. It therefore represents a potential loss of the containment barrier.

Potential Loss 4.C

This threshold describes a condition where containment pressure is greater than the setpoint at which containment energy (heat) removal systems are designed to automatically actuate, and less than one full train of equipment is capable of operating per design. The 15-minute criterion is included to allow operators time to manually start equipment that may not have automatically started, if possible. This threshold represents a potential loss of containment ~~in that~~ because containment heat removal/depressurization systems (e.g., containment sprays, ice condenser fans, etc., but not including containment venting strategies) are either lost or performing in a degraded manner.

Developer Notes:

Loss 4.A.1

~~Developers may include a list of site specific radiation monitors to better define this threshold. Expected monitor alarms or readings may also be included.~~

Potential Loss 4.A

~~The site specific pressure is the containment design pressure.~~

~~For plants that have implemented Westinghouse Owners Group Emergency Response Guidelines, the pressure value in Potential Loss 4.A is that used for the Containment Red Path. If the Containment CSFST contains more than one Red Path due to other dependencies (e.g., status of containment isolation), enter the highest containment pressure value shown on the tree. This is typically the containment design pressure.~~

— PWR CONTAINMENT BARRIER THRESHOLDS:

Potential Loss 4.B

Developers may enter the minimum containment atmospheric hydrogen concentration necessary to support a hydrogen burn (i.e., the lower deflagration limit). A concurrent containment oxygen concentration may be included if the plant has this indication available in the Control Room.

Potential Loss 4.C

Enter the site-specific pressure setpoint value that actuates containment pressure control systems (e.g., containment spray). Also enter the site-specific containment pressure control system/equipment that should be operating per design if the containment pressure setpoint is reached. If desired, specific condition indications such as parameter values can also be entered (e.g., a containment spray flow rate less than a certain value).

This threshold is not applicable to the U.S. Evolutionary Power Reactor (EPR) design.

Westinghouse ERG Plants

As a potential loss indication, developers should consider including a threshold the same as, or similar to, "Containment Red entry conditions met" in accordance with the guidance at the front of this section.

5. **Other Indications**

Not applicable (included for numbering consistency)

Loss and/or Potential Loss 5.A

This subcategory addresses other site-specific thresholds that may be included to indicate loss or potential loss of the Containment barrier based on plant-specific design characteristics not considered in the generic guidance.

Developer Notes:

Loss and/or Potential Loss 5.A

If site emergency operating procedures provide for venting of the containment as a means of preventing catastrophic failure, a Loss threshold should be included for the containment barrier. This threshold would be met as soon as such venting is IMMINENT. Containment venting as part of recovery actions is classified in accordance with the radiological effluent ICs.

Developers should determine if other reliable indicators exist to evaluate the status of this fission product barrier (e.g., review accident analyses described in the site Final Safety Analysis Report, as updated). The goal is to identify any unique or site-specific indications that will promote timely and accurate assessment of barrier status.

PWR CONTAINMENT BARRIER THRESHOLDS:

~~Any added thresholds should represent approximately the same relative threat to the barrier as the other thresholds in this column. Basis information for the other thresholds may be used to gauge the relative barrier threat level.~~

6. Emergency Director Judgment

Loss 6.A

This threshold addresses any other factors ~~that may be~~ used by the emergency director in determining whether the Containment Barrier is lost.

