



NEI 99-01

Methodology for Development of Emergency Action Levels

Revision 5 to Revision 6

Change Summary

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Introduction

To assist in the preparation and review of proposed Revision 6 of NEI 99-01, this document provides a section-by-section summary of the changes made to NEI 99-01 Revision 5 Final, Methodology for Development of Emergency Action Levels, February 2008 (ADAMS Accession Number ML080450149). Revision 6 is a significant re-write of the generic guidance. Rather than tracking changes by redline, this document provides a description of the changes, some of which involve relocation of current guidance elsewhere within the document. Table 1 provides an IC/EAL cross-reference between NEI 99-01 Revision 5 and Revision 6.

Change Summary Format

The change summary is a matrix format that addresses each section of Revision 5 of NEI 99-01 (from the Executive Summary to Appendix D). The left column lists NEI 99-01 Revision 5; the adjacent columns list proposed Revision 6 and change summary explanations. In many cases, the changes are editorial such as improved readability or format consistency, for which a detailed description or justification is not warranted. For technical intent changes or significant structural changes in the generic ICs and example EALs, a change description and appropriate justification is provided. For Sections 5.5 through 5.11 of Revision 5 (Categories A through S ICs and Example EALs), the proposed Revision 6 IC, EAL wording and mode applicability are also listed.

Due to the width of the table columns and table formatting constraints in this document, line breaks and indentation may differ slightly from the appearance of the corresponding wording in the Revision 5 and Revision 6 NEI 99-01 documents.

NEI 99-01 Revision 6 Format

The Revision 6 development effort has attempted to minimize internal formatting inconsistencies that existed in previous revisions.

The print and paragraph formatting conventions summarized below guide presentation of the Revision 6 document in accordance with the selected EAL writing criteria.

- Upper case print is reserved for system abbreviations, acronyms, logic terms (AND, OR, EITHER, ANY, ALL etc. when not used as a conjunction) and definitions.
- Bold font is used for logic terms, **ANY**, **EITHER**, **AND**, **OR**, **ALL** etc. (within example EAL wording only).
- Underscore is avoided as it can interfere with text in narrow line spacing.
- When presenting two alternative conditionals, they are introduced with "**EITHER** of the following:" with the alternative conditions bulleted.
- Three or more items in a list are normally introduced with "**ANY** of the following" or "all of the following." Items in the list begin with bullets when a priority or sequence is not inferred.
- The use of **AND/OR** logic within the same EAL has been avoided when possible. When such logic cannot be avoided, indentation and separation of subordinate contingent phrases is employed.
- Recognition category IC tables were sequenced from Unusual Event to General Emergency (left to right) consistent with how the IC are presented in the subsequent specific generic guidance.

Developer Notes

Revision 5 provided EAL developer notes within the bases section of the IC. These notes were identified by bracketed italic print and interspersed within the bases discussions. Generally, the developer notes were not intended to be incorporated into the site-specific implementation, When deemed helpful in Revision 6, each IC, EAL and fission product barrier threshold includes a Developer Note section.

It should be noted that improving the quality of the Developer Notes was a major focus area of Revision 6. The Developer Notes have been extensively revised and augmented with new information. The goal of this effort was to improve clarity of intent and promote consistent scheme implementation across the industry.

ECL Assignment Attributes & IC/EAL Risk Alignment

One of the goals of the Revision 6 process is to clearly define and document the relationship between each Initiating Condition (IC) and its associated assigned Emergency Classification Level (ECL). To this end, a set of risk and/or consequence attributes was developed for each ECL. These attributes “translate” each ECL definition into a set of specific criteria; the ECL attributes are listed in Section 3.1.

The ECL attributes were compared to each IC to verify that the IC risk and/or consequences matched those of its associated ECL. Changes to ICs and/or EALs were made where necessary to bring differences into alignment. The ECL attribute(s) applicable to a given IC are specified within the Developer Notes section; this entry substantiates the assignment the ECL to the IC.

A particular area of focus and discussion was the development of the attributes for the Alert ECL. Three of the attributes were readily defined from the existing Revision 5 basis and related NRC guidance – these are 3.1.2(A), 3.1.2(C) and 3.1.2(D). A fourth attribute was needed to broadly address conditions or events which affect plant systems, structures and components.

Per attribute 3.1.2(B), events corresponding to the Alert classification must be of sufficient magnitude that it could lead to a loss or potential loss of the fuel clad or RCS fission product barrier. The risks and consequences associated with this attribute are thus aligned with those of attribute 3.1.2(A), i.e., a loss or potential loss of either the fuel clad or RCS fission product barrier. The events and conditions classified under attribute 3.1.2(B) must therefore be precursors that could readily or reasonably lead to outcomes classified under attribute 3.1.2(A).

Nuclear power plant safety-related systems are typically comprised of two or more separate and redundant trains of equipment. A loss of one train of safety-related equipment due to a condition or event does not significantly increase risk nor threaten any greater consequence because there is at least one additional train to perform the safety-related function. This type of situation does not reflect the Alert definition wording of events “which involve an actual or potential substantial degradation of the level of safety of the plant”.

If an event or condition were to adversely affect the performance of more than one train of a safety-related system, then the safety-related function performed by that system could be compromised. It was also recognized that one or more safety-related functions could be degraded or lost if multiple

safety-related systems were concurrently impacted (regardless of how many individual trains were lost). Alert attribute 3.1.2(B) reflects these considerations using criteria that can support development of EALs that may be evaluated within the allowable 15-minute emergency classification assessment period.

IC Numbering

The IC numbering convention initially established in NUMARC/NESP-007 Revision 2 had been maintained through publication of NEI 99-01 Revision 5. Revisions 3, 4 and 5 added new ICs while others were deleted. This resulted in non-sequential IC numbering, numbering gaps and a lack of IC numbering continuity for related escalatory ICs. Revision 6 has re-sequenced and re-numbered ICs as needed to provide a logical sequence and support a standard industry-wide implementation. Additionally, the Permanently Defueled ICs have been redesignated "PD" vs. "D" and have been move to Appendix C of the document.

Revision 5 FAQs

Another goal of the Revision 6 process was to resolve outstanding Revision 5 FAQs. Attachment 3 provides a summary of how the Revision 5 FAQs were dispositioned within the Revision 6 document.

Global Changes Related to Imminent Condition Classification

The following global statement has been incorporated into Revision 6 Section 4 "Guidance On Making Emergency Classifications" and the specific notes under each IC have been deleted:

"For Initiating Conditions (ICs) and/or Emergency Action Levels (EALs) that have a stipulated time duration (e.g., 15 minutes, 30 minutes, etc.), the Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time."

Table 1 – NEI 99-01 Revision 5 to Revision 6 IC/EAL Cross-Reference

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
AU1	1	AU1	1
AU1	2	AU1	2
AU1	3	AU1	3
AU1	4	Deleted	
AU1	5	Deleted	
AU2	1	AU2	1
AU2	2	Deleted	
AA1	1	AA1	1
AA1	2	AA1	2
AA1	3	AA1	3
AA1	4	Deleted	
AA1	5	Deleted	
AA2	1	AA2	1
AA2	2	AA2	2
AA3	1	AA3	1
AS1	1	AS1	1
AS1	2	AS1	2
AS1	3	Deleted	

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
AS1	4	AS1	3
AG1	1	AG1	1
AG1	2	AG1	2
AG1	3	Deleted	
AG1	4	AG1	3
CU1	1 (BWR)	CU1	1
CU1	1 (PWR)	CU1	1
CU2	1	CU1	1
CU2	2	CU1	2
CU3	1	CU2	1
CU4	1	CU3	1
CU4	2	CU3	2
CU6	1	CU5	1
CU6	2	CU5	2
N/A	N/A	CU5	3
CU7	1	CU4	1
CU8	1 (BWR)	Deleted	

Table 1 – NEI 99-01 Revision 5 to Revision 6 IC/EAL Cross-Reference

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
CU8	1 (PWR)	Deleted	
CA1	1	CA1	1
CA1	2	CA1	2
CA3	1	CA2	1
CA4	1	CA3	1
CA4	2	CA3	2
CS1	1	CS1	1
CS1	2	CS1	2
CS1	3	CS1	3
CG1	1	CG1	1
CG1	2	CG1	2
D-AU1	1	PD-AU1	1
D-AU1	2	PD-AU1	2
D-AU2	1	PD-AU2	1
D-AU2	2	PD-AU2	2
D-SU1	1	PD-SU1	1
D-HU1	1	PD-HU1	1
D-HU1	2	PD-HU1	2

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
N/A		PD-HU1	3
D-HU2	1	PD-HU3	1
D-HU3	1	PD-HU2	1
D-HU3	2	PD-HU2	1
D-HU3	3	PD-HU2	1
D-HU3	4	Deleted	
D-HU3	5	PD-HU2	1
D-HU3	6	PD-HU2	1
D-HU3	7	PD-HU2	1
D-HU3	8	Deleted	
D-AA1	1	PD-AA1	1
D-AA1	2	PD-AA1	2
N/A	N/A	PD-AA1	3
D-AA2	1	PD-AA2	1
D-AA2	2	PD-AA2	2
D-HA1	1	PD-HA1	1
N/A		PD-HA1	2
D-HA2	1	PD-HA3	1

Table 1 – NEI 99-01 Revision 5 to Revision 6 IC/EAL Cross-Reference

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
E-HU1	1	E-HU1	1
FU1	1	Deleted	
FA1	1	FA1	1
FS1	1	FS1	1
FG1	1	FG1	1
HU1	1	Deleted	
HU1	2	Deleted	
HU1	3	Deleted	
HU1	4	Deleted	
HU1	5	Deleted	
HU2	1	Deleted	
HU2	2	Deleted	
HU3	1	Deleted	
HU3	2	Deleted	
HU4	1	HU1	1
HU4	2	HU1	2
HU4	3	HU1	3
HU5	1	HU8	1

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
HA1	1	HA2	1
HA1	2	HA6	1
HA1	3	HA6	1
HA1	4	Deleted	
HA1	5	Deleted	
HA1	6	Deleted	
HA2	1	HA4 (explosion)	1
		HA3 (fire)	1
		HA3 (fire)	2
HA3	1	HA5	1
HA4	1	HA1	1
HA4	2	HA1	2
HA5	1	HA7	1
HA6	1	HA8	1
HS2	1	HS7	1
HS3	1	HS8	1
HS4	1	HS1	1
HG1	1	HG1	1

Table 1 – NEI 99-01 Revision 5 to Revision 6 IC/EAL Cross-Reference

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
HG1	2	HG1	1
HG2	1	HG8	1
SU1	1	SU1	1
SU2	1	Deleted	
SU3	1	SU2	1
SU4	1	SU3	1
SU4	2	SU3	2
SU5	1	SU4	1
SU5	2	SU4	2
N/A	N/A	SU5	1
SU6	1	SU6	1
SU6	2	SU6	2
N/A	N/A	SU6	3
SU8	1 (BWR)	Deleted	
SU8	1 (PWR)	Deleted	
SA2	1	SA5	1
SA4	1	SA2	1
SA5	1	SA1	1

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	Example EAL	IC	Example EAL
SS1	1	SS1	1
SS2	1	SS5	1
SS3	1	SS2	1
SS6	1	Deleted	
SG1	1	SG1	1
SG2 (ATWS)	1	Deleted	
N/A	N/A	SG2 (loss of AC and DC power)	1

Executive Summary through Section 5.0:

Executive Summary

Acronyms and Abbreviations

1.0 Methodology for Development of Emergency Action Levels

2.0 Changes Incorporated With Revision 5

3.0 Development of Basis for Generic Approach

4.0 Human Factors Considerations

5.0 Generic EAL Guidance

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
Executive Summary	Expanded to incorporate appropriate portions of Rev. 5 Section 1.1 Background.
Acronyms & Abbreviations	Moved to Appendix A Minor editorial changes
1.0 Methodology for Development of Emergency Action Levels	See below
1.1 Background	Information incorporated into Executive Summary.
2.0 Changes Incorporated With Revision 5	Deleted. Changes incorporated in Revision 5 are not relevant to changes incorporated in Revision 6.
3.0 Development of Basis for Generic Approach	See below
3.1 Regulatory Context	Information included in Section 1, Regulatory Background. Included updated regulatory language and references. Incorporated relevant information from Rev. 5 Appendix E into section 1.3.
3.2 Definitions Used to Develop EAL Methodology	Information included in Section 2, Key Terminology Related to NEI 99-01 Guidance. Included discussion of the new key term – Fission Product Barrier Threshold.
3.3 Differences in Perspective	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.4 Recognition Categories	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.5 Design Differences	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.6 Required Characteristics	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.7 Emergency Classification Level Descriptions	Information included in Section 2, Key Terminology Related to NEI 99-01 Guidance.
3.8 Emergency Classification Level Thresholds	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.9 Emergency Action Levels	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme, and Section 4, Site-Specific Scheme Development Guidance.
3.10 Treatment of Multiple Events and	Information included in Section 5, Guidance on Making Emergency Classifications.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
Classification Level Upgrading	
3.11 Emergency Classification Level Downgrading	Information included in Section 5, Guidance on Making Emergency Classifications.
3.12 Classifying Transient Events	Information included in Section 5, Guidance on Making Emergency Classifications.
3.13 Operating Mode Applicability	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.14 BWR Operating Modes (Follow site specific Technical Specifications)	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
3.15 PWR Operating Modes (Follow site specific Technical Specifications)	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
4.0 Human Factors Considerations	See below
4.1 Level of Integration of EALs with Plant Procedures	Information included in Section 4, Site-Specific Scheme Development Guidance.
4.2 Method of Presentation	Information included in Section 4, Site-Specific Scheme Development Guidance.
4.3 Symptom-Based, Event-Based, or Barrier-Based EALs	Information included in Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
5.0 Generic EAL Guidance	See below
5.1 Generic Arrangement	Information relocated to Sections 3, Design of the NEI 99-01 Emergency Classification Scheme.
5.2 Generic Bases	Information included in Section 4, Site-Specific Scheme Development Guidance.
5.3 Site Specific Implementation	Information included in Section 4, Site-Specific Scheme Development Guidance.
5.4 Definitions	Moved to Appendix B (see definition changes/additions/ deletions below).
AFFECTING SAFE SHUTDOWN	Deleted. Term not used in Revision 6.
BOMB	Deleted. Term not used in Revision 6.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
CIVIL DISTURBANCE	Deleted. Term not used in Revision 6.
CONFINEMENT BOUNDARY	Revised to specify incorporation of site-specific definition.
CONTAINMENT CLOSURE	Revised to specify incorporation of site-specific definition.
EXPLOSION	Revised to improve clarity, and to add information regarding steam explosions and electrical faults.
EXTORTION	Deleted. Term not used in Revision 6.
FAULTED	Revised for clarity.
IMMINENT	Revised for clarity.
INTRUSION	Deleted. Term not used in Revision 6.
NORMAL LEVELS	Added to support more timely and accurate assessments of EALs.
NORMAL PLANT OPERATIONS	Deleted. Term not used in Revision 6.
OWNER CONTROLLED AREA	Added to support more timely and accurate assessments of EALs.
PROTECTED AREA	Revised to specify incorporation of site-specific definition.
REFUELING PATHWAY	Added to support more timely and accurate assessments of EALs.
RUPTURED	Deleted. Term not used in Revision 6.
SABOTAGE	Deleted. Term not used in Revision 6.
SEISMIC EVENT	Added to support more timely and accurate assessments of EALs.
STRIKE ACTION	Deleted. Term not used in Revision 6.
UNISOLABLE	Revised for clarity.
UNPLANNED	Revised for clarity.
VISIBLE DAMAGE	Revised for clarity and to support revised EAL statements.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
VITAL AREAS	Deleted. Term not used in Revision 6.