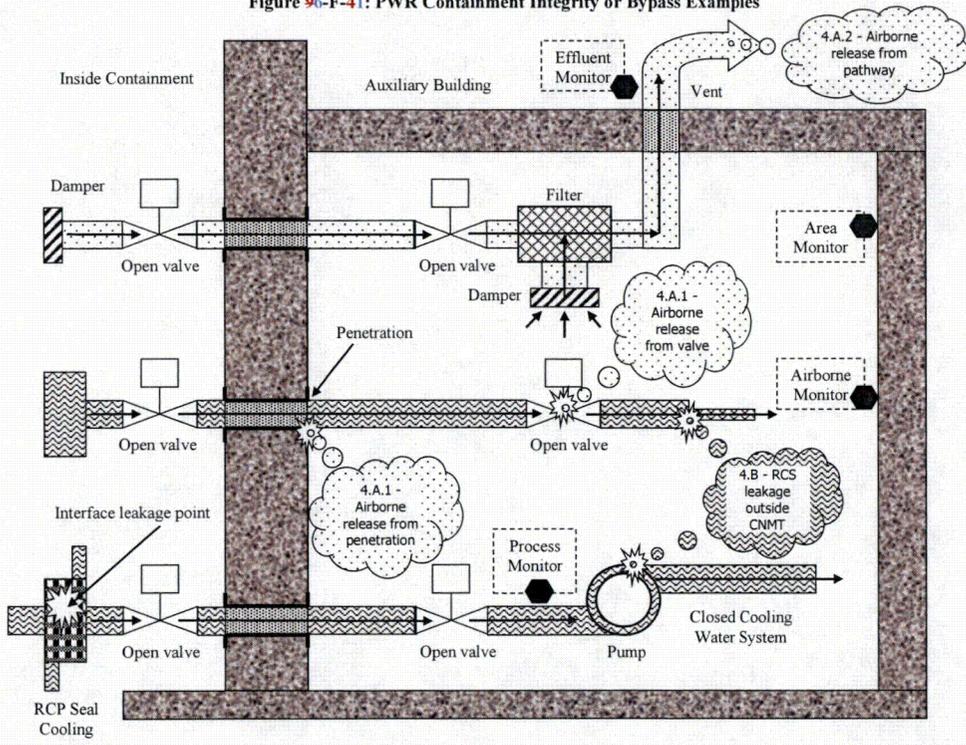
Potential Loss 6.A

This threshold addresses any other factors ~~that may be~~ used by the emergency director in determining whether the containment barrier is potentially lost. The emergency director ~~should will~~ also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

Developer Notes:

None

Figure 96-F-41: PWR Containment Integrity or Bypass Examples



107 HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY ICS/EALS

Table H-1: Recognition Category "H" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
HG1 HOSTILE ACTION resulting in loss of physical control of the facility. <i>Op. Modes: All</i>	HS1 HOSTILE ACTION within the PROTECTED AREA. <i>Op. Modes: All</i>	HA1 HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes. <i>Op. Modes: All</i>	HU1 Confirmed SECURITY CONDITION or threat. <i>Op. Modes: All</i>
			HU2 Seismic event greater than OBE levels. <i>Op. Modes: All</i>
			HU3 Hazardous event. <i>Op. Modes: All</i>
			HU4 FIRE potentially degrading the level of safety of the plant. <i>Op. Modes: All</i>
		HA5 Gaseous release impeding access to equipment necessary for normal plant operations, cooldown, or shutdown. <i>Op. Modes: All</i>	
	HS6 Inability to control a key safety function from outside the Control Room. <i>Op. Modes: All</i>	HA6 Control Room evacuation resulting in transfer of plant control to alternate locations. <i>Op. Modes: All</i>	
HG7 Other conditions exist which in the judgment of the emergency director warrant declaration of a General Emergency. <i>Op. Modes: All</i>	HS7 Other conditions exist which in the judgment of the emergency director warrant declaration of a Site Area Emergency. <i>Op. Modes: All</i>	HA7 Other conditions exist which in the judgment of the emergency director warrant declaration of an Alert. <i>Op. Modes: All</i>	HU7 Other conditions exist which in the judgment of the emergency director warrant declaration of a (NO)UENOU . <i>Op. Modes: All</i>

HG1

ECL: General Emergency

Initiating Condition: HOSTILE ACTION resulting in loss of physical control of the facility.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the site security force ~~the (site-specific security shift supervision).~~
- AND**
- b. **EITHER** of the following has occurred:
1. **ANY** of the following safety functions cannot be controlled or maintained.
 - Reactivity control
 - Core cooling ~~+PWR~~
 - RCS heat removal
- OR**
2. Damage to spent fuel has occurred or is IMMINENT.

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

PROTECTED AREA (PA): The area that encompasses all controlled areas within the security protected area fence.

This IC addresses an event in which a HOSTILE FORCE has taken physical control of the facility to the extent that the plant staff can no longer operate equipment necessary to maintain key safety functions. It also addresses a HOSTILE ACTION leading to a loss of physical control that results in actual or IMMEDIATE damage to spent fuel due to 1) damage to a spent fuel pool cooling system (e.g., pumps, heat exchangers, controls, etc.) or, 2) loss of spent fuel pool integrity such that sufficient water level cannot be maintained.

Timely and accurate communications between Security shift supervision and the control room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Developer Notes:

~~The (site-specific security shift supervision) is the title of the on-shift individual responsible for supervision of the on-shift security force.~~

~~Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.~~

~~With due consideration given to the above developer note, EALs may contain alpha or numbered references to selected events described in the Security Plan and associated implementing procedures. Such references should not contain a recognizable description of the event. For example, an EAL may be worded as "Security event #2, #5 or #9 is reported by the (site-specific security shift supervision)."~~

~~See the related Developer Note in Appendix B, Definitions, for guidance on the development of a scheme definition for the PROTECTED AREA.~~

~~ECL Assignment Attributes: 3.1.4.D~~

HG7

ECL: General Emergency

Initiating Condition: Other conditions exist which in the judgment of the emergency director warrant declaration of a General Emergency.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or IMMEDIATE substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

IMMEDIATE: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist ~~which~~ that are believed by the emergency director to fall under the emergency classification level description for a General Emergency.

HS1

ECL: Site Area Emergency

Initiating Condition: HOSTILE ACTION within the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the site security force (~~site-specific security shift supervision~~).

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

PROTECTED AREA (PA): The area that encompasses all controlled areas within the security protected area fence.

This IC addresses the occurrence of a HOSTILE ACTION within the PROTECTED AREA (PA). This event will require rapid response and assistance due to the possibility for damage to plant equipment.

Timely and accurate communications between Security shift supervision and the control room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal, or sheltering). The Site Area Emergency declaration will mobilize ORO resources and have them available to develop and implement public protective actions in the unlikely event that the attack is successful in impairing multiple safety functions.

This IC does not apply to a HOSTILE ACTION directed at an ISFSI PROTECTED AREA located outside the plant PROTECTED AREA (PA); such an attack should be assessed using IC HA1. It also does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR § 73.71 or 10 CFR § 50.72.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level ~~would be via~~ uses IC HG1.

Developer Notes:

~~The (site-specific security shift supervision) is the title of the on-shift individual responsible for supervision of the on-shift security force.~~

~~Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.~~

~~With due consideration given to the above developer note, EALs may contain alpha or numbered references to selected events described in the Security Plan and associated implementing procedures. Such references should not contain a recognizable description of the event. For example, an EAL may be worded as "Security event #2, #5 or #9 is reported by the (site-specific security shift supervision)."~~

~~See the related Developer Note in Appendix B, Definitions, for guidance on the development of a scheme definition for the PROTECTED AREA.~~

~~———— ECL Assignment Attributes: 3.1.3.D~~

HS6

ECL: Site Area Emergency

Initiating Condition: Inability to control a key safety function from outside the Control Room.

Operating Mode Applicability: All

Emergency Action Levels:

Note: The emergency director ~~should~~ will declare the Site Area Emergency promptly upon determining that ~~(site-specific number of 15 minutes)~~ has been exceeded, or will likely be exceeded.

- (1) a. An event has resulted in plant control being transferred from the control room to ~~(site-specific)~~ the remote shutdown panels ~~and local control stations~~.

AND

- b. Control of **ANY** of the following key safety functions is not reestablished within ~~(site-specific number of 15 minutes)~~.
- Reactivity control
 - Core cooling ~~{PWR}~~
 - RCS heat removal

Basis:

This IC addresses an evacuation of the control room that results in transfer of plant control to alternate locations, and the control of a key safety function cannot be reestablished in a timely manner. The failure to gain control of a key safety function following a transfer of plant control to alternate locations is a precursor to a challenge to one or more fission product barriers within a relatively short period of time.

The determination of whether ~~or not~~ "control" is established at the remote safe shutdown location(s) is based on emergency director judgment. The emergency director is expected to make a reasonable, informed judgment within ~~(the site-specific time for transfer)~~ 15 minutes as to whether ~~or not~~ the operating staff has control of key safety functions from the remote safe shutdown location(s).

Escalation of the emergency classification level ~~would be via~~ uses IC FG1 or CG1.