Section 5.5

Category A

Abnormal Rad Levels / Rad Effluents

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AU1	Any release of gaseous or liquid radioactivity to the environment greater than 2 times the Radiological Effluent Technical Specifications/ODCM for 60 minutes or longer. MODE: All	AU1	Radioactivity release greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer. MODE: All	Reformatted for readability and to facilitate application of site-specific effluent release controlling document. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.</p>		<p>Notes:</p> <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 	<p>Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths.</p>
1	<p>VALID reading on ANY of the following radiation monitors greater than the reading shown for 60 minutes or longer: (site specific monitor list and threshold values)</p>	1	<p>Reading on ANY effluent radiation monitor greater than (2 times the site-specific effluent controlling document limits) for 60 minutes or longer: (site-specific monitor list and threshold values corresponding to 2</p>	<p>Incorporates FAQ #4 Bases incorporates FAQ#3. The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs. Reformatted to facilitate application of site-specific effluent release controlling document. Bases clarified regarding scope of example EALs #1 and #2.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
			times the controlling document limits)	No change in EAL intent.
2	VALID reading on any effluent monitor reading greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.	2	Reading on ANY effluent radiation monitor greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.	Incorporates FAQ #4 Bases incorporates FAQ #3. The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs. Bases clarified regarding scope of example EALs #1 and #2. Added developers note guidance for addressing potential effluent monitor over-range conditions. No change in EAL intent.
3	Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than 2 times (site specific RETS values) for 60 minutes or longer.	3	Confirmed sample analysis for a gaseous or liquid release indicate a concentration or release rate greater than 2 times (site-specific effluent release controlling document limits) for 60 minutes or longer.	Reformatted to facilitate application of site specific effluent release controlling document. No change in EAL intent.
4	VALID reading on perimeter radiation monitoring system reading greater than 0.10 mR/hr above normal* background for 60 minutes or longer. [for sites having telemetered perimeter monitors]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, these monitors may not be controlled and maintained to the same level as plant equipment, or within the scope of the plant Technical Specifications. In addition, readings may be influenced by environmental or other factors. A licensee may request to include an EAL using a perimeter monitoring system; approval may be granted on a case-by-case basis.
5	VALID indication on automatic real-time dose assessment capability indicating greater than (site specific value) for 60 minutes or longer. [for sites having such capability]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, the capability may not be within the scope of the plant Technical Specifications. A licensee may request to include an EAL using real-time dose projection system results; approval may be granted on a case-by-case basis.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AU2	UNPLANNED rise in plant radiation levels MODE: All	AU2	UNPLANNED loss of water covering irradiated fuel MODE: All	Revised IC to be consistent with intent of associated EALs which is a loss of water shielding for irradiated fuel.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	<p>a. UNPLANNED water level drop in a reactor refueling pathway as indicated by (site specific level or indication).</p> <p>AND</p> <p>b. VALID Area Radiation Monitor reading rise on (site specific list).</p>	1	<p>a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by ANY of the following: (site-specific level indications).</p> <p>AND</p> <p>b. UNPLANNED rise in area radiation levels as indicated by ANY of the following radiation monitors. (site-specific list of area radiation monitors)</p>	<p>Incorporates FAQ #6</p> <p>Reworded to clarify that the EAL is based on site-specific area radiation indications as a result of an unplanned loss of refueling pathway inventory.</p> <p>Created a site-specific defined term “REFUELING PATHWAY” to promote more accurate and timely classification.</p> <p>The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs.</p> <p>UNPLANNED was added to EAL 1.b to be consistent with the IC statement and EAL 1.a.</p> <p>No change in EAL intent.</p>
2	<p>UNPLANNED VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1000 over normal* levels.</p> <p>*Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value.</p>	N/A	N/A	<p>Deleted. This is an unneeded legacy EAL from NUREG 0654.</p> <p>This event does not, in and of itself, meet any ECL attribute for an Unusual Event and thus should not be a classifiable event. Notification of this event, if necessary due to related or resulting events or conditions, is appropriately addressed under the non-emergency reporting requirements of 10 CFR 50.72.</p> <p>Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities.</p> <p>The event does not necessarily pose significant potential for</p>

				<p>escalation to an Alert classification.</p> <p>The occurrence of an abnormally high area radiation level in the plant, in and of itself, does not constitute a declarable emergency. For many areas of the plant, an increase of 1,000 times normal area radiation levels would not result in any significant constraints to room or equipment access.</p>
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AA1	<p>Any release of gaseous or liquid radioactivity to the environment greater than 200 times the Radiological Effluent Technical Specifications/ODCM for 15 minutes or longer.</p> <p>MODE: All</p>	AA1	<p>Offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.</p> <p>MODE: All</p>	<p>Revised IC to reflect offsite doses of 10% of the SAE threshold (i.e., 1% of the EPA PAGs). The dose assessment methodologies employed during an emergency vary significantly from those used to assess routine effluent releases, and which provided the basis for the Revision 5 based Unusual Event and the Alert EALs. The differences in these methodologies can lead to overlapping, or insufficiently separated, dose and dose rate values for the Alert and Site Area Emergency EALs. This change precludes such an overlap while still providing an appropriate gradation between the UE and SAE classification thresholds.</p> <p>This approach provides a reasonable and standard gradation between the AA1 (1% of PAGs), AS1 (10% of PAGs) and AG1 (100% of PAGs).</p> <p>Also see Attachment 4 for additional information.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.</p>		<p>Notes:</p> <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 	<p>Reworded and reformatted note for clarity.</p> <p>Added guidance for validity of isolated release paths.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	<p>VALID reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <p>(site specific monitor list and threshold values)</p>	1	<p>Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <p>(site-specific monitor list and threshold values)</p>	<p>Calculated monitor thresholds incorporated consistent with the IC, and related EALs in AS1 and AG1.</p> <p>Incorporates FAQ #4</p> <p>Bases clarified regarding scope of example EALs #1 and #2.</p> <p>Bases incorporates FAQ#3.</p> <p>Revised bases to support effluent monitor thresholds based on exceeding 1% PAG doses at site boundary or beyond vs. 200 ODCM limits (see IC change summary).</p> <p>Added developers note guidance for addressing potential effluent monitor over-range conditions.</p>
2	<p>VALID reading on any effluent monitor reading greater than 200 times the alarm setpoint established by a current radioactivity discharge permit for 15 minutes or longer.</p>	N/A	Subsumed into example EAL #1.	Subsumed into example EAL #1.
N/A	N/A	2	<p>Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point)</p>	Dose assessment based threshold incorporated consistent with the IC, and related EALs in AS1 and AG1.
3	<p>Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than 200 times (site specific RETS values) for 15 minutes or longer.</p>	3	<p>Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point):</p> <ul style="list-style-type: none"> • Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer. • Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation. 	<p>Replaced sample analysis with field survey results consistent with SAE and GE threshold methodology of exceeding a 1% fraction of the PAGs. Also aligns with EALs in AS1 and AG1</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
4	VALID reading on perimeter radiation monitoring system reading greater than 10.0 mR/hr above normal* background for 15 minutes or longer. [for sites having telemetered perimeter monitors]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, these monitors may not be controlled and maintained to the same level as plant equipment, or within the scope of the plant Technical Specifications. In addition, readings may be influenced by environmental or other factors. A licensee may request to include an EAL using a perimeter monitoring system; approval may be granted on a case-by-case basis.
5	VALID indication on automatic real-time dose assessment capability indicating greater than (site specific value) for 15 minutes or longer. [for sites having such capability]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, the capability may not be within the scope of the plant Technical Specifications. A licensee may request to include an EAL using real-time dose projection system results; approval may be granted on a case-by-case basis.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AA2	Damage to irradiated fuel or loss of water level that has resulted or will result in the uncovering of irradiated fuel outside the reactor vessel. MODE: All	AA2	Irradiated fuel is uncovered or damaged outside the reactor vessel. MODE: All	Simplified IC wording. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A water level drop in the reactor refueling cavity, spent fuel pool or fuel transfer canal that will result in irradiated fuel becoming uncovered.	1	Uncovery of irradiated fuel in the REFUELING PATHWAY for 15 minutes or longer	Incorporates FAQ #6. Replaced list of refueling pathway areas with single defined term. Revised EAL wording to improve readability. Specified “uncovery” vs. the subjective phrase “that will result in irradiated fuel becoming uncovered”. This will promote more accurate and consistent classifications. Added 15 minute criteria to exclude transient events and allow sufficient time for prompt operator actions to restore water level over the irradiated fuel, if possible.
2	A VALID alarm or (site specific elevated reading) on ANY of the following due to damage to irradiated fuel or loss of water level. (site specific radiation monitors)	2	Damage to irradiated fuel resulting in a release of radioactivity as indicated by ANY of the following radiation monitors: (site-specific listing of radiation monitors, and the associated readings, setpoints and/or alarms)	Incorporates FAQ #4 Revised to specify damage to irradiated fuel resulting in a release of radioactivity from the damaged fuel as indicated by site-specific radiation monitor readings. Revised to clarify that either a site-specific alarm and/or reading can be used to define this threshold.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AA3	Rise in radiation levels within the facility that impedes operation of systems required to maintain plant safety functions MODE: All	AA3	Radiation level that impedes required continuous occupancy	Simplified IC wording. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Dose rate greater than 15 mR/hr in ANY of the following areas requiring continuous occupancy to maintain plant safety functions: (site specific area list)	1	Dose rate greater than 15 mR/hr in ANY of the following areas: (site specific area list)	Simplified EAL wording. No change in EAL intent. Clarified minimum required areas requiring continuous occupancy in the Developer Notes.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AS1	Off-site dose resulting from an actual or IMMEDIATE release of gaseous radioactivity greater than 100 mrem TEDE or 500 mrem Thyroid CDE for the actual or projected duration of the release. MODE: All MODE: All	AS1	Offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE MODE: All	Simplified IC statement. The individual EALs appropriately address whether dose is actual or projected. A gaseous release is the only credible means of meeting this IC; not necessary to include this term. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.</p>		<p>NOTES:</p> <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 	<p>Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths.</p>
1	<p>VALID reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer: (site specific monitor list and threshold values)</p>	1	<p>Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer: (site-specific monitor list and threshold values)</p>	<p>Incorporates FAQ #4. The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs. Incorporated developer notes to provide guidance for calculation of appropriate effluent monitor thresholds.</p>

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
				No change in EAL intent.
2	Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary.	2	Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond (site-specific dose receptor point)	Replaced “site boundary” with “site-specific dose receptor point” to be consistent with site-specific dose assessment methodologies for defining offsite doses. No change in EAL intent.
3	VALID perimeter radiation monitoring system reading greater than 100 mR/hr for 15 minutes or longer. [for sites having telemetered perimeter monitors]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, these monitors may not be controlled and maintained to the same level as plant equipment, or within the scope of the plant Technical Specifications. In addition, readings may be influenced by environmental or other factors. A licensee may request to include an EAL using a perimeter monitoring system; approval may be granted on a case-by-case basis.
4	Field survey results indicate closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation, at or beyond the site boundary.	3	Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point): <ul style="list-style-type: none"> • Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer. • Analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation. 	Renumbered example EAL. Reformatted for readability. Replaced “site boundary” with “site-specific dose receptor point” to be consistent with site-specific dose assessment methodologies for defining offsite doses. No change in EAL intent.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
AG1	Off-site dose resulting from an actual or IMMEDIATE release of gaseous radioactivity greater than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the actual or projected duration of the release using actual meteorology. MODE: All	AG1	Offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE MODE: All	Simplified IC statement. The individual EALs appropriately address whether dose is actual or projected. A gaseous release is the only credible means of meeting this IC; not necessary to include this term. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.		NOTES: <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 	Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths.
1	VALID reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer: (site specific monitor list and	1	Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer: (site-specific monitor list and threshold	Incorporates FAQ #4. The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs. Incorporated developer notes to provide guidance for

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	threshold values)			calculation of appropriate effluent monitor thresholds. No change in EAL intent.
2	Dose assessment using actual meteorology indicates doses greater than 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond the site boundary.	2	Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond (site-specific dose receptor point)	Replaced “site boundary” with “site-specific dose receptor point” to be consistent with site-specific dose assessment methodologies for defining offsite doses. No change in EAL intent.
3	VALID perimeter radiation monitoring system reading greater than 1000 mR/hr for 15 minutes or longer. [for sites having telemetered perimeter monitors]	N/A	N/A	Deleted. Many licensees do not have this capability. For those that do, these monitors may not be controlled and maintained to the same level as plant equipment, or within the scope of the plant Technical Specifications. In addition, readings may be influenced by environmental or other factors. A licensee may request to include an EAL using a perimeter monitoring system; approval may be granted on a case-by-case basis.
4	Field survey results indicate closed window dose rates greater than 1000 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 5000 mrem for one hour of inhalation, at or beyond site boundary.	3	Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point): <ul style="list-style-type: none"> • Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer. • Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation, at or beyond site boundary 	Renumbered example EAL. Reformatted for readability. Replaced “site boundary” with “site-specific dose receptor point” to be consistent with site-specific dose assessment methodologies for defining offsite doses. No change in EAL intent.

Section 5.6

Category C

Cold Shutdown / Refueling System Malfunction

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU1	RCS Leakage MODE: Cold Shutdown	CU1	RCS Leakage for 15 minutes or longer. MODE: Cold Shutdown, Refueling	Added “for 15 minutes or longer” to align with EAL criterion. Combined IC CU1 and CU2 to address loss of inventory in both Cold Shutdown and Refueling modes; simplifies classification process.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	RCS leakage results in the inability to maintain or restore RPV level greater than (site specific low level RPS actuation setpoint) for 15 minutes or longer. [BWR] RCS leakage results in the inability to maintain or restore level within (site specific pressurizer or RCS/RPV level target band) for 15 minutes or longer. [PWR]	1	RCS leakage results in (reactor vessel/RCS [PWR] or RPV [BWR]) level less than the required lower limit for 15 minutes or longer	Revised EAL to combine CU1 and CU2. Changed wording to more clearly address the EAL intent – the inability to maintain RPV/RCS level greater than the lower limit applicable for the current mode and configuration. Standardized PWR and BWR terminology.
N/A	N/A	2	a. (Reactor vessel/RCS [PWR] or RPV [BWR]) level cannot be monitored. AND b. UNPLANNED level rise in (site-specific sump and/or tank)	Incorporates Rev. 5 CU2.3 for conditions when RPV/RCS inventory cannot be monitored.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU2	UNPLANNED loss of RCS/RPV inventory. MODE: Refueling	N/A	N/A	CU2 IC and example EALs combined with CU1.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.	N/A		CU2 IC and example EALs combined with CU1.
1	UNPLANNED RCS/RPV level drop as indicated by either of the following: <ul style="list-style-type: none"> • RCS/RPV water level drop below the RPV flange for 15 minutes or longer when the RCS/RPV level band is established above the RPV flange. • RCS/RPV water level drop below the RCS level band for 15 minutes or longer when the RCS/RPV level band is established below the RPV flange. 	N/A	N/A	CU2 IC and example EALs combined with CU1.
		N/A	N/A	CU2 IC and example EALs combined with CU1.

2	RCS/RPV level cannot be monitored with a loss of RCS/RPV inventory as indicated by an unexplained level rise in (site specific sump or tank).	N/A	N/A	CU2 IC and example EALs combined with CU1.
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU3	AC power capability to emergency busses reduced to a single power source for 15 minutes or longer such that any additional single failure would result in station blackout. MODE: Cold Shutdown, Refueling	CU2	AC power capability to emergency busses reduced to a single power source for 15 minutes or longer. MODE: Cold Shutdown, Refueling, Defueled	Added Defueled mode applicability. This provides an escalation path to CA3 for a complete loss of power to AC emergency busses when the reactor is defueled. Simplified IC wording. The criterion “such that any additional single failure would result in station blackout” provided no additional clarification to the IC statement; “single power source” is sufficient. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	a. AC power capability to (site specific emergency busses) reduced to a single power source for 15 minutes or longer. AND b. Any additional single power source failure will result in station blackout.	1	AC power capability to (site-specific emergency busses) is reduced to a single power source for 15 minutes or longer	Simplified EAL wording. The criterion “such that any additional single failure would result in station blackout” provided no additional clarification to the EAL statement; “single power source” is sufficient. Incorporates FAQ #36. Expanded developer notes to address addition of clarifying examples, and taking credit for cross-ties and swing generators at multi-unit sites. No change in EAL intent.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU4	UNPLANNED loss of decay heat removal capability with irradiated fuel in the RPV. MODE: Cold Shutdown, Refueling	CU3	UNPLANNED loss of decay heat removal capability. MODE: Cold Shutdown, Refueling	Simplified IC wording. The criterion “with irradiated fuel in the RPV” provided no additional clarification to the IC statement and was deleted. Only irradiated fuel could cause the EALs to be met. Implements EAL FAQ #11. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	UNPLANNED event results in RCS temperature exceeding the Technical Specification cold shutdown temperature limit.	1	UNPLANNED loss of decay heat removal results in RCS temperature greater than the Technical Specification cold shutdown temperature limit	Aligned EAL wording to the condition specified in the IC, i.e., changed “event” to “loss of decay heat removal”. Replaced “exceeding” with preferred term “greater than”. No change in EAL intent.
2	Loss of all RCS temperature and RCS/RPV level indication for 15 minutes or longer.	2	Loss of ALL RCS temperature and reactor vessel/RCS [PWR] or RPV [BWR] level indication for 15 minutes or longer	Included PWR and BWR terminology. No change in EAL intent.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU6	Loss of all On-site or Off-site communications capabilities. MODE: Cold Shutdown, Refueling, Defueled	CU5	Loss of all onsite or offsite communications capabilities	None

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Loss of all of the following on-site communication methods affecting the ability to perform routine operations: (site specific list of communications methods)	1	Loss of ALL of the following onsite communication methods: (site-specific list of communications methods)	Simplified wording to improve emergency classification accuracy and timeliness. The applicable Developer Note explains that the listed communications systems in EAL #1 be those that support the ability to perform routine operations; the Emergency Director need only determine if the systems are unavailable (lost). No change in EAL intent.
2	Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications: (site specific list of communications methods)	2	Loss of ALL of the following ORO communications methods: (site-specific list of communications methods)	Split example EAL #2 into loss of ORO notification capability and loss of NRC notification capability. Revised wording will improve emergency classification accuracy and timeliness. No change in EAL intent.
N/A	N/A	3	Loss of ALL of the following NRC communications methods: (site-specific list of communications methods)	Split example EAL #2 into loss of ORO notification capability and loss of NRC notification capability. Revised wording will improve emergency classification accuracy and timeliness. No change in EAL intent.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU7	Loss of required DC power for 15 minutes or longer. MODE: Cold Shutdown, Refueling	CU4	Loss of required DC power for 15 minutes or longer. MODE: Cold Shutdown, Refueling	Renumbered IC.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	Less than (site specific bus voltage indication) on required (site specific Vital DC busses) for 15 minutes or longer.	1	Indicated voltage is less than (site-specific bus voltage value) on (required site-specific Vital DC busses) for 15 minutes or longer.	Revised wording to improve clarity. No change in EAL intent.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CU8	Inadvertent Criticality MODE: Cold Shutdown, Refueling	N/A	N/A	Deleted IC CU8. See below.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	UNPLANNED sustained positive period observed on nuclear instrumentation. (BWR)	N/A	N/A	<p>IC CU8 and associated EALs have been deleted.</p> <p>The original concept of an inadvertent criticality threshold was considered in NEI 97-03 (Revision 3 of what would become NEI 99-01) and subsequently incorporated into the NEI 99-01 guidance with Revision 4. The bases from NEI 97-03 indicated that the concern was primarily for criticality events that occur in the Cold Shutdown and Refueling modes though the mode applicability was extended to Startup and Hot Shutdown modes. In the NRC Regulatory Analysis that supported the Revision 4 endorsement in Reg Guide 1.101, it states:</p> <p><i>"The basis for adding this EAL comes from studies of criticality events that occur in the Cold Shutdown or Refueling modes (reference NUREG-1449, "Shutdown and Low-Power Operation at Commercial Nuclear Power Plant in the United States"). These events represent a potential degradation of the level of safety of the plant and, therefore, warrant an Unusual Event classification."</i></p> <p>The NEI example EALs (BWR & PWR) rely on in-core nuclear instrumentation for indications of an inadvertent criticality. This would exclude any inadvertent criticality event associated with fuel external to the reactor vessel (such as mis-positioning of spent fuel in the SFP or loss of boration in PWR reactor cavity, fuel transfer canal or SFP).</p> <p>NUREG-1449 assessed criticalities associated with inadvertent reactivity additions to the reactor core. For PWRs the concern is rapid in-core boron dilution during startup under hot condition with shutdown control rod banks removed (NUREG/CR-5819). For BWRs the concern is related to control rod withdrawal errors or feedwater</p>
1	UNPLANNED sustained positive startup rate observed on nuclear instrumentation. (PWR)	N/A	N/A	