Developer Notes:

~~The "site-specific remote shutdown panels and local control stations" are the panels and control stations referenced in plant procedures used to cooldown and shutdown the plant from a location(s) outside the Control Room.~~

~~The "site-specific number of minutes" is the time in which plant control must be (or is expected to be) reestablished at an alternate location as described in the site-specific fire response analyses. Absent a basis in the site-specific analyses, 15 minutes should be used. Another time~~

period may be used with appropriate basis/justification.

ECL Assignment Attributes: 3.1.3.B

HS7

ECL: Site Area Emergency

Initiating Condition: Other conditions exist which in the judgment of the emergency director warrant declaration of a Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist ~~which~~ that are believed by the emergency director to fall under the emergency classification level description for a Site Area Emergency.

HA1

ECL: Alert

Initiating Condition: HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

- (1) A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the site security force (~~site-specific security shift supervision~~).
- (2) A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

OWNER CONTROLLED AREA (OCA): The site property owned by or otherwise under the control of FNP security.

This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA (OCA) or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA (PA), or the need to prepare the plant and staff for a potential aircraft impact.

Timely and accurate communications between Security shift supervision and the control room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal, or sheltering). The Alert declaration will also heighten the awareness of offsite response organizations, allowing them to be better prepared should it be necessary to consider further actions.

This IC does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc.

Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR § 73.71 or 10 CFR § 50.72.

EAL #1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA (OCA). This includes any action directed against an ISFSI that is located outside the plant PROTECTED AREA (PA).

EAL #2 addresses the threat from the impact of an aircraft on the plant, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that plant personnel and OROs are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with ~~station procedures~~(~~site-specific procedure~~).

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may be provided by NORAD through the NRC.

In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA (OCA) was intentional (i.e., a HOSTILE ACTION). It is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, ~~should~~ will not be unduly delayed while awaiting notification by a Federal agency.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level ~~would be via~~ uses IC HS1.

Developer Notes:

~~The (site-specific security shift supervision) is the title of the on-shift individual responsible for supervision of the on-shift security force.~~

~~Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.~~

~~With due consideration given to the above developer note, EALs may contain alpha or numbered references to selected events described in the Security Plan and associated implementing procedures. Such references should not contain a recognizable description of the event. For example, an EAL may be worded as "Security event #2, #5 or #9 is reported by the (site-specific security shift supervision)."~~

~~See the related Developer Note in Appendix B, Definitions, for guidance on the development of a scheme definition for the OWNER CONTROLLED AREA.~~

~~ECL Assignment Attributes: 3.1.2.D~~

HA5

ECL: Alert

Initiating Condition: Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability: All

Emergency Action Levels:

Note: If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.

- (1) a. Release of a toxic, corrosive, asphyxiant or flammable gas into any of the following Table H1 plant rooms or areas:

Mode	Room Name	Room Number
3	Electrical Penetration Room	334, 333, 347 / 2334, 2333, 2347
	Hallway Outside Filter Room	312, 332/ 2312, 2332
	1A / 2A MCC areas	
	Sample Room and Primary CHM labs	323, 324 / 2323, 2324
4	Sample Room and Primary CHM labs	323, 324 / 2323, 2324
	RHR Hx Room.	128/ 2128

(site specific list of plant rooms or areas with entry-related mode applicability identified)

AND

- b. Entry into the room or area is prohibited or impeded.

Basis:

This IC addresses an event involving a release of a hazardous gas that precludes or impedes access to equipment necessary to maintain normal plant operation, or required for a normal plant cooldown and shutdown. This condition represents an actual or potential substantial degradation of the level of ~~safety of the plant~~ plant safety.

An Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect at the time of the gaseous release. The emergency classification is not contingent upon whether entry is actually necessary at the time of the release.

Evaluation of the IC and EAL do not require atmospheric sampling; it only requires the emergency director's judgment that the gas concentration in the affected room/area is sufficient to preclude or significantly impede procedurally required access. This judgment may be based on a variety of factors including an existing job hazard analysis, report of ill effects on personnel,

advice from a subject matter expert or operating experience with the same or similar hazards. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., requiring use of protective equipment, such as SCBAs, that is not routinely employed).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the gaseous release). For example, the plant is in Mode 1 when the gaseous release occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The gas release is a planned activity that includes compensatory measures ~~which to~~ address the temporary inaccessibility of a room or area (e.g., fire suppression system testing).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by ~~merely~~ displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19% ~~percent~~, which can lead to breathing difficulties, unconsciousness or even death.

This EAL does not apply to firefighting activities that automatically or manually activate a fire suppression system in an area.

Escalation of the emergency classification level ~~would be via~~ uses Recognition Category R, C or F ICs.

Developer Notes:

~~The "site-specific list of plant rooms or areas with entry-related mode applicability identified" should specify those rooms or areas that contain equipment which require a manual/local action as specified in operating procedures used for normal plant operation, cooldown and shutdown. Do not include rooms or areas in which actions of a contingent or emergency nature would be performed (e.g., an action to address an off-normal or emergency condition such as emergency repairs, corrective measures or emergency operations). In addition, the list should specify the plant mode(s) during which entry would be required for each room or area.~~

~~The list should not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).~~

~~The list need not include the Control Room if adequate engineered safety/design features are in place to preclude a Control Room evacuation due to the release of a hazardous gas. Such features may include, but are not limited to, capability to draw air from multiple air intakes at different and separate locations, inner and outer atmospheric boundaries, or the capability to acquire and maintain positive pressure within the Control Room envelope.~~

~~If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency should be declared since the event will have no adverse~~

impact beyond that already allowed by Technical Specifications at the time of the event.

~~ECL Assignment Attributes: 3.1.2.B~~

HA6

ECL: Alert

Initiating Condition: Control Room evacuation resulting in transfer of plant control to alternate locations.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) An event has resulted in plant control being transferred from the control room to ~~(site-specific remote shutdown panels and local control stations).~~

Basis:

This IC addresses an evacuation of the control room that results in transfer of plant control to alternate locations outside the control room. The loss of the ability to control the plant from the control room is considered to be a potential substantial degradation in the level of plant safety.

Following a control room evacuation, control of the plant will be transferred to alternate shutdown locations. The necessity to control a plant shutdown from outside the control room, in addition to responding to the event that required the evacuation of the control room, will present challenges to plant operators and other on-shift personnel. Activation of the ERO and emergency response facilities will assist in responding to these challenges.

Escalation of the emergency classification level ~~would be via~~ uses IC HS6.

Developer Notes:

~~The "site-specific remote shutdown panels and local control stations" are the panels and control stations referenced in plant procedures used to cool down and shutdown the plant from a location(s) outside the Control Room.~~

~~—— ECL Assignment Attributes: 3.1.2.B~~

HA7

ECL: Alert

Initiating Condition: Other conditions exist which in the judgment of the emergency director warrant declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) Other conditions exist which, in the judgment of the emergency director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist ~~which~~ that are believed by the emergency director to fall under the emergency classification level description for an Alert.

HU1

ECL: Notification of Unusual Event

Initiating Condition: Confirmed SECURITY CONDITION or threat.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

- (1) A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the site security force (~~site-specific security shift supervision~~).
- (2) Notification of a credible security threat directed at ~~the site~~ FNP.
- (3) A validated notification from the NRC providing information of an aircraft threat.

Basis:

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

HOSTILE ACTION: An act toward a nuclear power plant (NPP) or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the NPP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area (OCA)).

This IC addresses events that pose a threat to plant personnel or SAFETY SYSTEM equipment, and ~~thus~~ represent a potential degradation in the level of plant safety. Security events which do not meet one of these EALs are adequately addressed by the requirements of 10 CFR § 73.71 or 10 CFR § 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under ICs HA1, HS1 and HG1.

Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to plant personnel and OROs.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

EAL #1 references site security force (~~site-specific security shift supervision~~) because these are the individuals trained to confirm that a security event is occurring or has occurred. Training on security event confirmation and classification is controlled due to the nature of safeguards and 10 CFR § 2.39 information.

EAL #2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with station procedures (site-specific procedure).

EAL #3 addresses the threat from the impact of an aircraft on the plant. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation of the threat is performed in accordance with station procedures (site-specific procedure).

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

Escalation of the emergency classification level would be via uses IC HA1.

Developer Notes:

The (site-specific security shift supervision) is the title of the on-shift individual responsible for supervision of the on-shift security force.

The (site-specific procedure) is the procedure(s) used by Control Room and/or Security personnel to determine if a security threat is credible, and to validate receipt of aircraft threat information.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.