				<p>transients during startups.</p> <p>In the Cold Shutdown and Refueling modes for both PWR and BWRs the possibility for an inadvertent core reactivity addition sufficient to cause criticality is not considered in the NUREG-1449 event analysis. It is noted that such events would be extremely unlikely due to shutdown margin design and reactivity control interlocks. It would appear that any such event, regardless of probability, would be adequately addressed under 10CFR50.72 reporting requirements.</p> <p>There is no direct emergency classification escalation pathway for this IC.</p> <p>Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities.</p> <p>Therefore, IC CU8 and associated EALs have been deleted.</p>
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CA1	Loss of RCS/RPV inventory. MODE: Cold Shutdown, Refueling	CA1	Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory. MODE: Cold Shutdown, Refueling	Included PWR and BWR terminology. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.</p>		<p>Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</p>		Reworded for clarity.
1	Loss of RCS/RPV inventory as indicated by level less than (site specific level). [Low-Low ECCS actuation setpoint / Level 2 (BWR)] [Bottom ID of the RCS loop (PWR)]	1	Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory as indicated by level less than (site-specific level)	Included PWR and BWR terminology. Specifics on determining level setpoints were placed in the Developer Notes. No change in EAL intent.
2	RCS/RPV level cannot be monitored for 15 minutes or longer with a loss of RCS/RPV inventory as indicated by an unexplained level rise in (site specific sump or tank).	2	a. (Reactor vessel/RCS [PWR] or RPV [BWR]) level cannot be monitored for 15 minutes or longer AND b. UNPLANNED level rise in (site-specific sump and/or tank) due to a loss of (reactor vessel/RCS [PWR] or RPV [BWR]) vessel	Reworded EAL statement, and split into separate statements (2a. and b.), to improve clarity. Included PWR and BWR terminology. Replaced “unexplained” with the defined term “UNPLANNED”. No change in EAL intent.

			inventory.	
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NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CA3	Loss of all Off-site and all On-Site AC power to emergency busses for 15 minutes or longer. MODE: Cold Shutdown, Refueling, Defueled	CA2	Loss of all offsite and all onsite AC power to emergency busses for 15 minutes or longer. MODE: Cold Shutdown, Refueling, Defueled	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	Loss of all Off-Site and all On-Site AC Power to (site specific emergency busses) for 15 minutes or longer.	1	Loss of ALL offsite and ALL onsite AC Power to (site-specific emergency busses) for 15 minutes or longer	No change Expanded developer notes to address taking credit for cross-ties and swing generators at multi-unit sites.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CA4	Inability to maintain plant in cold shutdown. MODE: Cold Shutdown, Refueling	CA4	Inability to maintain plant in cold shutdown. MODE: Cold Shutdown, Refueling	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	N/A		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Added timing note.
1	An UNPLANNED event results in RCS temperature greater than (site specific Technical Specification cold shutdown temperature limit) for greater than the specified duration on table.	1	UNPLANNED loss of decay heat removal capability resulting in RCS temperature greater than (site-specific Technical Specification cold shutdown temperature limit) for greater than the duration specified in the following table.	Revised wording to clarify that the temperature increase is a result of a "loss of decay heat removal capability". No change in EAL intent.
2	An UNPLANNED event results in RCS pressure increase greater than 10 psi due to a loss of RCS cooling. (PWR-This EAL does not apply in Solid Plant conditions.)	2	UNPLANNED loss of decay heat removal capability resulting in an RCS pressure increase greater than (site-specific pressure reading). (This EAL does not apply during water-solid plant conditions.[PWR])	Revised wording to clarify that the temperature increase is a result of a "loss of decay heat removal capability". Replace "10 psi" value with "(site-specific reading" to accommodate plant design differences and instrumentation capabilities. Implementation guidance provided in developers notes. No change in EAL intent.

Reformatted IC CA4 Table to improve readability.

Revision 5:

Table: RCS Reheat Duration Thresholds		
RCS	Containment Closure	Duration
Intact (but not RCS Reduced Inventory [PWR])	N/A	60 minutes*
Not intact or RCS Reduced Inventory (PWR)	Established	20 minutes*
	Not Established	0 minutes
* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.		

Revision 6:

Table: RCS Reheat Duration Threshold		
CNMT Status \ RCS Status	CONTAINMENT CLOSURE not established	CONTAINMENT CLOSURE established
RCS Not Intact	0 minutes	20 minutes*
RCS at reduced inventory (mid-loop operation) [PWR]	0 minutes	20 minutes*
RCS Intact	60 minutes*	60 minutes*
* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.		

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CS1	Loss of RCS/RPV inventory affecting core decay heat removal capability MODE: Cold Shutdown, Refueling	CS1	Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory affecting core decay heat removal capability. MODE: Cold Shutdown, Refueling	Included PWR and BWR terminology. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	With CONTAINMENT CLOSURE not established, RCS/RPV level less than (site specific level). [6" below the bottom ID of the RCS loop (PWR)] [6" below the low-low ECCS actuation setpoint (BWR)]	1	a. CONTAINMENT CLOSURE not established. AND b. (Reactor vessel/RCS [PWR] or RPV [BWR]) level less than (site-specific level).	Reformatted to improve readability. Included PWR and BWR terminology. Specifics on determining level setpoints were placed in the Developer Notes. The BWR RPV water level threshold with containment closure not established has been revised to reflect the low-low-low ECCS actuation setpoint vs. 6" below the low-low initiation setpoint which is used as the threshold value in CA1. Escalation to the SAE at the low-low-low threshold is operationally significant because this setpoint is associated with the low pressure motor driven ECCS. These are the systems that would be available to recover RPV inventory. The low pressure ECCS actuation level setpoint is the appropriate BWR classification threshold for CS1 as that is the level below which ECCS will auto initiate to restore RPV water level and it provides a discernable escalation gradient between the Alert and General Emergency (TOAF). No change in PWR EAL intent.

2	With CONTAINMENT CLOSURE established, RCS/RPV level less than (site specific level for TOAF).	2	<p>a. CONTAINMENT CLOSURE established.</p> <p>AND</p> <p>b. (Reactor vessel/RCS [<i>PWR</i>] or RPV [<i>BWR</i>]) level less than (site-specific level).</p>	<p>Reformatted to improve readability.</p> <p>Included PWR and BWR terminology.</p> <p>Specifics on determining level setpoints were placed in the Developer Notes.</p> <p>No change in EAL intent.</p>
3	<p>RCS/RPV level cannot be monitored for 30 minutes or longer with a loss of RCS/RPV inventory as indicated by ANY of the following:</p> <ul style="list-style-type: none"> • (Site specific radiation monitor) reading greater than (site specific value). • Erratic Source Range Monitor Indication. • Unexplained level rise in (site specific sump or tank). 	3	<p>a. (Reactor vessel/RCS [<i>PWR</i>] or RPV [<i>BWR</i>]) level cannot be monitored for 30 minutes or longer.</p> <p>AND</p> <p>b. Core uncover is indicated by ANY of the following:</p> <ul style="list-style-type: none"> • (Site-specific radiation monitor) reading greater than (site-specific value). • Erratic source range monitor indication [<i>PWR</i>]. • UNPLANNED rise in (site-specific sump and/or tank levels) of sufficient magnitude to indicate core uncover. • (Other site-specific indications). 	<p>Reformatted to improve readability.</p> <p>Included PWR and BWR terminology.</p> <p>Clarified that erratic SRM indications are applicable to PWRs only. BWR SRMs are retractable and when fully inserted are typically located approximately 6 in. below core mid-plane. Even if the loss of moderation in the area of the SRM fission chamber detectors could be differentiated from normal shutdown detector noise, the indication would not be evident until water level had dropped well into the core mid-plane region.</p> <p>Expanded threshold expectation that sump and/or tank levels changes must be of sufficient magnitude to indicate core uncover. A Developer Note was added.</p> <p>Replaced “unexplained” with the defined term “UNPLANNED”.</p> <p>Added provision for other site-specific indications.</p> <p>No change in PWR EAL intent.</p>

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
CG1	Loss of RCS/RPV inventory affecting fuel clad integrity with containment challenged. MODE: Cold Shutdown, Refueling	CG1	Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory affecting fuel clad integrity with containment challenged. MODE: Cold Shutdown, Refueling	Included PWR and BWR terminology. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	a. RCS/RPV level less than (site specific level for TOAF) for 30 minutes or longer. AND b. ANY containment challenge indication (see Table):	1	a. (Reactor vessel/RCS [PWR] or RPV [BWR]) vessel level less than (site-specific level) for 30 minutes or longer. AND b. ANY indication from the Containment Challenge Table	Reformatted to improve readability. Included PWR and BWR terminology. Specifics on determining level setpoints were placed in the Developer Notes. No change in EAL intent.
2	a. RCS/RPV level cannot be monitored with core uncover indicated by ANY of the following for 30 minutes or longer. <ul style="list-style-type: none"> (Site specific radiation monitor) reading greater than (site specific setpoint). Erratic source range 	2	a. (Reactor vessel/RCS [PWR] or RPV [BWR]) vessel level cannot be monitored for 30 minutes or longer. AND b. Core uncover is indicated by ANY of the following: <ul style="list-style-type: none"> (Site-specific radiation 	Reformatted for readability. Included PWR and BWR terminology. Changed the start time of the 30-minute clock from the receipt of one of the uncover indications to the loss of monitoring capability. This change was made to address NRC staff review comments provided in public meetings. Clarified that erratic SRM indications are applicable to PWRs only. BWR SRMs are retractable and when fully inserted are typically located approximately 6 in. below core mid-plane. Even if the loss

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>monitor indication</p> <ul style="list-style-type: none"> UNPLANNED level rise in (site specific sump or tank). [Other site specific indications] <p>AND</p> <p>b. ANY containment challenge indication (see Table):</p>		<p>monitor) reading greater than (site-specific value).</p> <ul style="list-style-type: none"> Erratic source range monitor indication [PWR]. UNPLANNED rise in (site-specific sump and/or tank levels) of sufficient magnitude to indicate core uncover. (Other site-specific indications) <p>AND</p> <p>c. ANY indication from the Containment Challenge Table).</p>	<p>of moderation in the area of the SRM fission chamber detectors could be differentiated from normal shutdown detector noise, the indication would not be evident until water level had dropped well into the core mid-plane region.</p> <p>Expanded threshold expectation that sump and/or tank levels changes must be of sufficient magnitude to indicate core uncover. A Developer Note was added.</p> <p>Added note to Containment Challenge Table that if containment closure is re-established prior to 30 min. limit classification is not required. This pulled-up information in the basis.</p>

Revision 5:

Table: Containment Challenge Indications
<ul style="list-style-type: none"> CONTAINMENT CLOSURE not established. (Site specific explosive mixture) inside containment. UNPLANNED rise in containment pressure. Secondary containment radiation monitor reading above (site specific value). [BWR only]

Revision 6:

Table: Containment Challenge Indications
<ul style="list-style-type: none"> CONTAINMENT CLOSURE not established* (Site-specific explosive mixture) exists inside containment. UNPLANNED rise in containment pressure. Secondary containment radiation monitor reading above (site-specific value). [BWR]

* If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute core uncover time limit, then escalation to a General Emergency is not required.

Section 5.7

Category D

Permanently Defueled Station Malfunction

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-AU1	Any release of gaseous or liquid radioactivity to the environment greater than 2 times the Radiological Effluent Technical Specifications for 60 minutes or longer. MODE: N/A	PD-AU1	Radioactivity release greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer. MODE: N/A	Reformatted for readability and to facilitate application of site-specific effluent release controlling document. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown</p>	<p>Notes:</p> <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 		<p>Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths.</p>
1	<p>VALID reading on ANY of the following radiation monitors greater than the reading shown for 60 minutes or longer. (site specific monitor list and threshold values)</p>	1	<p>Reading on ANY effluent radiation monitor greater than (2 times the site-specific effluent controlling document limits) for 60 minutes or longer: (site-specific monitor list and threshold values corresponding to 2 times the controlling document limits)</p>	<p>Incorporates FAQs #3 and #4. The term VALID was deleted; the expectation concerning VALID is discussed in Section 5 and applies to all EALs. Reformatted to facilitate application of site-specific effluent release controlling document. Bases clarified regarding scope of example EALs #1 and #2.</p>

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
				No change in EAL intent.
2	Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than (2 times site specific technical specification values) for 60 minutes or longer.	2	Confirmed sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times (site-specific effluent release controlling document limits) for 60 minutes or longer.	Reformatted to facilitate application of site specific effluent release controlling document. No change in EAL intent.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-AU2	UNPLANNED rise in plant radiation levels. MODE: N/A	PD-AU2	UNPLANNED rise in plant radiation levels. MODE: N/A	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	a. UNPLANNED water level drop in the spent fuel pool as indicated by (site specific level or indication). AND b. VALID Area Radiation Monitor reading rise on (site specific list).	1	a. UNPLANNED water level drop in the spent fuel pool as indicated by (site-specific level or indication). AND b. Area Radiation Monitor reading rise on (site-specific list)	Incorporates FAQ #4 – Deleted VALID
2	UNPLANNED Area Radiation Monitor readings or survey results indicate a rise by 25 mR/hr over normal* levels. *Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value	2	UNPLANNED Area Radiation Monitor readings or survey results indicate a rise by 25 mR/hr over NORMAL LEVELS	Incorporates FAQ #4 – Deleted VALID Incorporates FAQ #5 – NORMAL LEVELS is new defined term

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-SU1	UNPLANNED spent fuel pool temperature rise. MODE: N/A	PD-SU1	UNPLANNED spent fuel pool temperature rise. MODE: N/A	No Change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	UNPLANNED Spent Fuel Pool temperature rise greater than (site specific ° F).	1	UNPLANNED Spent Fuel Pool temperature rise greater than (site-specific ° F).	No Change

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-HU1	Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant. MODE: N/A	PD-HU1	Confirmed SECURITY CONDITION or threat. MODE: N/A	Simplified IC wording. The EALs contain the specific event classification criteria. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the (site specific security shift supervision).	1	A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the (site-specific security shift supervision).	No change.
2	A credible site specific security threat notification.	2	Notification of a credible security threat directed at the site	Reworded for readability. No change in EAL intent.
	N/A	3	A validated notification from the NRC providing information of an aircraft threat.	Added EAL and associated bases information to match EAL HU1, EAL#3 of NEI 99-01, Rev. 06 (HU4, EAL #3 of NEI 99-01, Rev. 05).

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-HU2	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT. MODE: N/A	PD-HU3	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT. MODE: N/A	No change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Other conditions exist which in the judgment of the Shift Supervisor / Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation in the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.	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-related systems occurs.	<p>Clarified EAL Text to match HU6: Removed the title of Shift Supervisor from EAL wording as it is redundant to the term Emergency Director.</p> <p>Clarified EAL Basis Text to match HU6 to say: This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a NOUE.</p>

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-HU3	Natural or destructive phenomena inside the PROTECTED AREA affecting the ability to maintain spent fuel integrity. MODE: N/A	PD-HU2	Natural or destructive phenomena affecting the ability to maintain spent fuel integrity. MODE: N/A	EAL # changed for D-HU3 to DHU2 for improved grouping of EALs. The term "inside the Protected Area" is not necessary to proper IC understanding and was deleted; the operative criterion is that the event affected "the ability to maintain spent fuel integrity".

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Seismic event identified by ANY 2 of the following: <ul style="list-style-type: none"> Seismic event confirmed by (site specific indication or method) Earthquake felt in plant National Earthquake Center 	1	a. ANY of the following: <ul style="list-style-type: none"> SEISMIC EVENT FIRE EXPLOSION Release of a toxic, corrosive, asphyxiant or flammable gas Severe weather or flooding <p>AND</p>	<p>Combined and bulletized the conditions for readability.</p> <p>All EALs contain the operationally significant criterion that "the event has the potential to affect, or has affected, equipment necessary to maintain spent fuel integrity."</p> <p>Made SEISMIC EVENT a defined term to promote understanding and assessment consistency.</p> <p>Incorporated tornado, high winds and flooding into a single "severe weather or flooding" bullet.</p> <p>Deleted vehicle crash consistent with IC HU1.</p> <p>Deleted timing criterion for fire. The length of a fire at a permanently defueled plant, in and of itself, is not operationally significant. The operative criterion is that the FIRE affects "equipment necessary to maintain spent fuel integrity", regardless of the duration.</p> <p>Deleted "other" criteria as it is adequately addressed under IC PD-HU2.</p>
2	Tornado striking or high winds greater than (site specific mph) within the PROTECTED AREA that have the potential to affect equipment needed to maintain spent fuel integrity.		b. The event has the potential to affect, or has affected, equipment necessary to maintain spent fuel integrity.	
3	Internal flooding that has the potential to affect equipment needed to maintain spent fuel integrity in ANY of the following areas. (site specific area list)			

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
4	Vehicle crash within the PROTECTED AREA that has the potential to affect equipment needed to maintain spent fuel integrity.			
5	FIRE not extinguished within 15 minutes of control room notification or verification of a control room FIRE alarm that has the potential to affect equipment needed to maintain spent fuel integrity in ANY of the following areas: (site specific area list)			
6	EXPLOSION within the PROTECTED AREA resulting in VISIBLE DAMAGE that has the potential to affect equipment needed to maintain spent fuel integrity			
7	Toxic, corrosive, asphyxiant, or flammable gas within the PROTECTED AREA that has the potential to affect the operation of equipment needed to maintain spent fuel integrity.			
8	(Site specific occurrences affecting the PROTECTED AREA that have the potential to affect equipment needed to maintain spent fuel integrity)			

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-AA1	Any release of gaseous or liquid radioactivity to the environment greater than 200 times the Radiological Effluent Technical Specifications/ODCM for 15 minutes or longer. MODE: N/A	PD-AA1	Offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE. MODE: N/A	Revised this IC to align revised IC AA1.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.</p>		<p>Notes:</p> <ul style="list-style-type: none"> ● The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown. ● If the associated release path to the environment has been isolated, the effluent monitor reading is no longer VALID for classification purposes. 	<p>Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths.</p>
1	UNPLANNED VALID reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer.	1	Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer: (site-specific monitor list and	<p>Calculated monitor thresholds incorporated consistent with the IC. Incorporates FAQ #4. Bases incorporates FAQ#3. Revised bases to support effluent monitor thresholds based on exceeding 1% PAG doses at site boundary or beyond vs. 200 ODCM</p>

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
			threshold values)	limits (see IC change summary). Added developers note guidance for addressing potential effluent monitor over-range conditions.
N/A	N/A	2	Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point)	Dose assessment based threshold incorporated consistent with the IC.
2	Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than 200 times (site specific technical specification values) for 15 minutes or longer	3	Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point): <ul style="list-style-type: none"> • Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer. • Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation. 	Replaced sample analysis with field survey results exceeding a 1% fraction of the PAGs.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-AA2	UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity. MODE: N/A	PD-AA2	UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity. MODE: N/A	No change.
Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	UNPLANNED dose rate greater than 15 mR/hr in ANY of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity: (site specific area list)	1	UNPLANNED dose rate greater than 15 mR/hr in ANY of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity: (site-specific area list)	No change.
2	UNPLANNED Area Radiation Monitor readings or survey results indicate a rise by 100 mR/hr over normal* levels that impedes access to ANY of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity. (site specific area list) *Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value.	2	UNPLANNED Area Radiation Monitor readings or survey results indicate a rise by 100 mR/hr over NORMAL LEVELS that impedes access to ANY of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity. (site-specific area list)	Incorporates FAQ #5 – NORMAL LEVELS is new defined term

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-HA1	HOSTILE ACTION within the fuel building or control room. MODE: N/A	PD-HA1	HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes. MODE: N/A	Revised IC to match IC HA1 – replaced fuel building or control room with OCA and added criterion for airborne attack threat.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A HOSTILE ACTION is occurring or has occurred within the Fuel Building or control room as reported by the (site security shift supervision).	1	A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site security shift supervision).	Revised EAL to match EAL HA1.1 - replaced fuel building or control room with OWNER CONTRTOLLED AREA (OCA).
	N/A	2	A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.	Added EAL #2 to match HA1.2

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
D-HA2	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert. MODE: N/A	PD-HA3	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert. MODE: N/A	No Change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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 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.	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.	No Change.

Section 5.8

Category E

Events Related to Independent Spent Fuel Storage Installations

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY MODE: Not applicable	E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY MODE: Not applicable	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Damage to a loaded cask confinement BOUNDARY	1	Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than (2 times the site-specific cask specific technical specification allowable radiation level) on the surface of the spent fuel cask	Revised EAL and Basis information to rely on site-specific criteria linked to ISFSI Technical Specification allowable limits. This approach aligns the EAL with the generic UE attributes listed in section 3.1.1 and related IC AU1. The new EAL is better defined and more readily assessable.

Section 5.9

Category F

Fission Product Barrier Degradation

BWR

PWR

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC/EAL#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC/EAL#	Rev. 6 IC Wording and Mode Applicability	Change Summary
FU1	ANY Loss or ANY Potential Loss of Containment MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	N/A	N/A	FU1 deleted - See Attachment 1 for justification.

Rev. 5 IC/EAL#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC/EAL#	Rev. 6 IC Wording and Mode Applicability	Change Summary
FA1	ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	FA1	Any Loss or any Potential Loss of either the Fuel Clad OR RCS barrier MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	No change

Rev. 5 IC/EAL#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC/EAL#	Rev. 6 IC Wording and Mode Applicability	Change Summary
FS1	Loss or Potential Loss of ANY Two Barriers MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	FS1	Loss or Potential Loss of any two barriers MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	No change

Rev. 5 IC/EAL#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
FG1	Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	FG1	Loss of any two barriers and Loss or Potential Loss of the third barrier MODE: Power Operation, Hot Standby, Startup, Hot Shutdown	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	<p><u>NOTES</u></p> <p>The logic used for these initiating conditions reflects the following considerations:</p> <ul style="list-style-type: none"> • The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier (See Sections 3.4 and 3.8). NOUE ICs associated with RCS and Fuel Clad Barriers are addressed under System Malfunction ICs. • At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier “Loss” EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier “Potential Loss” EALs existed, the Emergency Director would have more assurance that there was no immediate need to escalate to a General 	N/A	<p><u>NOTES</u></p> <p>The logic used for these initiating conditions reflects the following considerations:</p> <ul style="list-style-type: none"> • The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier. NOUE ICs associated with the RCS and Fuel Clad Barriers are addressed under the System Malfunction ICs. 	<p>First bullet: The NEI parenthetical phrase “See Sections 3.4 and 3.8” has been deleted because it refers to deleted sections. A new reference is not necessary.</p> <p>Second bullet: Deleted. This note provides no guidance on the implementation of the fission product barrier thresholds.</p>

	<p>Emergency.</p> <ul style="list-style-type: none"> • The ability to escalate to higher emergency classification levels as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety. • The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications. 		<ul style="list-style-type: none"> • The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. 	<p>Third bullet: Deleted. This note provides no guidance on the implementation of the fission product barrier thresholds.</p> <p>Fourth bullet: The second sentence in the fourth bullet of the NEI notes “When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications” has been deleted to implement FAQ #14.</p>
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Table 5-F-2 BWR Fission Product Barrier Thresholds

Fuel Clad Barrier

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC Loss 1	Primary Coolant Activity Level A. Primary coolant activity greater than (site-specific value).	FC Loss 1	Reactor Coolant Activity Level A. Reactor coolant activity greater than (site-specific value).	Changed "Primary" to "Reactor" to standardize terminology.
FC Loss 2	Reactor Vessel Water Level A. RPV water level cannot be restored and maintained above (site specific RPV water level corresponding to the requirement for primary containment flooding).	FC Loss 2	RPV Water Level A. Primary containment flooding required.	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology. Simplified the threshold, consistent with CMT Potential Lose 2.A. The statement "Primary containment flooding required" captures the multiple conditions based on RPV level indication or the inability to determine RPV level that indicate a severe challenge core cooling intended by this threshold. The requirement to enter the primary containment flooding procedure (SAGs) is not based on a single RPV water level threshold.
FC Loss 3	Not Applicable Not Applicable	FC Loss 3	Not Applicable Not Applicable	No change
FC Loss 4	Primary Containment Radiation Monitoring A. Primary containment radiation monitor reading greater than (site specific value).	FC Loss 4	Primary Containment Radiation Monitoring A. Primary containment radiation monitor reading greater than (site specific value).	No change
FC Loss 5	Other (Site-Specific) Indications A. (site specific) as applicable	FC Loss 5	Other Indications A. (site specific as applicable)	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC Loss 6	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier	FC Loss 6	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier	No change
FC P-Loss 1	Primary Coolant Activity Level Not Applicable.	FC P-Loss 1	Reactor Coolant Activity Level Not Applicable.	Changed "Primary" to "Reactor" to standardize terminology.
FC P-Loss 2	Reactor Vessel Water Level A. RPV water level cannot be restored and maintained above (site specific RPV water level corresponding to the top of active fuel) or cannot be determined.	FC P-Loss 2	RPV Water Level A. RPV water level cannot be restored and maintained above (site-specific RPV water level corresponding to the top of active fuel) following depressurization of the RPV or cannot be determined.	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology. The words "following depressurization" have been added. See Attachment 2 for justification.
FC P-Loss 3	Not Applicable Not Applicable	FC P-Loss 3	Not Applicable Not Applicable	No change
FC P-Loss 4	Primary Containment Radiation Monitoring Not Applicable	FC P-Loss 4	Primary Containment Radiation Monitoring Not Applicable	No change
FC P-Loss 5	Other (Site-Specific) Indications A. (site specific) as applicable	FC P-Loss 5	Other Indications A. (site specific as applicable)	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC P-Loss 6	<p>Emergency Director Judgment</p> <p>A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier</p>	FC P-Loss 6	<p>Emergency Director Judgment</p> <p>A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier</p>	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

RCS

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS Loss 1	Primary Containment Pressure A. Primary containment pressure greater than (site specific value) due to RCS leakage.	RCS Loss 1	Primary Containment Pressure A. Primary containment pressure greater than (site specific value) due to RCS leakage.	No change
RCS Loss 2	Reactor Vessel Water Level A. RPV water level cannot be restored and maintained above (site specific RPV water level corresponding to the top of active fuel) or cannot be determined.	RCS Loss 2	RPV Water Level A. RPV water level cannot be restored and maintained above (site-specific RPV water level corresponding to the top of active fuel) following depressurization of the RPV or cannot be determined	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology. The words "following depressurization" have been added. See Attachment 2 for justification. Expanded bases discussion to define the term "cannot be restored and maintained" and exclude intentional lowering of RPV level under ATWS conditions.
RCS Loss 3	RCS Leak Rate A. (site specific Indication of an UNISOLABLE Main Steamline, HPCI, Feedwater, RWCU, or RCIC break) OR B. Emergency RPV Depressurization is required	RCS Loss 3	RCS Leak Rate A. UNISOLABLE break in ANY of the following: (site-specific systems with potential for high-energy line breaks) OR B. Emergency RPV Depressurization is required	Reworded threshold placing the example list of high energy systems in the threshold bases discussion.
RCS Loss 4	Primary Containment Radiation Monitoring A. Primary containment radiation monitor reading greater than (site specific value).	RCS Loss 4	Primary Containment Radiation Monitoring A. Primary containment radiation monitor reading greater than (site specific value).	No change
RCS Loss 5	Other Site-Specific Indications A. (site specific) as applicable	RCS Loss 5	Other Indications A. (site specific as applicable)	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS Loss 6	<p>Emergency Director Judgment A. ANY condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier</p>	RCS Loss 6	<p>Emergency Director Judgment A. ANY condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier</p>	No change
RCS P-Loss 1	<p>Primary Containment Pressure Not Applicable</p>	RCS P-Loss 1	<p>Primary Containment Pressure Not Applicable</p>	No change
RCS P-Loss 2	<p>Reactor Vessel Water Level Not applicable</p>	RCS P-Loss 2	<p>RPV Water Level Not applicable</p>	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology.
RCS P-Loss 3	<p>RCS Leak Rate A. RCS leakage greater than 50 gpm inside the drywell OR B. UNISOLABLE primary system leakage outside primary containment as indicated by exceeding EITHER of the following: a. Max Normal Operating Temperature. OR b. Max Normal Area Radiation.</p>	RCS P-Loss 3	<p>RCS Leak Rate A. UNISOLABLE primary system leakage that results in exceeding EITHER of the following: 1. Max Normal Operating Temperature OR 2. Max Normal Operating Area Radiation Level</p>	<p>Deleted threshold A based on > 50 gpm RCS leakage inside the drywell. BWR operating experience indicates that this threshold cannot be assessed under hot conditions because leaks rates well below this threshold would result in a high drywell pressure isolation which in turn isolates containment sumps required for making such determination. This threshold is subsumed into RCS Loss 1.A.</p> <p>Changed wording "...as indicated by..." to "...that results in..." Consistent with the usage and bases of the Secondary Containment Control Guideline (EOP), exceeding the specified limits is not the defacto indication of unisolable primary system leakage outside PC but a quantification of the magnitude of the primary system leakage outside PC.</p> <p>Added the words "Operating" and "Level" consistent with BWR EOP terminology.</p> <p>Expanded bases discussion for RCS Potential Loss 3.C supporting use of Max Normal Operating Levels.</p>

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS P-Loss 4	<p>Primary Containment Radiation Monitoring</p> <p>Not applicable</p>	RCS P-Loss 4	<p>Primary Containment Radiation Monitoring</p> <p>Not applicable</p>	No change
RCS P-Loss 5	<p>Other Site Specific Indications (site specific) as applicable</p>	RCS P-Loss 5	<p>Other Indications (site specific as applicable)</p>	No change
RCS P-Loss 6	<p>Emergency Director Judgment</p> <p>A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.</p>	RCS P-Loss 6	<p>Emergency Director Judgment</p> <p>Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier</p>	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Containment

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CMT Loss 1	<p>Primary Containment Conditions</p> <p>A. Primary containment pressure rise followed by a rapid unexplained drop in primary containment pressure.</p> <p>OR</p> <p>B. Primary containment pressure response not consistent with LOCA conditions.</p>	CMT Loss 1	<p>Primary Containment Conditions</p> <p>A. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise</p> <p>OR</p> <p>B. Primary containment pressure response not consistent with LOCA conditions</p>	Threshold (A) reworded to place the primary indication of concern, rapid pressure drop, first followed by the pressure rise criteria. Replaced the term "unexplained" with "unplanned" consistent with FAQ #10.
CMT Loss 2	<p>Reactor Vessel Water Level</p> <p>Not applicable</p>	CNMT Loss 2	<p>RPV Water Level</p> <p>Not applicable</p>	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology.

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CMT Loss 3	<p>Primary Containment Isolation Failure or Bypass</p> <p>A. Failure of all valves in any one line to close. AND Direct downstream pathway to the environment exists after primary containment isolation signal. OR</p> <p>B. Intentional primary containment venting per EOPs. OR</p> <p>C. UNISOLABLE primary system leakage outside primary containment as indicated by exceeding EITHER of the following: a. Max Safe Operating Temperature. OR b. Max Safe Area Radiation.</p>	CNMT Loss 3	<p>Primary Containment Isolation Failure</p> <p>A. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal OR</p> <p>B. Intentional primary containment venting per EOPs OR</p> <p>C. UNISOLABLE primary system leakage outside primary containment that results in exceeding EITHER of the following: 1. Max Safe Operating Temperature. OR 2. Max Safe Operating Area Radiation Level</p>	<p>Deleted the word "or Bypass" from the threshold category title. The threshold addresses 'direct' unisolable release path.</p> <p>Deleted the the statement "Failure of all valves in any one line to close" in the first statement. The concern is a failure of any valves that result in an <u>unisolable</u> downstream pathway.</p> <p>Added the term "Unisolable" to clarify that actions have been taken to isolate the release pathway if the automatic isolation failed.</p> <p>Clarified the bases for threshold B that intentional venting per EOPs is not intended to include venting for primary containment pressure control when not in an accident situation (e.g., to control pressure below the drywell high pressure scram setpoint) and thus does not meet the threshold condition.</p> <p>Changed wording "...as indicated by..." to "...that results in..." Consistent with the usage and bases of the Secondary Containment Control Guideline (EOP), exceeding the specified limits is not the defacto indication of unisolable primary system leakage outside PC but a quantification of the magnitude of the primary system leakage outside PC.</p> <p>Added bases for threshold C to describe the significance of the Max Safe Operating values cited. Added the words "Operating" and "Level" consistent with BWR EOP terminology.</p>
CMT Loss 4	<p>Primary Containment Radiation Monitoring</p> <p>Not applicable</p>	CNMT Loss 4	<p>Primary Containment Radiation Monitoring</p> <p>A. (Site-specific as applicable)</p>	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CMT Loss 5	Other Site Specific Indications (site specific) as applicable	CMT Loss 5	Other Indications (site specific as applicable)	No change
CMT Loss 6	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment barrier	CMT Loss 6	Emergency Director Judgment A. ANY condition in the opinion of the Emergency Director that indicates Loss of the Containment barrier	No change
CMT P-Loss 1	Primary Containment Conditions A. Primary containment pressure greater than (site specific value) and rising. OR B. Explosive mixture exists inside primary containment. OR C. RPV pressure and suppression pool temperature cannot be maintained below the HCTL.	CMT P-Loss 1	Primary Containment Conditions A. Primary containment pressure greater than (site-specific value) and rising OR B. (site-specific explosive mixture) exists inside primary containment OR C. RPV pressure and suppression pool temperature cannot be maintained below the HCTL	Reworded threshold B to support inclusion of site-specific explosive mixture concentrations.
CMT P-Loss 2	Reactor Vessel Water Level Primary containment flooding required	CMT P-Loss 2	RPV Water Level Primary containment flooding required	No change
CMT P-Loss 3	Primary Containment Isolation Failure or Bypass Not applicable	CMT P-Loss 3	Primary Containment Isolation Failure Not applicable	No change
CMT P-Loss 4	Primary Containment Radiation Monitoring Primary containment radiation monitor reading greater than (site specific value).	CMT P-Loss 4	Primary Containment Radiation Monitoring Primary containment radiation monitor reading greater than (site specific value).	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CMT P-Loss 5	Other Site Specific Indications (site specific) as applicable	CMT P-Loss 5	Other Indications (site specific as applicable)	No change
CMT P-Loss 6	Emergency Director Judgment Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment barrier	CMT P-Loss 6	Emergency Director Judgment Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment barrier	No change