With due consideration given to the above developer note, EALs may contain alpha or numbered references to selected events described in the Security Plan and associated implementing procedures. Such references should not contain a recognizable description of the event. For example, an EAL may be worded as "Security event #2, #5 or #9 is reported by the (site-specific security shift supervision)."

—— ECL Assignment Attributes: 3.1.1.A

HU2

ECL: Notification of Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by seismic switch activation with the seismic system computer indicating **EITHER** of the following:
 - Cumulative Absolute Velocity (CAV) greater than 0.160 g-sec AND Spectral Acceleration greater than 0.200 g.
 - Cumulative Absolute Velocity (CAV) greater than 0.160 g-sec AND Spectral Velocity greater than 15.240 cm/sec.

Commented [67]: V18 Seismic ARP – FNP-1(2)-ARP-1.12

~~———— (site specific indication that a seismic event met or exceeded OBE limits)~~

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)⁷. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)⁸ should have no significant impact on safety-related systems, structures, and components. However, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (e.g., performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of plant safety of the plant.

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should readily be readily felt by on-site personnel and recognized as a seismic event (e.g., typical lateral accelerations are in excess of 0.08g). The shift manager or emergency director may seek external verification if deemed appropriate (e.g., a call to the USGS, or check of internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via uses IC CA6 or SA9.

Developer Notes:

~~This “site specific indication that a seismic event met or exceeded OBE limits” should be based on the indications, alarms and displays of site specific seismic monitoring equipment.~~

⁷An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

⁸An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

Indications described in the EAL should be limited to those that are immediately available to Control Room personnel and which can be readily assessed. Indications available outside the Control Room and/or which require lengthy times to assess (e.g., processing of scratch plates or recorded data) should not be used. The goal is to specify indications that can be assessed within 15 minutes of the actual or suspected seismic event.

For sites that do not have readily assessable OBE indications within the Control Room, developers should use the following alternate EAL (or similar wording):

(1) a. Control Room personnel feel an actual or potential seismic event.

AND

b. The occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Emergency Director.

The EAL 1.b statement is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped heavy load). The Shift Manager or Emergency Director may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. It is recognized that this alternate EAL wording may cause a site to declare an Unusual Event while another site, similarly affected but with readily assessable OBE indications in the Control Room, may not.

The above alternate wording may also be used to develop a compensatory EAL for use during periods when a seismic monitoring system capable of detecting an OBE is out of service for maintenance or repair.

ECL Assignment Attributes: 3.1.1.A

HU3

ECL: Notification of Unusual Event

Initiating Condition: Hazardous event.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3 or 4 or 5)

Note: EAL #4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

- (1) A tornado strike within the PROTECTED AREA.
- (2) Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode.
- (3) Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release).
- (4) A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles.
- (5) Sustained hurricane force winds greater than 74 mph forecast to be at the plant site in the next four hours. (~~Site-specific list of natural or technological hazard events~~)

Basis:

PROTECTED AREA (PA): The area that encompasses all controlled areas within the security protected area fence.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These are typically systems classified as safety-related.

This IC addresses hazardous events that are considered to represent a potential degradation of the level of ~~plant safety-of the plant~~.

EAL #1 addresses a tornado striking (touching down) within the PROTECTED AREA (PA).

EAL #2 addresses flooding of a building room or area that results in operators isolating power to a SAFETY SYSTEM component due to water level or other wetting concerns. Classification is also required if the water level or related wetting causes an automatic isolation of a SAFETY SYSTEM component from its power source (e.g., a breaker or relay trip). To warrant classification, operability of the affected component must be required by Technical Specifications for the current operating mode.

EAL #3 addresses a hazardous materials event originating at an offsite location and of sufficient magnitude to impede the movement of personnel within the PROTECTED AREA (PA).

EAL #4 addresses a hazardous event that causes an on-site impediment to vehicle movement and significant enough to prohibit the plant staff from accessing the site using personal vehicles. Examples of such an event include site flooding caused by a hurricane, heavy rains, up-river water releases, or dam failure, etc., or an on-site train derailment blocking the access road.

This EAL is not intended to apply to routine impediments such as fog, snow, ice, or vehicle breakdowns or accidents, but rather to more significant conditions such as the Hurricane Andrew strike on Turkey Point in 1992, the flooding around the Cooper Station during the Midwest floods of 1993, or the flooding around Ft. Calhoun Station in 2011.

EAL #5 addresses phenomena of the hurricane based on the severe weather mitigation procedure. ~~(site-specific description).~~

Escalation of the emergency classification level ~~would be~~ based on ICs in Recognition Categories A, F, S or C.

Developer Notes:

~~The "Site specific list of natural or technological hazard events" should include other events that may be a precursor to a more significant event or condition, and that are appropriate to the site location and characteristics.~~

~~Notwithstanding the events specifically included as EALs above, a "Site specific list of natural or technological hazard events" need not include short-lived events for which the extent of the damage and the resulting consequences can be determined within a relatively short time frame. In these cases, a damage assessment can be performed soon after the event, and the plant staff will be able to identify potential or actual impacts to plant systems and structures. This will enable prompt definition and implementation of compensatory or corrective measures with no appreciable increase in risk to the public.~~

~~To the extent that a short-lived event does cause immediate and significant damage to plant systems and structures, it will be classifiable under the Recognition Category F, S and C ICs and EALs. Events of lesser impact would be expected to cause only small and localized damage. The consequences from these types of events are adequately assessed and addressed in accordance with Technical Specifications. In addition, the occurrence or effects of the event may be reportable under the requirements of 10 CFR 50.72.~~

~~———— ECL Assignment Attributes: 3.1.1.A and 3.1.1.C~~

HU4

ECL: Notification of Unusual Event

Initiating Condition: FIRE potentially degrading the level of safety of the plant.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3 or 4)

Note: The emergency director ~~should~~ will declare the Unusual Event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- (1) a. A FIRE is NOT extinguished within 15-minutes of ANY of the following FIRE detection indications:
- Report from the field (i.e., visual observation)
 - Receipt of multiple (more than 1) fire alarms or indications
 - Field verification of a single fire alarm

AND

- b. The FIRE is located within ANY ~~of the following plant~~ Table H2 rooms or areas.

~~(site specific list of plant rooms or areas)~~

- (2) a. Receipt of a single fire alarm (i.e., no other indications of a FIRE).

AND

- b. The FIRE is located within ANY ~~of the following plant~~ Table H2 rooms or areas:

~~(site specific list of plant rooms or areas)~~

AND

- c. The existence of a FIRE is not verified within 30-minutes of alarm receipt.

- (2)(3) A FIRE within the plant PROTECTED AREA or ISFSI ~~[for plants with an ISFSI outside the plant Protected Area]~~ PROTECTED AREA not extinguished within 60-minutes of the initial report, alarm or indication.

- (3)(4) A FIRE within the plant PROTECTED AREA or ISFSI ~~[for plants with an ISFSI outside the plant Protected Area]~~ PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish.

Table H2
Auxiliary Building
Diesel Generator Building
Service Water Intake Structure (SWIS)
Containment

Basis:

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

PROTECTED AREA (PA): The area that encompasses all controlled areas within the security protected area fence.

This IC addresses the magnitude and extent of FIRES that may be indicative of a potential degradation of the level of plant safety ~~of the plant~~.

EAL #1

The intent of the 15-minute duration is to size the FIRE and to discriminate against small FIRES that are readily extinguished (e.g., smoldering waste paper basket). In addition to alarms, other indications of a FIRE ~~could be include~~ a drop in fire main pressure, automatic activation of a suppression system, ~~ete~~.

Upon receipt, operators will take prompt actions to confirm the validity of an initial fire alarm, indication, or report. For EAL assessment purposes, the emergency declaration clock starts at the time that the initial alarm, indication, or report was received, and not the time that a subsequent verification action was performed. Similarly, the fire duration clock also starts at the time of receipt of the initial alarm, indication or report.

EAL #2

This EAL addresses receipt of a single fire alarm, and the existence of a FIRE is not verified (i.e., proved or disproved) within 30-minutes of the alarm. Upon receipt, operators will take prompt actions to confirm the validity of a single fire alarm. For EAL assessment purposes, the 30-minute clock starts at the time that the initial alarm was received, and not the time that a subsequent verification action was performed.