Table 5-F-3 PWR Fission Product Barrier Thresholds

Fuel Cladding

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC Loss 1	Critical Safety Function Status A. Core-Cooling Red Entry Conditions Met.	FC Loss 2	Inadequate Heat Removal B. Core Cooling Red entry conditions met	Relocated threshold to different heading. Revised category to read "Inadequate Heat Removal"
FC Loss 2	Primary Coolant Activity Level A. Coolant activity greater than (site specific value).	FC Loss 3	RCS Activity/Containment Radiation B. (Site-specific indications that reactor coolant activity is greater than 300 μ Ci/gm I-131 dose equivalent).	Changed "Primary" to "RCS" to standardize terminology. Relocated threshold to different heading. Revised category to read "RCS Activity/Containment Radiation" Revised generic wording to provide greater latitude in the use of site-specific indications and terminology.
FC Loss 3	Core Exit Thermocouple Readings A. Core exit thermocouples reading greater than (site specific degree F).	FC Loss 2	Inadequate Heat Removal A. Core exit thermocouple readings greater than (site-specific temperature value).	Minor editorial change. Relocated threshold to different heading. Revised category to read "Inadequate Heat Removal"
FC Loss 4	Reactor Vessel Water Level Not Applicable	N/A	N/A	N/A
FC Loss 5	Not Applicable Not Applicable	N/A	N/A	N/A
FC Loss 6	Containment Radiation Monitoring A. Containment radiation monitor reading greater than (site specific value).	FC Loss 3	RCS Activity/Containment Radiation A. Containment radiation monitor reading greater than (site-specific value).	Relocated threshold to different heading. Revised category to read "RCS Activity/Containment Radiation"

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC Loss 7	Other (Site-Specific) Indications A. (Site-specific) as applicable	FC Loss 5	Other Indications A. (site-specific as applicable)	Minor editorial changes.
FC Loss 8	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	FC Loss 6	Emergency Director Judgment A. ANY condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	No change.
FC P-Loss 1	Critical Safety Function Status A. Core Cooling-Orange Entry Conditions Met. OR B. Heat Sink-Red Entry Conditions Met.	FC P-Loss 1 FC P-Loss 2	RCS or SG Tube Leakage B. Core Cooling Orange entry conditions met Inadequate Heat Removal B. Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications) OR C. Core Cooling Orange entry conditions met OR D. Heat Sink Red entry conditions met	Relocated thresholds to different headings. Revised categories to read "RCS or SG Tube Leakage" and "Inadequate Heat Removal". Revision 5 Potential Loss 1.A incorporated as Revision 6 FC Potential Loss 1.B and 2.C. The 2 locations address both aspects of a Core Cooling Orange status – elevated thermocouple temperatures due to inadequate heat removal and reduced reactor vessel level due to RCS leakage. Revision 5 Potential Loss 1.B incorporated as Revision 6 FC Potential Loss 2.D. Also see Developer Notes for FC Potential Loss 2.D. Revision 6 FC P-Loss 2.B provides an inadequate heat removal threshold for those plants that do not implement WOG CSFSTs. This threshold is equivalent to the existing WOG-based threshold.
FC P-Loss 2	Primary Coolant Activity Level Not Applicable	N/A	N/A	N/A

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC P-Loss 3	Core Exit Thermocouple Readings A. Core exit thermocouples reading greater than (site specific degree F).	FC P-Loss 2	Inadequate Heat Removal A. Core exit thermocouple readings greater than (site specific temperature value).	Minor/editorial wording change. Relocated threshold to different heading. Revised category to read "Inadequate Heat Removal".
FC P-Loss 4	Reactor Vessel Water Level A. RCS/RPV level less than (site specific level for TOAF).	FC P-Loss 1	RCS or SG Tube Leakage A. RCS/reactor vessel level less than (site-specific level)	Relocated threshold to different heading. Revised category to read "RCS or SG Tube Leakage". Revised "RPV" to "reactor vessel" to use common PWR terminology. Deleted reference to TOAF. Value should match that used in EOPs and/or functional restoration procedures. This level may or may not be TOAF. See clarification added to Basis and Developer Notes.
FC P-Loss 5	Not Applicable Not Applicable	N/A	N/A	N/A
FC P-Loss 6	Containment Radiation Monitoring Not Applicable	N/A	N/A	N/A
FC P-Loss 7	Other (Site-Specific) Indications A. (Site-specific) as applicable	FC P-Loss 5	Other Indications A. (site-specific as applicable)	Minor editorial changes.

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
FC P-Loss 8	<p>Emergency Director Judgment</p> <p>A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.</p>	FC P-Loss 6	<p>Emergency Director Judgment</p> <p>A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier</p>	No change.

Table 5-F-3 PWR Fission Product Barrier Thresholds

RCS

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS Loss 1	Critical Safety Function Status Not Applicable	N/A	N/A	N/A
RCS Loss 2	RCS Leak Rate A. RCS leak rate greater than available makeup capacity as indicated by a loss of RCS subcooling.	RCS Loss 1	RCS or SG Tube Leakage A. An automatic or manual ECCS (SI) actuation is required by EITHER of the following: 1. UNISOLABLE RCS leakage 2. SG tube leakage.	Relocated threshold to different heading. Revised category to read "RCS or SG Tube Leakage". Revised wording better defines and quantifies the RCS loss threshold. The requirement for ECCS (SI) actuation is more operationally significant and reflects a broader range of initiating events/conditions (e.g., low pressurizer pressure and/or level, high containment pressure, decision by Shift Manager, etc.). The new threshold is a more reliable indication of RCS barrier status for classification purposes (i.e., subcooling can be affected by parameter variables beyond just the leak rate). Also subsumes Revision 5 RCS Loss 4.A based on SG Tube Rupture. This simplifies the classification assessment process.
RCS Loss 3	Not Applicable Not Applicable	N/A	N/A	N/A
RCS Loss 4	SG Tube Rupture A. RUPTURED SG results in an ECCS (SI) actuation.	N/A	N/A	Relocated threshold to different heading. Revised category to read "RCS or SG Tube Leakage". Incorporated into RCS Loss 1.A. This simplifies the classification assessment process. Because of this combination (i.e., using the ECCS/SI criterion), the term RUPTURED is no longer required.
RCS Loss 5	Not Applicable Not Applicable	N/A	N/A	N/A

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS Loss 6	Containment Radiation Monitoring A. Containment radiation monitor reading greater than (site specific value).	RCS Loss 3	RCS Activity/Containment Radiation A. Containment radiation monitor reading greater than (site specific value).	Relocated threshold to different heading. Revised category to read "RCS Activity/Containment Radiation"
RCS Loss 7	Other (Site-Specific) Indications A. (Site-specific) as applicable	RCS Loss 5	Other Indications A. (site-specific as applicable)	Minor editorial changes.
RCS Loss 8	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	RCS Loss 6	Emergency Director Judgment A. ANY condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	No change.

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS P-Loss 1	<p>Critical Safety Function Status</p> <p>A. RCS Integrity-Red Entry Conditions Met.</p> <p>OR</p> <p>B. Heat Sink-Red Entry Conditions Met.</p>	RCS P-Loss 1 RCS P-Loss 2	<p>RCS or SG Tube Leakage</p> <p>B. RCS cooldown rate greater than (site-specific pressurized thermal shock criteria/limits defined by site-specific indications).</p> <p>OR</p> <p>C. RCS Integrity Red entry conditions met</p> <p>Inadequate Heat Removal</p> <p>A. Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications).</p> <p>OR</p> <p>B. Heat Sink Red entry conditions met</p>	<p>Relocated thresholds to different heading.</p> <p>Revised categories to read "RCS or SG Tube Leakage" and "Inadequate Heat Removal".</p> <p>Revised to provide generic Pressurized Thermal Shock (PTS) EAL criteria for all PWR designs. See Developer Notes for RCS Potential Loss 1.B and 1.C.</p> <p>Revised to provide generic loss of heat sink EAL criteria for all PWR designs. Also see Developer Notes for RCS Potential Loss 2.A and 2.B.</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS P-Loss 2	RCS Leak Rate A. RCS leak rate indicated greater than (site specific capacity of one charging pump in the normal charging mode) with Letdown isolated.	RCS P-Loss 1	RCS/SG Tube Leakage A. Operation of a standby charging (makeup) pump is required by EITHER of the following: 1. UNISOLABLE RCS leakage OR 2. SG tube leakage.	Relocated threshold to different heading. Revised category to read "RCS or SG Tube Leakage". The RCS P-Loss leak rate threshold has been simplified - instead of quantifying the leak rate (i.e., determining if the leak rate is greater than a pump capacity), the new threshold requires classification if operation of a standby charging (makeup) pump is required. This action would be directed by a procedure in response to indications that unisolable RCS leakage, or SG tube leakage, is beyond the capacity of one charging pump (e.g., letdown is isolated and pressurizer level continues to decrease). The old "capacity" criterion is subsumed in the decision to start a standby charging pump. This change will promote more accurate and timely classification since a leak rate calculation will not be required. The revised wording also clearly addresses large steam generator tube leaks that are not of sufficient size to require an ECCS (SI) actuation.
RCS P-Loss 3	Not Applicable Not Applicable	N/A	N/A	N/A
RCS P-Loss 4	SG Tube Rupture Not Applicable	N/A	N/A	N/A
RCS P-Loss 5	Not Applicable Not Applicable	N/A	N/A	N/A
RCS P-Loss 6	Containment Radiation Monitoring Not Applicable	N/A	N/A	N/A

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
RCS P-Loss 7	Other (Site-Specific) Indications A. (Site-specific) as applicable	RCS P-Loss 5	Other Indications A. (site-specific as applicable)	Minor editorial changes.
RCS P-Loss 8	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.	RCS P-Loss 6	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier	No change.

Table 5-F-3 PWR Fission Product Barrier Thresholds

Containment

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CNMT Loss 1	Critical Safety Function Status Not Applicable	N/A	N/A	N/A
CNMT Loss 2	<p>Containment Pressure</p> <p>A. A containment pressure rise followed by a rapid unexplained drop in containment pressure.</p> <p>OR</p> <p>B. Containment pressure or sump level response not consistent with LOCA conditions.</p>	CNMT Loss 4	<p>Containment Integrity or Bypass</p> <p>A. Containment isolation is required AND EITHER of the following:</p> <ol style="list-style-type: none"> 1. UNPLANNED rise in radiation monitor readings outside of containment that indicate a loss of containment integrity <p>OR</p> <ol style="list-style-type: none"> 2. UNISOLABLE pathway from containment to the environment exists <p>OR</p> <p>B. Indications of RCS leakage outside of containment.</p>	<p>Relocated threshold to different heading.</p> <p>Revised category to read "Containment Integrity or Bypass".</p> <p>The Revision 5 CNMT Loss 2.A was replaced with Revision 6 CNMT Loss 4.A.1. UNPLANNED increases in radiation levels outside containment are a better indication of the loss of containment integrity than a decrease in containment pressure (i.e., a more accurate and timely indication). There are several variables that may affect the rate of change of containment pressure; some may result in containment pressure remaining stable or increasing even though the barrier has been lost. In addition, the revised wording removed the subjective term "rapid" in cases where containment pressure is decreasing.</p> <p>The Revision 5 CNMT Loss 2.B was replaced with Revision 6 CNMT Loss 4.B. This wording expands the range of indications of RCS leakage outside of containment; see Basis section for discussion. This threshold includes interfacing system LOCAs of a magnitude sufficient to meet a loss or potential loss of the RCS barrier.</p> <p>Significantly expanded bases to support the new threshold wording and incorporated a graphic (Figure 9-F-4) to clarify intent.</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CNMT Loss 3	<p>Core Exit Thermocouple Readings Not applicable</p>	N/A	N/A	N/A
CNMT Loss 4	<p>SG Secondary Side Release with P-to-S Leakage A. RUPTURED SG is also FAULTED outside of containment. OR B. a. Primary-to-Secondary leakrate greater than 10 gpm. AND b. UNISOLABLE steam release from affected SG to the environment.</p>	CNMT Loss 1	<p>RCS or SG Tube Leakage A. Leaking SG is FAULTED outside of containment.</p>	<p>Relocated threshold to different heading. Revised category to read "RCS or SG Tube Leakage". Thresholds A and B combined into a single threshold. The lower bound of the size of the unisolable steam release has been appropriately limited to that which causes the SG to be considered FAULTED (i.e., the lower limit excludes small or incidental steam releases that do not cause SG pressure to decrease uncontrollably). The lower bound value of the RCS leak rate is governed by the RCS Barrier Potential Loss threshold; for this reason, the 10 gpm leak rate value is no longer required and was deleted. In addition, primary-to-secondary leakage greater than 25 gpm or other Technical Specification allowable limits is classified as an Unusual Event per IC SU4. Also see related discussion concerning deletion of IC FU1.</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
<p>CNMT Loss 5</p>	<p>Containment Isolation Failure or Bypass A. a. Failure of all valves in any one line to close. AND b. Direct downstream pathway to the environment exists after containment isolation signal.</p>	<p>CNMT Loss 4</p>	<p>Containment Integrity or Bypass A. Containment isolation is required AND EITHER of the following: 1. UNPLANNED rise in radiation monitor readings outside of containment that indicate a loss of containment integrity OR 2. UNISOLABLE pathway from containment to the environment exists</p>	<p>Relocated threshold to different heading. Revised category to read "Containment Integrity or Bypass". The Revision 5 Containment Loss 5.A was reworded and incorporated into Revision 6 CNMT Loss threshold 4.A.2. The revised wording continues to specify a containment isolation requirement and an UNISOLABLE pathway to the environment. The Revision 5 Loss 5.A.a wording is unnecessary – the existence of UNISOLABLE pathway following a containment isolation means that there must be a failure of all valves in any one line to close. This wording also addresses a broader range of conditions such as the failure of an in-board CNMT isolation valve to close and a line break upstream of a closed out-board CNMT isolation valve.</p>
<p>CNMT Loss 6</p>	<p>Containment Radiation Monitoring Not Applicable</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>
<p>CNMT Loss 7</p>	<p>Other (Site-Specific) Indications A. (Site-specific) as applicable</p>	<p>CNMT Loss 5</p>	<p>Other Indications A. (site-specific as applicable)</p>	<p>Minor editorial changes.</p>
<p>CNMT Loss 8</p>	<p>Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.</p>	<p>CNMT Loss 6</p>	<p>Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.</p>	<p>No change.</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CNMT P-Loss 1	Critical Safety Function Status A. Containment-Red Entry Conditions Met.	CNMT P-Loss 4	Containment Integrity or Bypass D. Containment Red entry conditions met	Relocated threshold to different heading. Revised category to read "Containment Integrity or Bypass".

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
<p>CNMT P-Loss 2</p>	<p>Containment Pressure</p> <p>A. Containment pressure greater than (site specific value) and rising.</p> <p>OR</p> <p>B. Explosive mixture exists inside containment.</p> <p>OR</p> <p>C. a. Pressure greater than containment depressurization actuation setpoint.</p> <p>AND</p> <p>b. Less than one full train of depressurization equipment operating.</p>	<p>CNMT P-Loss 4</p>	<p>Containment Integrity or Bypass</p> <p>A. Containment pressure greater than (site specific value) and rising.</p> <p>OR</p> <p>B. Explosive mixture exists inside containment.</p> <p>OR</p> <p>C. 1. Pressure greater than containment (site-specific containment depressurization actuation setpoint.)</p> <p>AND</p> <p>2. Less than one full train of (site-specific containment depressurization equipment operating per design).</p>	<p>Relocated threshold to different heading.</p> <p>Revised category to read "Containment Integrity or Bypass".</p> <p>In 4.C, made the operational requirements parenthetical to indicate that plants should use site-specific operational design criteria for containment heat removal systems.</p> <p>An applicability exclusion has been incorporated into the developer notes for P-Loss 4.C for US EPR designs. The US EPR containment volume, condensation surface area, and heat capacities are such that the containment design pressure is not exceeded during design basis Loss of Coolant Accident (LOCA) and Main Steam Line Break (MSLB) events. In addition, the containment pressure decreases to less than 50% of the accident analysis values in less than 24 hours thus ensuring that radiological dose consequences are acceptable. An automatically actuated containment spray system is therefore not required to mitigate the consequences of a Design Basis Accident for the US EPR; therefore, there is no automatic actuation setpoint for this potential loss fission product barrier threshold to be based upon. Mass and energy releases to the containment during LOCA and MSLB events were calculated using the NRC approved RELAP5/MOD2 (B&W) methodology. Containment pressure responses were calculated using the NRC approved GOTHIC code methodology.</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CNMT P-Loss 3	<p>Core Exit Thermocouple Readings</p> <p>A. a. Core exit thermocouples in excess of (site specific) ° F. AND b. Restoration procedures not effective within 15 minutes. OR B. a. Core exit thermocouples in excess of (site-specific) F. AND b. Reactor vessel level below (site specific level). AND c. Restoration procedures not effective within 15 minutes.</p>	CNMT P-Loss 2	<p>Inadequate Heat Removal</p> <p>A. 1. (Site-specific criteria for entry into core cooling restoration procedure) AND 2. Restoration procedure not effective within 15 minutes. OR B. Core Cooling Red entry conditions met for 15 minutes or longer</p>	<p>Relocated threshold to different heading.</p> <p>Revised category to read "Inadequate Heat Removal".</p> <p>Revision 5 CNMT PL 3.A.a and, 3.B.a and 3.B.b replaced by Revision 6 CNMT PL 2.A.1 to allow for use of site-specific procedure entry criteria (i.e., use the parameter values specified in EOPs). This change will align EAL criteria with the operationally significant parameters specified in site-specific EOPs.</p> <p>Clarification was added to the bases regarding what constitutes restoration procedures being "effective".</p> <p>Added CSFST Red entry condition for those plants that implement WOG CSFSTs.</p>
CNMT P-Loss 4	<p>SG Secondary Side Release with P-to-S Leakage</p> <p>Not applicable</p>	N/A	N/A	N/A
CNMT P-Loss 5	<p>Containment Isolation Failure or Bypass</p> <p>Not Applicable</p>	N/A	N/A	N/A
CNMT P-Loss 6	<p>Containment Radiation Monitoring</p> <p>A. Containment radiation monitor reading greater than (site specific value).</p>	CNMT P-Loss 3	<p>RCS Activity/Containment Radiation</p> <p>A. Containment radiation monitor reading greater than (site specific value).</p>	<p>Relocated threshold to different heading.</p> <p>Revised category to read "RCS Activity/Containment Radiation".</p>

Table 5-F-3 PWR Fission Product Barrier Thresholds

Rev. 5 Threshold #	Rev. 5 Example Threshold Wording	Rev. 6 Threshold #	Rev. 6 Example Threshold Wording	Change Summary
CNMT P-Loss 7	Other (Site-Specific) Indications A. (Site-specific) as applicable	CNMT P-Loss 5	Other Indications A. (site-specific as applicable)	Minor editorial changes.
CNMT P-Loss 8	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.	CNMT P-Loss 7	Emergency Director Judgment A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.	No change.

Section 5.10

Category H

Hazards and Other Conditions Affecting Plant Safety

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HU1	Natural or destructive phenomena affecting the PROTECTED AREA. MODE: All	N/A	Deleted	Deleted. This is an unneeded legacy IC from NUREG 0654. These events do not, in and of themselves, meet any ECL attribute for an Unusual Event and thus should not be a classifiable event. Notification of these events is appropriately addressed under the non-emergency reporting requirements of 10 CFR 50.72. Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities. The listed events do not necessarily pose significant potential for escalation to an Alert classification.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Seismic event identified by ANY 2 of the following: <ul style="list-style-type: none"> Seismic event confirmed by (site specific indication or method) Earthquake felt in plant National Earthquake Center 	N/A	Deleted	See IC HU1 change summary justification above. The occurrence of a seismic event absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.
2	Tornado striking within PROTECTED AREA boundary or high winds greater than (site specific mph).	N/A	Deleted	See IC HU1 change summary justification above. The occurrence of high winds (including a tornado) absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.
3	Internal flooding that has the potential to affect safety related equipment required by Technical Specifications for the current operating mode in ANY of the	N/A	Deleted	See IC HU1 change summary justification above. The occurrence of flooding absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.

NEI 99-01 Revision 5 to Revision 6 Change Summary

	following areas: (site specific area list)			
4	Turbine failure resulting in casing penetration or damage to turbine or generator seals.	N/A	Deleted	See IC HU1 change summary justification above. The occurrence of a turbine failure absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.
5	(Site specific occurrences affecting the PROTECTED AREA).	N/A	Deleted	See IC HU1 change summary justification above.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HU2	FIRE within the PROTECTED AREA not extinguished within 15 minutes of detection or EXPLOSION within the PROTECTED AREA. MODE: All	N/A	Deleted	Deleted. This is an unneeded legacy EAL from NUREG 0654. These events do not, in and of themselves, meet any ECL attribute for an Unusual Event and thus should not be a classifiable event. Notification of these events is appropriately addressed under the non-emergency reporting requirements of 10 CFR 50.72. Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities. The listed events do not necessarily pose significant potential for escalation to an Alert classification.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	FIRE not extinguished within 15 minutes of control room notification or verification of a control room FIRE alarm in ANY of the following areas: (site specific area list)	N/A	Deleted	See IC HU2 change summary justification. The occurrence of a FIRE absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.
2	EXPLOSION within the PROTECTED AREA.	N/A	Deleted	The occurrence of an EXPLOSION absent any report or indication of damage to plant safety systems, structures or components presents no increased risk to worker or public safety. This event does not require an emergency classification.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HU3	Release of toxic, corrosive, asphyxiant, or flammable gases deemed detrimental to NORMAL PLANT OPERATIONS. MODE: All	N/A	Deleted	Deleted. This is an unneeded legacy EAL from NUREG 0654. These events do not, in and of themselves, meet any ECL attribute for an Unusual Event and thus should not be a classifiable event. Notification of these events is appropriately addressed under the non-emergency reporting requirements of 10 CFR 50.72. Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities. The listed events do not necessarily pose significant potential for escalation to an Alert classification.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS.	N/A	Deleted	See IC HU3 change summary justification. The occurrence of a hazardous gas release absent any restriction that hinders required access to safety system equipment presents no increased risk to worker or public safety. This event does not require an emergency classification.
2	Report by local, county or state officials for evacuation or sheltering of site personnel based on an off-site event.	N/A	Deleted	See IC HU3 change summary justification. The occurrence of a hazardous gas release absent any restriction that hinders required access to safety system equipment presents no increased risk to worker or public safety. This event does not require an emergency classification.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HU4	Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant. MODE: All	HU1	Confirmed SECURITY CONDITION or threat MODE: All	Simplified IC wording. The EALs contain the specific event classification criteria. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A SECURITY CONDITION that does NOT involve a HOSTILE ACTION as reported by the (site specific security shift supervision).	1	A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the (site-specific security shift supervision)	No change.
2	A credible site specific security threat notification.	2	Notification of a credible security threat directed at the site	Reworded for readability. No change in EAL intent.
3	A validated notification from NRC providing information of an aircraft threat.	3	A validated notification from the NRC providing information of an aircraft threat.	No change.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HU5	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NOUE. MODE: All	HU8	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a (NO)UE. MODE: All	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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 off-site response or monitoring are expected unless further degradation of safety systems occurs.	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	No change

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA1	Natural or destructive phenomena affecting VITAL AREAS MODE: All	HA2	SEISMIC EVENT affecting safety systems. MODE: All	HA1 revised to reflect separating out the example R5 EALs for seismic events and severe weather/flooding into stand-alone ICs in R6. To promote usage consistency, made SEISMIC EVENT a defined term.
		HA6	Severe weather or flooding affecting safety systems. MODE: All	HA1 revised to reflect separating out the example R5 EALs for seismic events and severe weather/flooding into stand-alone ICs in R6.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary

<p>1</p>	<p>a. Seismic event greater than Operating Basis Earthquake (OBE) as indicated by (site specific seismic instrumentation) reading (site specific OBE limit).</p> <p>AND</p> <p>b. Earthquake confirmed by ANY of the following:</p> <ul style="list-style-type: none"> • Earthquake felt in plant • National Earthquake Center • Control Room indication of degraded performance of systems required for the safe shutdown of the plant. 	<p>HA2.1</p>	<p>(1) a. ANY of the following:</p> <ol style="list-style-type: none"> 1. Vibratory ground motion is felt and recognized as an earthquake based on a consensus of control room operators on duty at the time. <p>OR</p> <ol style="list-style-type: none"> 2. Both of the following: <ol style="list-style-type: none"> a) Vibratory ground motion detected by (site-specific seismic monitoring instrumentation). AND b) The occurrence of an earthquake is confirmed through contact with the National Earthquake Information Center or other source deemed credible by the Emergency Director (e.g., a regional seismic monitoring agency, news media reports, etc.). <p>AND</p> <p>b. ANY of the following:</p> <ul style="list-style-type: none"> • Reports of VISIBLE DAMAGE to ANY of the following structures or areas: (site-specific list) • Control Room indication of degraded performance of more than one train of a safety system or more than one safety system. • Damage report of sufficient magnitude to conclude that more than one train of a safety system or more than one system cannot perform their intended design function. 	<p>In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment."</p> <p>The occurrence of an OBE, in and of itself, is not operationally significant and provides no information concerning the actual post-event condition of the plant. It therefore provides no meaningful information concerning a potential increase in the risk to worker or public safety, and is not an appropriate classification criterion.</p> <p>The revised seismic EAL is tied to seismic activity that results in visible damage to structures containing safety systems, or actual indication or damage reports of significantly degraded safety system performance. These are operationally significant criteria and serve as appropriate bases for declaration an Alert.</p> <p>Split out multiple EAL criteria in (1).b into separate bullets.</p> <p>The R6 EAL (1).a reflects improved wording to address OE from the August 23, 2011 earthquake centered in Virginia. This wording will promote more timely emergency classifications with no decrease in accuracy.</p>
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<p>2</p>	<p>Tornado striking or high winds greater than (site specific mph) resulting in VISIBLE DAMAGE to ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems:</p> <p>(site specific structure list)</p>	<p>HA6.1</p>	<p>Severe weather or flooding causing ANY of the following:</p> <ul style="list-style-type: none"> ■ Reports of VISIBLE DAMAGE to ANY of the following structures or areas: (site-specific list) ■ Control Room indication of degraded performance of more than one train of a safety system or more than one safety system. ■ Damage report of sufficient magnitude to conclude that more than one train of a safety system or more than one system cannot perform their intended design function. 	<p>In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment."</p> <p>The revised R6 wording, "severe weather" subsumes the R5 terms "tornado" and "high winds".</p> <p>Split out multiple EAL criteria into separate bullets.</p>
<p>3</p>	<p>Internal flooding in ANY of the following areas resulting in an electrical shock hazard that precludes access to operate or monitor safety equipment OR control room indication of degraded performance of those safety systems:</p> <p>(site specific area list)</p>	<p>N/A</p>	<p>Subsumed into example EAL HA6.1.</p>	<p>In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment."</p> <p>Example EAL #3 has been subsumed into new EAL HA6.1; see above. The R6 EAL addresses any form of flooding, from whatever source.</p>
<p>4</p>	<p>Turbine failure-generated PROJECTILES resulting in VISIBLE DAMAGE to or penetration of ANY of the following structures containing safety systems or components OR control</p>	<p>N/A</p>	<p>Deleted.</p>	<p>Example EAL #4 has been deleted. The effects of a turbine failure-generated projectile are better addressed by the EALs and thresholds in Recognition Categories F and S.</p>

	room indication of degraded performance of those safety systems: (site specific structure list)			
5	Vehicle crash resulting in VISIBLE DAMAGE to ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems: (site specific structure list)	N/A	Deleted.	Example EAL #5 has been deleted. The effects of a vehicle crash are better addressed by the EALs and thresholds in Recognition Categories F and S.
6	(Site specific occurrences) resulting in VISIBLE DAMAGE to ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems:	N/A	Deleted.	Example EAL #6 has been deleted. The effects of a hazardous event, not already listed elsewhere, are better addressed by the EALs and thresholds in Recognition Categories F and S.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA2	FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown MODE: All	HA3	FIRE affecting safety systems MODE: All	Relocated the R5 FIRE IC to R6 IC HA3. Simplified the IC wording.
N/A	N/A	HA4	EXPLOSION affecting safety systems	Relocated the R5 EXPLOSION IC to R6 IC HA4. Simplified the IC wording.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	FIRE or EXPLOSION resulting in VISIBLE DAMAGE to ANY of the following structures containing safety systems or components OR control room indication of degraded performance of those safety systems: (site specific structure list)	HA3.1	(1) FIRE resulting in ANY of the following: <ul style="list-style-type: none"> VISIBLE DAMAGE to ANY of the following structures and areas: (site-specific list). Control Room indication of degraded performance of more than one train of a safety system or more than one safety system. Damage report of sufficient magnitude to conclude that more than one train of a safety system or more than one system cannot perform their intended design function 	In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment." Split out multiple EAL criteria into separate bullets.
N/A	N/A	HA3.2	(2) FIRE in ANY of the following structures or areas not extinguished within 30 minutes of	Added a threshold based on the occurrence of an extended fire, i.e., lasting more than 30 minutes after Fire Brigade deployment. This EAL is indicative of a significant fire that cannot be quickly controlled

			the Control Room directing deployment of the Fire Brigade (site-specific list)	by onsite firefighting personnel. It would be evaluated during an event where the damage report necessary to evaluate EAL #1 is still not available 30 minutes after the Control Room directed deployment of the Fire Brigade (and assuming the other bullet criteria were not met).
N/A	N/A	HA4.1	<p>EXPLOSION resulting in ANY of the following:</p> <ul style="list-style-type: none"> • VISIBLE DAMAGE to ANY of the following structures and areas: (site-specific list). • Control Room indication of degraded performance of more than one train of a safety system or more than one safety system. • Damage report of sufficient magnitude to conclude that more than one train of a safety system or more than one system cannot perform their intended design function 	In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment."

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA3	Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of operable equipment required to maintain safe operations or safely shutdown the reactor. MODE: All	HA5	Gas release impeding access to safety systems MODE: All	In general, an effort was made in Rev. 6 to better relate the plant impacts of the events in this section to the to the ECL assignment attributes in section 3.1. All of the hazard-based Alert EALs have been aligned to the existence of a visible damage report to a structure containing safety systems, Control Room indication or other damage report that multiple safety-related trains or systems are impacted. This approach promotes more timely and accurate EAL assessments. Refer to up front section "ECL Assignment Attributes & IC/EAL Risk Alignment."

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shutdown beyond that already allowed by Technical Specifications at the time of the event.		Note: If the safety system 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.	Reworded note to improve clarity and readability.
1	Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of systems required to maintain safe operations or safely shutdown the reactor.	1	a. Release of a toxic, corrosive, asphyxiant or flammable gas to any of the following plant rooms or areas: (site-specific list): AND b. Personnel cannot enter the room or area to perform a required action necessary to maintain safe plant operation, or to safely cooldown or shutdown the plant.	Revised the EAL (along with the Developer Note instructions) to focus the list on those rooms or areas containing components necessary to maintain safe plant operation, or to safely cooldown or shutdown the plant. The revised EAL wording replaces the subjective term "jeopardize" with observable/objective criteria. The loss of access criterion is limited to an access need that is currently required and cannot be performed, and does not include access that could be potentially required at some future time, or is otherwise not anticipated. This change addresses a variety of industry OE with gas release-related events and classifications. It will promote more accurate emergency classifications, i.e., classification of events that actually meet an Alert ECL attribute.

NEI 99-01 Revision 5 to Revision 6 Change Summary

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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA4	HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat. MODE: All	HA1	HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes. MODE: All	Added 30 min. criteria for airborne attack consistent with example EAL #2.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site specific security shift supervision).	1	A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site-specific security shift supervision)	No change.
2	A validated notification from NRC of an airliner attack threat within 30 minutes of the site.	2	A validated notification from NRC of an aircraft attack threat within 30 minutes of the site	Incorporates FAQ #26.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA5	Control Room Evacuation Has Been Initiated MODE: All	HA7	Plant control transferred to locations outside the Control Room MODE: All	Revised the IC to reflect that the actual classifiable event of concern is the transfer of plant control to outside of the Control Room and not the related act of an evacuation. Since the steps/methods used to implement a Control Room evacuation can vary significantly, this approach will result in more consistent application across the industry. The overall intent of this IC did not change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	(Site-specific procedure) requires control room evacuation.	1	An UNPLANNED event has resulted in plant control being transferred from the Control Room to (site-specific remote shutdown panels and local control stations)	Revised the EAL to reflect that the actual classifiable event of concern is the transfer of plant control to outside of the Control Room and not the related act of an evacuation. Since the steps/methods used to implement a Control Room evacuation can vary significantly, this approach will result in more consistent application across the industry. See expanded basis discussion. The overall intent of this EAL did not change.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HA6	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert. MODE: All	HA8	Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert MODE: All	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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.	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	No change

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HS2	Control room evacuation has been initiated and plant control cannot be established. MODE: All	HS7	Inability to control a key safety function from outside the Control Room MODE: All	Revised IC to reflect the bases intent by specifying the inability to control key safety function(s) from outside the Control Room. Since the steps/methods used to implement a Control Room evacuation can vary significantly, this approach will result in more consistent application across the industry. The overall intent of this IC did not change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	a. Control room evacuation has been initiated. AND b. Control of the plant cannot be established within (site specific minutes).	1	a. An event has resulted in plant control being transferred from the Control Room to (site-specific remote shutdown panels and local control stations). AND b. Control of ANY of the following safety functions is not reestablished within (site-specific number of minutes). <ul style="list-style-type: none"> • Reactivity control • Core cooling [<i>PWR</i>] / RPV water level [<i>BWR</i>] • RCS heat removal. 	Changed to refer to the completion of the act transferring plant control to a location outside the Control Room. Since the steps/methods used to implement a Control Room evacuation can vary significantly, this approach will result in more consistent application across the industry. Changed "... control of the plant . . ." to control of the listed safety functions. This change "pulled up" clarifying guidance from the basis section. The new criteria are more readily assessable. See expanded basis discussion. The overall intent of this EAL did not change.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HS3	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency.	HS8	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency	No change

NEI 99-01 Revision 5 to Revision 6 Change Summary

	MODE: All		MODE: All	
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Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.	1	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.	No change

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HS4	HOSTILE ACTION within the Protected Area MODE: All	HS1	HOSTILE ACTION within the PROTECTED AREA MODE: All	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A HOSITILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (site-security shift supervision).	1	A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (site-specific security shift supervision)	No change

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HG1	HOSTILE ACTION resulting in loss of physical control of the facility. MODE: All	HG1	HOSTILE ACTION resulting in loss of key safety functions or damage to spent fuel MODE: All	Changed "... loss of physical control of the facility" to "...loss of key safety functions". This change "pulled up" clarifying guidance from the basis section. Added "damage to spent fuel" since this condition is assessed in an EAL for this IC (provides consistency). The overall intent of this IC did not change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions.	1	a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (site-specific security shift supervision). AND b. EITHER of the following: 1. ANY of the following safety functions cannot be controlled or maintained. <ul style="list-style-type: none"> ▪ Reactivity control ▪ Core cooling [PWR] / RPV water level [BWR] ▪ RCS heat removal 2. Damage to spent fuel has occurred or is IMMINENT	Revised wording and added logic to combine Rev. 5 EALs 1 and 2 into a single EAL in Rev. 6. Changed "...such that plant personnel are unable to operate equipment required to maintain safety functions" to control of the listed safety functions. This change "pulled up" clarifying guidance from the basis section. The new criteria are more readily assessable. Incorporates FAQ #29 R6 EAL #(1).b.2 - simply references existing or IMMINENT damage to spent fuel. The damage consideration is independent of the cause, e.g., a loss of water level through a breach in the spent pool wall without damage to cooling systems. Likewise, the statement "freshly off-loaded reactor core in pool" is unnecessary; the only consideration is indication of actual or IMMINENT damage to spent fuel. The overall intent of this EAL did not change.
2	A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.			