A single fire alarm, absent other indication(s) of a FIRE, may be indicative of equipment failure or a spurious activation, and not an actual FIRE. For this reason, additional time is allowed to verify the validity of the alarm. The 30-minute period is a reasonable amount of time to determine if an actual FIRE exists; however, after that time, and absent information to the contrary, it is assumed that an actual FIRE is in progress.

If an actual FIRE is verified by a report from the field, then EAL #1 is immediately applicable, and the emergency must be declared if the FIRE is not extinguished within 15-minutes of the report. If the alarm is verified to be due to an equipment failure or a spurious activation, and this verification occurs within 30-minutes of the receipt of the alarm, then this EAL is not applicable and no emergency declaration is warranted.

EAL #3

In addition to a FIRE addressed by EAL #1 or EAL #2, a FIRE within the plant PROTECTED AREA (PA) not extinguished within 60-minutes may also potentially degrade the level of plant safety. This basis extends to a FIRE occurring within the PROTECTED AREA (PA) of an

ISFSI located outside the plant PROTECTED AREA (PA). ~~[Sentence for plants with an ISFSI outside the plant Protected Area]~~

EAL #4

If a FIRE within the plant or ISFSI ~~[for plants with an ISFSI outside the plant Protected Area]~~ PROTECTED AREA is of sufficient size to require a response by an offsite firefighting agency (e.g., a local town Fire Department), then the level of plant safety is potentially degraded. The dispatch of an offsite firefighting agency to the site requires an emergency declaration only if it is needed to actively support firefighting efforts because the fire is beyond the capability of the Fire Brigade to extinguish. Declaration is not necessary if the agency resources are placed on stand-by, or supporting post-extinguishment recovery or investigation actions.

Basis-Related Requirements from Appendix R

Appendix R to 10 CFR 50, states in part:

Criterion 3 of Appendix A to this part specifies that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boil-off.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under post-fire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents.

~~In addition,~~ Appendix R to 10 CFR 50, requires, among other considerations, the use of 1-hour fire barriers for the enclosure of cable and equipment and associated non-safety circuits of one redundant train (G.2.c). As used in EAL #2, the 30-minutes to verify a single alarm is well within this worst-case 1-hour time period.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level ~~would be via~~ uses IC CA6 or SA9.

Developer Notes:

~~The "site specific list of plant rooms or areas" should specify those rooms or areas that contain SAFETY SYSTEM equipment.~~

~~As noted in the EALs and Basis section, include the term ISFSI if the site has an ISFSI outside the plant Protected Area.~~

—— ECL Assignment Attributes: 3.1.1.A

HU7

ECL: Notification of Unusual Event

Initiating Condition: Other conditions exist which in the judgment of the emergency director warrant declaration of a NOUE.

Operating Mode Applicability: All

Emergency Action Levels:

- (1) Other conditions exist which in the judgment of the emergency director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist ~~which~~ that are believed by the emergency director to fall under the emergency classification level description for a NOUE.

118 SYSTEM MALFUNCTION ICS/EALS

Table S-1: Recognition Category "S" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<p>SG1 Prolonged loss of all offsite and all onsite AC power to emergency buses.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	<p>SS1 Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	<p>SA1 Loss of all but one AC power source to emergency buses for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	<p>SU1 Loss of all offsite AC power capability to emergency buses for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
		<p>SA2 UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	<p>SU2 UNPLANNED loss of Control Room indications for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
			<p>SU3 Reactor coolant activity greater than Technical Specification allowable limits.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
			<p>SU4 RCS leakage for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
	<p>SS5 Inability to shutdown the reactor causing a challenge to core cooling or RCS heat removal.</p> <p><i>Op. Modes: Power Operation</i></p>	<p>SA5 Automatic or manual trip fails to shutdown the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor.</p> <p><i>Op. Modes: Power Operation</i></p>	<p>SU5 Automatic or manual trip fails to shutdown the reactor.</p> <p><i>Op. Modes: Power Operation</i></p>

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
			<p>SU6 Loss of all onsite or offsite communications capabilities.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
			<p>SU7 Failure to isolate containment or loss of containment pressure control. [PWR]</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>
<p>SG8 Loss of all AC and vital DC power sources for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	<p>SS8 Loss of all vital DC power for 15 minutes or longer.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>		
		<p>SA9 Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.</p> <p><i>Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown</i></p>	