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
HG2	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency. MODE: All	HG8	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency MODE: All	No change

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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 off-site for more than the immediate site area.	HG6.1	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	No change

Section 5.11

Category S System Malfunction

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU1	Loss of all Off-site AC power to emergency busses for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU1	Loss of offsite AC power capability to emergency busses for 15 minutes or longer MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Replaced “of all Off-Site AC Power” with “offsite AC power capability”. Added discussion to basis concerning application of “capability” to the IC and EAL. This change addresses a situation where offsite power is available but is not currently supplying emergency busses due to the steps/time required to swap from an emergency power source back to a normal offsite power source. This change will ensure that plant conditions are aligned with the UE ECL attributes.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	Loss of all off-site AC power to (site specific emergency busses) for 15 minutes or longer.	1	Loss of ALL offsite AC power capability to (site-specific emergency busses) for 15 minutes or longer	Incorporated the term “capability” to be consistent with IC statement. Added discussion to basis concerning application of “capability” to the IC and EAL. This change addresses a situation where offsite power is available but is not currently supplying emergency busses due to the steps/time required to swap from an emergency power source back to a normal offsite power source. This change will ensure that plant conditions are aligned with the UE ECL attributes.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU2	Inability to reach required shutdown within Technical Specification limits. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	N/A	N/A	Deleted. The inability to reach required shutdown within Technical Specification limits does not meet any ECL attribute for an Unusual Event and thus should not be a classifiable event; however, this event would be reported to the NRC per the non-emergency notification requirements of 10 CFR 50.72. There is no direct emergency classification escalation pathway for this IC. Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.	N/A	N/A	Deleted. See IC change summary justification.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU3	UNPLANNED loss of safety system annunciation or indication in the control room for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU2	UNPLANNED loss of safety system annunciation in the Control Room for 15 minutes or longer MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Deleted "or indication". Given the greater relative importance of indication over annunciation, indication was deleted from this IC; significant losses of safety system indication escalates the event to the Alert classification.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	UNPLANNED Loss of greater than approximately 75% of the following for 15 minutes or longer: a. (Site specific control room safety system annunciation) OR b. (Site specific control room safety system indication)	1	UNPLANNED loss of ALL the following annunciation for 15 minutes or longer (site-specific list)	Deleted "or indication". Given the greater relative importance of indication over annunciation, indication was deleted from this IC; significant losses of safety system indication escalates the event to the Alert classification. Focused the EAL on the loss of annunciation associated with the key safety functions of reactivity control, core cooling [PWR] / RPV water level [BWR] and RCS heat removal. These are the functions of primary interest to maintaining the fuel cladding and RCS fission product barriers, the potential loss or loss of which would escalate the emergency to the Alert level. With the change to the specification of a subset of total annunciation, the arbitrary 75% criterion is no longer necessary and was deleted.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU4	Fuel Clad Degradation MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU3	Fuel clad degradation greater than Technical Specification allowable limits MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Added “greater than Technical Specification allowable limits” to align the IC with the EAL. No change in IC intent.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	(Site specific radiation monitor readings indicating fuel clad degradation greater than Technical Specification allowable limits.)	1	(Site-specific radiation monitor readings indicating fuel clad degradation greater than Technical Specification allowable limits.)	No change.
2	(Site specific coolant sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits.)	2	Reactor coolant sample activity greater than (site-specific value taken from Technical Specification allowable limits)	Reworded for clarity. No change in EAL intent.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU5	RCS Leakage MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU4	RCS leakage for 15 minutes or longer MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	The criterion "for 15 minutes or longer" was added to the IC to preclude classification for brief and readily isolable RCS leaks. This approach is consistent with that used for other ICs and introduces no significant risk increase to plant workers or the public. This change will reduce inappropriate emergency classifications, i.e., classification of a condition that does not meet an ECL attribute for an Unusual Event.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A			Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Added timing note applicable to EAL thresholds with a timing criteria.
1	Unidentified or pressure boundary leakage greater than 10 gpm.	1	RCS unidentified or pressure boundary leakage greater than (site-specific value) for 15 minutes or longer	Replaced the "10 gpm" value with a "(site-specific value)" to allow the use of a value higher than 10 gpm for those plants that have higher Technical Specification allowable limits. This ensures that an emergency classification is appropriately aligned with the analyzed safety envelop defined by Technical Specifications. The criterion "for 15 minutes or longer" was added to the EAL to preclude classification for brief and readily isolable RCS leaks. Basis section was changed to include direction that the Identified, Unidentified and Pressure Boundary Leakage definitions are consistent with those presented in the plant Technical Specifications. This ensures that operators are using the same definitions for both Technical Specification LCO and emergency classification assessments. Additionally, verbiage was added to explain the 15-minute time limit.
2	Identified leakage greater than 25 gpm,	2	RCS identified leakage greater than (site-specific value) for 15	Replaced the "25 gpm" value with a "(site-specific value)" to allow the use of a value higher than 25 gpm for those plants that have higher Technical Specification limits. This ensures that an

			minutes or longer	<p>emergency classification is appropriately aligned with the analyzed safety envelop defined by Technical Specifications.</p> <p>The criterion “for 15 minutes or longer” was added to the EAL to preclude classification for brief and readily isolable RCS leaks.</p> <p>Basis section was changed to include direction that the Identified, Unidentified and Pressure Boundary Leakage definitions are consistent with those presented in the plant Technical Specifications. This ensures that operators are using the same definitions for both Technical Specification LCO and emergency classification assessments. Additionally, verbiage was added to explain the 15-minute time limit.</p>
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
N/A	N/A	SU5	Automatic (trip [<i>PWR</i>] or scram [<i>BWR</i>]) fails to shutdown the reactor MODE: Power Operation	Added new IC and associated EAL based on the failure of an automatic trip/scram to shutdown the reactor. Following the failure of an automatic scram (trip), operators will promptly initiate actions to shutdown the reactor. Such actions may include inserting a manual trip/scram signal, manually driving in the control rods, emergency boration, local opening of breakers, etc. If these actions are successful, reactor heat generation will quickly fall to a level within the capabilities of the ECCS. Provided that the integrity of the RCS barrier [<i>PWR</i>], or primary containment barrier [<i>BWR</i>] is not challenged during the period of excess heat generation, there is no imminent threat to any fission product barrier and therefore does not warrant an Alert classification per the Alert classification attributes.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	An automatic reactor (trip [<i>PWR</i>] or scram [<i>BWR</i>]) failed to shutdown the reactor as indicated by (site-specific indications of reactor not shutdown)	Added new UE IC and associated EAL based on the failure of an automatic trip/scram to shutdown the reactor. Following the failure of an automatic scram (trip), operators will promptly initiate actions to shutdown the reactor. Such actions may include inserting a manual trip/scram signal, manually driving in the control rods, emergency boration, local opening of breakers, etc. If these actions are successful, reactor heat generation will quickly fall to a level within the capabilities of the ECCS. Provided that the integrity of the RCS barrier [<i>PWR</i>], or primary containment barrier [<i>BWR</i>] is not challenged during the period of excess heat generation, there is no imminent threat to any fission product barrier. This condition meets an ECL attribute for Unusual Event. If the reactor cannot be shutdown prior to a threat to integrity of the RCS barrier [<i>PWR</i>], or primary containment barrier [<i>BWR</i>], then the condition will escalate to an Alert classification.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU6	Loss of all On-site or Off-site communications capabilities. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU6	Loss of all onsite or offsite communications capabilities MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	None

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	Loss of all of the following on-site communication methods affecting the ability to perform routine operations. (site specific list of communications methods)	1	Loss of ALL of the following onsite communication methods: (site-specific list of communications methods)	Simplified wording to improve emergency classification accuracy and timeliness. The applicable Developer Note explains that the listed communications systems in EAL #1 be those that support the ability to perform routine operations; the Emergency Director need only determine if the systems are unavailable (lost). No change in EAL intent.
2	Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications. (site specific list of communications methods)	2	Loss of ALL of the following ORO communications methods: (site-specific list of communications methods)	Split example EAL #2 into loss of ORO notification capability and loss of NRC notification capability. Revised wording will improve emergency classification accuracy and timeliness. No change in EAL intent.
N/A	N/A	3	Loss of ALL of the following NRC communications methods: (site-specific list of communications methods)	Split example EAL #2 into loss of ORO notification capability and loss of NRC notification capability. Revised wording will improve emergency classification accuracy and timeliness. No change in EAL intent.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SU8	Inadvertent Criticality. MODE: Hot Standby, Hot Shutdown	N/A	N/A	Deleted IC SU8. See below.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	UNPLANNED sustained positive period observed on nuclear instrumentation. [BWR]	1	N/A	<p>IC SU8 and associated EALs have been deleted.</p> <p>The original concept of an inadvertent criticality threshold was considered in NEI 97-03 (Revision 3 of what would become NEI 99-01) and subsequently incorporated into the NEI 99-01 guidance with Revision 4. The bases from NEI 97-03 indicated that the concern was primarily for criticality events that occur in the Cold Shutdown and Refueling modes though the mode applicability was extended to Startup and Hot Shutdown modes. In the NRC Regulatory Analysis that supported the Revision 4 endorsement in Reg Guide 1.101, it states:</p> <p><i>"The basis for adding this EAL comes from studies of criticality events that occur in the Cold Shutdown or Refueling modes (reference NUREG-1449, "Shutdown and Low-Power Operation at Commercial Nuclear Power Plant in the United States"). These events represent a potential degradation of the level of safety of the plant and, therefore, warrant an Unusual Event classification."</i></p> <p>The NEI example EALs (BWR & PWR) rely on in-core nuclear instrumentation for indications of an inadvertent criticality. This would exclude any inadvertent criticality event associated with fuel external to the reactor vessel (such as mis-positioning of spent fuel in the SFP or loss of boration in PWR reactor cavity, fuel transfer canal or SFP).</p> <p>NUREG-1449 assessed criticalities associated with inadvertent reactivity additions to the reactor core. For PWRs the concern is rapid in-core boron dilution during startup under hot condition with shutdown control rod banks removed (NUREG/CR-5819). For BWRs the concern is related to control rod withdrawal errors or</p>
1	UNPLANNED sustained positive startup rate observed on nuclear instrumentation. [PWR]	2	N/A	

				<p>feedwater transients during startups.</p> <p>In the Cold Shutdown and Refueling modes for both PWR and BWRs the possibility for an inadvertent core reactivity addition sufficient to cause criticality is not considered in the NUREG-1449 event analysis. It is noted that such events would be extremely unlikely due to shutdown margin design and reactivity control interlocks.</p> <p>This condition does not meet any ECL attribute for an Unusual Event and thus should not be a classifiable event; however, this event would be reported to the NRC per the non-emergency notification requirements of 10 CFR 50.72.</p> <p>There is no direct emergency classification escalation pathway for this IC.</p> <p>Normal and off-normal (but non-emergency) procedures would be sufficient to perform event investigation and correction activities.</p> <p>Therefore, IC CU8 and associated EALs have been deleted.</p>
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SA2	<p>Automatic Scram (Trip) fails to shutdown the reactor and the manual actions taken from the reactor control console are successful in shutting down the reactor.</p> <p>MODE: Power Operation, Startup</p>	SA5	<p>Automatic (trip [PWR] or scram [BWR]) fails to shutdown the reactor and challenge to RCS barrier [PWR] or challenge to primary containment barrier [BWR]</p> <p>MODE: Power Operation</p>	<p>Replaced R5 wording - “manual actions taken from the reactor control console are successful in shutting down the reactor” – with “challenge to RCS barrier [PWR] or challenge to primary containment barrier [BWR]”. The R5 criterion is not operationally significant nor indicative of the severity of plant conditions, and can lead to classification of an event as a Site Area Emergency that, in fact, presents no significant threat to plant workers or the public. The R6 criterion focuses on the appropriate operationally significant plant responses that may be indicative of a threat to a fission product barrier, and hence increased risk.</p> <p>This IC describes a failure of the reactor protection system to automatically (trip [PWR] or scram [BWR]) the reactor, and reactor heat generation is sufficient to challenge the integrity of the RCS barrier [PWR], or primary containment barrier [BWR]. This represents an actual or potential substantial degradation of the level of safety of the plant and is consistent with the Alert classification level attributes.</p> <p>Deleted Startup mode. The EAL reactor shutdown criteria are only applicable in the Power Operation mode per standard Technical Specifications. It is recognized that for those plants that have not implemented standard Technical Specifications, the Startup mode may need to be included if the shutdown power criteria overlaps the Startup mode power criteria. This is addressed in the Developer Notes.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	<p>a. An automatic scram (trip) failed to shutdown the reactor.</p> <p>AND</p> <p>b. Manual actions taken at the reactor control console</p>	1	<p>a. An automatic reactor (trip [PWR] or scram [BWR]) failed to shutdown the reactor as indicated by (site-specific indications of reactor not shutdown).</p>	<p>This EAL describes a failure of the reactor protection system to automatically (trip [PWR] or scram [BWR]) the reactor, and reactor heat generation is sufficient to challenge the integrity of the RCS barrier [PWR], or primary containment barrier [BWR]. This represents an actual or potential substantial degradation of the level of safety of the plant.</p> <p>Replaced the 1.b criterion of R5 with the new criteria discussed</p>

	<p>successfully shutdown the reactor as indicated by (site specific indications of plant shutdown).</p>		<p>AND</p> <p>b. RCS pressure reaches (site-specific lowest pressurizer PORV pressure setpoint). [PWR]</p> <p>Suppression pool temperature reaches (site-specific Boron Injection Initiation Temperature (BIIT)).[BWR]</p>	<p>below. The R5 1.b criterion is not operationally significant nor indicative of the severity of plant conditions, and can lead to classification of an event as a Site Area Emergency that, in fact, presents no significant threat to plant workers or the public. The new R6 criterion focuses on the appropriate operationally significant plant responses that may be indicative of a threat to a fission product barrier, and hence increased risk.</p> <p>An Alert is warranted because:</p> <p>[PWR] – RCS pressure has approached the design limits of the RCS and fuel cladding. Protection of RCS and fuel cladding integrity is now dependent upon operation of a pressure relief valve(s) until operators can shut down the reactor. There are attendant concerns including the loss of RCS mass (reactor coolant) when the pressure relief valve(s) lifts and the possibility that a valve will not fully close.</p> <p>[BWR] – Exceeding the Boron Injection Initiation Temperature (BIIT) under failure to scram conditions is a fundamental indication that heat is being added to the containment at a rate that could ultimately challenge primary containment integrity. The BIIT is a function of reactor power. It is utilized to establish requirements for boron injection and deliberately lowering RPV water level following a failure-to-scram. If boron injection is initiated before suppression pool temperature reaches the BIIT, emergency RPV depressurization may be precluded at lower reactor power levels.</p> <p>For additional background information, refer to NUREG-1780, <i>Regulatory Effectiveness of the Anticipated Transient Without Scram Rule</i>.</p>
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Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SA4	<p>UNPLANNED Loss of safety system annunciation or indication in the control room with EITHER (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators unavailable.</p> <p>MODE: Power Operation, Startup, Hot Standby, Hot Shutdown</p>	SA2	<p>Inability to monitor a key safety function parameter for 15 minutes or longer</p> <p>MODE: Power Operation, Startup, Hot Standby, Hot Shutdown</p>	<p>Focused IC on the inability to monitor a key safety function parameter (i.e., a parameter value that may be available from several indication sources). Given the greater relative importance of indication over annunciation, annunciation was deleted from this IC; significant losses of safety system annunciation are classified as an Unusual Event per IC SU2.</p> <p>Pulled-up 15-minute criterion from EAL.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</p>		<p>Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</p>	<p>Reworded for clarity.</p>
1	<p>a. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:</p> <ul style="list-style-type: none"> • (Site specific control room safety system annunciation) <p>OR</p> <ul style="list-style-type: none"> • (Site specific control room safety system indication) <p>OR</p> <p>b. EITHER of the following:</p> <ul style="list-style-type: none"> • A SIGNIFICANT TRANSIENT is in progress. • Compensatory indications 	1	<p>Inability to monitor one or more of the following key safety function parameters from within the Control Room for 15 minutes or longer.</p> <p>[Table]</p> <p>AND</p> <p>A SIGNIFICANT TRANSIENT in progress</p>	<p>Focused the EAL on the inability to monitor a parameter associated with the key safety functions of reactivity control, core cooling [PWR] / RPV water level [BWR] and RCS heat removal. These are the functions of primary interest to maintaining the fuel cladding and RCS fission product barriers. The inability to monitor one of these parameters during a SIGNIFICANT TRANSIENT significantly reduces the margin to a loss or potential loss of the fuel clad or RCS fission product barrier, and thus warrants an Alert classification.</p> <p>With the change to the specification of a subset of total indication, the arbitrary 75% criterion is no longer necessary and was deleted.</p> <p>This approach addresses a much wider spectrum of events that may result in the inability to adequately monitor key plant safety functions. The second bullet of the R5 1.b criteria is no longer necessary because it's included in the R6 EAL logic, i.e., the</p>

	are unavailable.			inability to monitor a parameter means that all indication sources in the Control Room have been reviewed, normal and compensatory, but the parameter value cannot be determined for monitoring purposes.
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<i>[BWR parameter list]</i>	<i>[PWR parameter list]</i>
Reactor Power	Reactor Power
RPV Water Level	Reactor Vessel Level
RPV Pressure	Subcooling
Primary Containment Pressure	In-Core/Core Exit Temperature
Suppression Pool Level	Levels in at least (site-specific number) steam generators
Suppression Pool Temperature	Steam Generator Auxiliary or Emergency Feed Water Flow

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SA5	<p>AC power capability to emergency busses reduced to a single power source for 15 minutes or longer such that any additional single failure would result in station blackout.</p> <p>MODE: Power Operation, Startup, Hot Standby, Hot Shutdown</p>	SA1	<p>AC power capability to emergency busses reduced to a single power source for 15 minutes or longer</p> <p>MODE: Power Operation, Startup, Hot Standby, Hot Shutdown</p>	<p>IC numbering change SA5 to SA1.</p> <p>Simplified IC wording. The criterion “such that any additional single failure would result in station blackout” provided no additional clarification to the IC statement; “single power source” is sufficient.</p> <p>No change to IC intent.</p>

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	<p>Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.</p>		<p>Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</p>	<p>Reworded for clarity.</p>
1	<p>a. AC power capability to (site-specific emergency busses) reduced to a single power source for 15 minutes or longer.</p> <p>AND</p> <p>b. Any additional single power source failure will result in station blackout.</p>	1	<p>AC power capability to (site-specific emergency busses) is reduced to a single power source for 15 minutes or longer</p>	<p>Simplified EAL wording. The criterion “such that any additional single failure would result in station blackout” provided no additional clarification to the EAL statement; “single power source” is sufficient.</p> <p>Incorporates FAQ #36.</p> <p>Expanded developer notes to address addition of clarifying examples, and taking credit for cross-ties and swing generators at multi-unit sites.</p> <p>No change to EAL intent.</p>

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SS1	Loss of all Off-site and all On-Site AC power to emergency busses for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SS1	Loss of all offsite and all onsite AC power to emergency busses for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	No change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	Loss of all Off-Site and all On-Site AC power to (site specific emergency busses) for 15 minutes or longer.	1	Loss of ALL offsite and ALL onsite AC power to (site-specific emergency busses) for 15 minutes or longer	No change.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SS2	Automatic Scram (Trip) fails to shutdown the reactor and manual actions taken from the reactor control console are not successful in shutting down the reactor. MODE: Power Operation, Startup	SS5	Automatic (trip [PWR] or scram [BWR]) fails to shutdown the reactor and extreme challenge to core cooling or RCS heat removal MODE: Power Operation	The IC and example EAL have been revised to properly reflect the SAE classification attributes of a condition indicative of a threat to multiple fission product barriers. Deleted Startup mode. The EAL reactor shutdown criteria are only applicable in the Power Operation mode per standard Technical Specifications. It is recognized that for those plants that have not implemented standard Technical Specifications, the Startup mode may need to be included if the shutdown power criteria overlaps the Startup mode power criteria. This is addressed in the Developer Notes.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	a. An automatic scram (trip) failed to shutdown the reactor. AND b. Manual actions taken at the reactor control console do not shutdown the reactor as indicated by (site specific indications of reactor not shutdown).	1	a. An automatic reactor (trip [PWR] or scram [BWR]) failed to shutdown the reactor as indicated by (site-specific indications of reactor not shutdown). AND b. EITHER of the following <ul style="list-style-type: none"> • (Site-specific indication that the core cooling [PWR] / RPV water level [BWR] key safety function is extremely challenged.) • (Site-specific indication that the RCS heat removal key safety function is extremely challenged.) 	The IC and example EAL have been revised to properly reflect the SAE classification attributes of a condition indicative of a threat to multiple fission product barriers. Under this condition, the reactor is producing more heat than the maximum decay heat load for which the ECCS is designed, and initial efforts to bring the reactor subcritical have been unsuccessful. There is now an extreme challenge to a key safety function(s) needed for the protection of the public, and an event trajectory that could lead to core damage (and a General Emergency) if further mitigation actions are unsuccessful. For this reason, the Site Area Emergency declaration is warranted. In some instances, the emergency classification resulting from this IC/EAL may be higher than that resulting from an assessment of the plant response against the Recognition Category F ICs/EALs. This is appropriate in that the Recognition Category F ICs/EALs do not address the additional threat posed to one or more barriers by the inability to bring the reactor subcritical following a (trip [PWR] or scram [BWR]). The inclusion of this IC/EAL ensures the timely declaration of a Site Area Emergency in response to an event involving a failure to promptly (trip [PWR] or scram [BWR]) the reactor.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SS3	Loss of all vital DC power for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SS2	Loss of all vital DC power for 15 minutes or longer MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	IC number change SS3 to SS2.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.		Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Reworded for clarity.
1	Less than (site specific bus voltage indication) on all (site specific Vital DC busses) for 15 minutes or longer.	1	Indicated voltage is less than (site-specific bus voltage value) on ALL (site-specific Vital DC busses) for 15 minutes or longer	Minor wording changes to improve clarity. No change to EAL intent.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SS6	Inability to monitor a SIGNIFICANT TRANSIENT in progress. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	N/A	N/A	Deleted. There is no credible event sequence that could lead to the conditions meeting this IC and EAL that would not already be classified as an SAE or GE by another IC/EAL (e.g., a total loss of AC power and/or DC power). The conditions described by this IC and EAL are adequately and more appropriately addressed by other system malfunction and FPB-based ICs and EALs.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.	N/A		N/A
1	a. Loss of greater than approximately 75% of the following for 15 minutes or longer: <ul style="list-style-type: none"> • (Site specific control room safety system annunciation) OR <ul style="list-style-type: none"> • (Site specific control room safety system indication) AND b. A SIGNIFICANT TRANSIENT is in progress. AND c. Compensatory indications are unavailable.	N/A	N/A	Deleted. There is no credible event sequence that could lead to the conditions meeting this IC and EAL that would not already be classified as an SAE or GE by another IC/EAL (e.g., a total loss of AC power and/or DC power). The conditions described by this IC and EAL are adequately and more appropriately addressed by other system malfunction and FPB-based ICs and EALs.

NEI IC#	NEI IC Wording	CCNPP IC#(s)	CCNPP IC Wording	Difference/Deviation Justification
SG1	Prolonged loss of all Off-site and all On-Site AC power to emergency busses. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SG1	Prolonged loss of all offsite and all onsite AC power to emergency busses MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	No change.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A			Note: The Emergency Director should declare the emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.	Added timing note to promote timely evaluation of EAL #1.b – first bullet.
1	a. Loss of all off-site and all on-site AC power to (site specific emergency busses). AND b. EITHER of the following: <ul style="list-style-type: none"> Restoration of at least one emergency bus in less than (site specific hours) is not likely. (Site specific indication of continuing degradation of core cooling based on Fission Product Barrier monitoring.) 	1	a. Loss of ALL offsite and ALL onsite AC power to (site-specific emergency busses). AND b. EITHER of the following: <ul style="list-style-type: none"> Restoration of at least one emergency bus in less than (site-specific hours) is not likely. (Site-specific indication of degraded core cooling [BWR]) / (Site-specific indication that core cooling is severely challenged [PWR]) 	Revised wording in EAL #1.b – second bullet – to improve clarity and promote consistent application. Deleted “based on Fission Product Barrier monitoring.” Assessment of this EAL is independent of the fission product barrier loss thresholds. Specific parameters will this EAL will be included in accordance with the Developer Note instructions. No change in EAL intent.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SG2	Automatic Scram (Trip) and all manual actions fail to shutdown the reactor and indication of an extreme challenge to the ability to cool the core exists. MODE: Power Operation, Startup	N/A	N/A	Deleted. The condition defined by this IC and EAL is appropriately classified as a SAE. See discussion for revised IC SS5.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	a. An automatic scram (trip) failed to shutdown the reactor. AND b. All manual actions do not shutdown the reactor as indicated by (site specific indications of reactor not shutdown). AND c. EITHER of the following exist or have occurred due to continued power generation: <ul style="list-style-type: none"> • (Site specific indication that core cooling is extremely challenged.) • (Site specific indication that heat removal is extremely challenged.) 	1	N/A	Deleted. The condition defined by this IC and EAL is appropriately classified as a SAE. See discussion for revised IC SS5.

NEI 99-01 Revision 5 to Revision 6 Change Summary

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
N/A	N/A	SG2	Loss of all AC and DC emergency busses for 15 minutes or longer MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Added new IC and associated example EAL to address loss of both all emergency AC and emergency DC power for greater than 15 minutes. This General Emergency threshold addresses insights from the Fukushima accident.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	a. Loss of ALL offsite and ALL onsite AC power to (site-specific emergency busses) for 15 minutes or longer. AND b. Indicated voltage is less than (site-specific bus voltage value) on ALL (site-specific vital DC busses) for 15 minutes or longer	Added new IC and associated example EAL to address loss of both all emergency AC and emergency DC power for greater than 15 minutes. This General Emergency threshold addresses insights from the Fukushima accident.

NEI 99-01 Revision 5 Appendices:

Appendix A: Basis for Radiological Effluent EALs

Appendix D: Basis for Permanently Defueled Station EALs

Appendix E: Basis for ISFSI EALs

NEI 99-01 Rev. 5 Appendix	NEI 99-01 Rev. 6 Change Summary
Appendix A: Basis for Radiological Effluent EALs	Deleted. Applicable radiological effluent EAL development guidance has been incorporated into the individual Category A and PD IC and EAL bases.
Appendix D: Basis for Permanently Defueled Station EALs	Applicable portions of the basis have been subsumed into the new Appendix C introduction and appropriate portions of the individual IC and EAL bases.
Appendix E: Basis for ISFSI EALs	Deleted. Appendix E provided background on dry storage design but provided no bases for support of the Category E IC/EAL development or implementation.

Attachment 1

**Justification for Deletion of IC FU1 –
Unusual Event Based on a Loss or Potential Loss of Containment**

OBJECTIVE

Simplify the NEI 99-01 Fission Product Barrier classification scheme and reduce the likelihood of inaccurate or inappropriate Unusual Event classifications.

BACKGROUND

NEI 99-01 Revision 5 Section 5.9 "Fission Product Barrier EALs" IC FU1 specifies declaration of an Unusual Event for "Any loss or potential loss of containment". Specifically, Tables 5-F-2 (PWR) and 5-F-3 (BWR) specify containment barrier loss and potential loss thresholds as part of the fission product barrier based classification scheme. While the existing scheme indicates declaration of an Unusual Event for any such loss or potential loss of the containment barrier as defined by the specified loss and potential loss thresholds, it is noted on page 88 that

"Containment Barrier thresholds are used primarily as discriminators for escalation from an Alert to a Site Area Emergency or a General Emergency."

A clarifying note regarding fission product barrier based EALs on page 80 states,

"The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications."

These statements imply that a containment barrier loss or potential loss in the absence of a challenge to another barrier should not warrant classification under fission product barrier monitoring criteria.

ASSESSMENT

Each containment loss or potential loss threshold of NEI 99-01 Revision 5 was examined as follows:

- The symptoms or events that would generate the threshold were identified.
- The conditions that must occur in order to identify the symptom or produce the event sequence were compared to the fuel clad and RCS fission product barrier thresholds.
- If another fission product barrier threshold would always be reached by one of the conditions, the containment threshold should be considered redundant to the other barrier threshold and, therefore, unnecessary because the fuel clad and RCS fission product barrier threshold alone requires a higher classification than the Unusual Event required by the containment threshold.
- If another fission product barrier threshold would not always be reached by one of the conditions, a determination was made whether another Unusual Event IC/EAL would be applicable or the event would require a non-emergency notification per 10 CFR 50.72 (e.g., conditions that exceed Technical Specification criteria).

CONCLUSION

This assessment concluded that Recognition Category F IC FU1 should be deleted from the fission product barrier classification scheme. Each of the existing specific loss or potential loss thresholds

- would be accompanied by a concurrent challenge to one or more of the other barriers (and would therefore escalate the emergency to an SAE or GE), or
- would result in declaration of a UE under another existing EAL threshold, or
- is adequately controlled under Technical Specification operability requirements for Containment, including non-emergency notification per 10 CFR 50.72 if those requirements cannot be met.

Attachment 2

Justification for Revision of BWR Fuel Clad Potential Loss 2.A and RCS Loss 2.A

OBJECTIVE

Simplify the NEI 99-01 Fission Product Barrier classification scheme and reduce the likelihood of inaccurate or inappropriate Unusual Event classifications.

BACKGROUND

Numerous BWR licensees have identified ambiguity in the EAL threshold criteria related to the inability to restore and maintain RPV water above the specified setpoint in the Fission Product Barrier table. This could lead to inconsistent interpretation of the classification criteria.

This justification clarifies the intended interpretation and bases of the phrase “*RPV water level cannot be restored and maintained...*” as used within BWR Fission Product Barrier thresholds:

- Fuel Clad Potential Loss 2.A
- RCS Loss 2.A

Revision 5 of NEI 99-01 incorporated into the above EAL classification thresholds the terminology used in Revision 2 of the BWROG Emergency Procedure and Severe Accident Guidelines (EPGs/SAGs) related to EOP steps associated with RPV water level (inventory) control. The purpose for using wording similar to the EOPs (EPGs), as described in Section 3.9 of NEI 99-01 Rev. 5, is to allow emergency classification to flow from the EOP assessment rather than being based on a separate EAL assessment. However, experience during training and drills with the specified EAL thresholds has resulted in inconsistent interpretation and questions as to which point within the EOP RPV water level control flowpath the appropriate determination is made that level cannot be restored and maintained above the specified level threshold for the purpose of emergency classification.

DISCUSSION

BWR Fuel Clad potential loss threshold 2A and RCS loss threshold 2A state:

“RPV water level cannot be restored and maintained above (site specific RPV water level corresponding to the top of active fuel) or cannot be determined.”

The operator is required to assess the ability to restore and maintain RPV water level relative to the threshold at various points within the RPV water level control flowpath of the EOPs (for examples see EPG Steps RC/L-2 and C1-3 for non-ATWS events). Specifically, if RPV water level cannot be restored and maintained above the top of active fuel (TAF), the operator is directed by the last paragraph of EPG Step RC/L-2 to enter Contingency #1 where he is given the latitude to use available injection systems, injection subsystems and alternate injection subsystems to restore RPV water level above TAF. Definition of the phrase “restore and maintain” allows the operator to make this decision when actual RPV water level is above, at, or somewhat below TAF. Timing of this decision is event dependent and includes factors such as the availability of injection sources, RPV pressure relative to the shutoff heads of injection sources, status of primary containment parameters, etc. No matter where actual RPV water level is with respect to TAF, however, the operator believes when making this decision that more drastic measures (e.g., emergency depressurization of the RPV) may be required to avoid unnecessary core uncover and challenge to the fuel clad barrier.

CONCLUSION

Until the RPV is depressurized and low-pressure RPV injection sources operate, it is difficult for the operator to determine if, in fact, the fuel clad barrier is being challenged. It is, therefore, the inability to restore or maintain RPV water level above TAF following RPV depressurization (either by automatic or manual action or a large break) that threatens adequate core cooling. The Fuel Clad Potential Loss threshold and bases have been revised to clarify that intent.

**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
1	Notes	McCain	<p>Are notes included within the EAL section of NEI 99-01 Rev 5 EALs considered part of the EAL threshold or are they simply instruction for how to evaluate the EAL?</p> <p>Add the following to section 5.1. "When providing EALs and user aids, such as wallboards, notes should be kept with each applicable EAL or moved to a common area and referenced by the applicable EAL."</p>	A	<p>During the development of NEI 99-01 Revision 5, the staff purposely moved information germane to EAL declaration timing to lead the EAL. The expectation is that licensees will have this information on the wallboard, or other licensee specific EAL presentation method, so that EAL decision-makers have this information readily available. It is not expected that similar notes be incorporated on EAL wallboards for every EAL, a reference to a Note on the EAL wallboard is acceptable as long as the information is adequately captured on the wallboard and pointed to for each applicable EAL.</p> <p>This is considered a DIFFERENCE in accordance with RIS 2003-18, 18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff</p>	<p>Implemented in Rev. 6</p> <p>Clarified in Section 4.3</p>
2	Definitions	Stobaugh	<p>Section 5.4 Definitions contains the following:</p> <p>AFFECTING SAFE SHUTDOWN, BOMB, CIVIL DISTURBANCE, EXTORTION,</p>	D	<p>These terms are frequently used in discussing emergency planning issues. Having a consistent definition serves to ensure consistency in their use. The defined terms in NEI 99-01 R5, as well as NEI 07-01 Rev. 0,</p>	<p>Deleted definitions not used within the Rev. 6 document</p>

NRC Status: S - Out of Scope D - Disapproved A - Approved P - Partially Approved R-# - Repeat X - Not Submitted

**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			<p>HOSTAGE, INTRUSION, SABOTAGE, and STRIKE ACTION</p> <p>None of these definitions are used in the document. Therefore the definitions are no longer needed.</p> <p>Delete the definitions</p>		are intended to provide consistency and to aid in effective communication. The staff expects the terms defined in the endorsed guidance to be developed, if applicable for a licensee's design, in the licensee's EALs. This EALFAQ is DENIED	
3	AU1, AA1	Egdorf	<p>Add the below wording as clarification to the EAL basis section for AU1 and AA1:</p> <p>A radiation monitor reading is VALID when a release path is established. If the release path to the environment has been isolated, then the radiation monitor reading is not VALID for classification</p>	D	<p>The radiation monitor readings are VALID as defined in the endorsed guidance, hence the proposed resolution is DENIED.</p> <p>As stated in the endorsed wording for the initiating condition wording of AU1 and AA1, the EALs are for releases to the environment. If there is no release to the environment, then the staff questions why the EAL would be declared and thus why this is an issue. The NEI EAL Task Force may propose clarification wording in the EAL technical basis to ensure consistent understanding of AU1 and AA1 if it is desired to seek clarification via the EALFAQ process .</p>	Incorporated FAQ intent in AU1 and AA1 bases and note.
4	AU1, AU2, AA1, AA2, AS1, AG1	McCain	Provide the following in the NEI 99-01 EALs and FPBs discussion section, rather than as a definition that only applies to a	A	The use of this term is intended to serve as a reminder to EAL decision-makers that EAL declarations should be based upon VALID	Deleted term "valid" in all instances

NRC Status: S - Out of Scope D - Disapproved A - Approved P - Partially Approved R-# - Repeat X - Not Submitted

**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			limited subset of EALs : "All EALs and FPBs (i.e., all thresholds) assume valid indications."		indicators as defined in the endorsed guidance. The fact that some EALs have the term VALID within the EAL wording, and some do not, does not negate the overall expectation that EAL declarations be based upon VALID indicators. Implicit in this definition is the need for timely assessment. The guidance was endorsed as proposed by NEI, subject to NRC requests for revision. The inconsistent application of this term is not a staff expectation, but as it did not jeopardize the understanding of the EAL, or affect the timing of the declaration, the staff did not ask NEI to revise the guidance for this particular issue This is considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff.	
5	AU1.4, AU2.2, AA1.4, D-AU2.2, D-AA2.2	McCain	Make 'normal levels' a defined term using the standard format of the document as follows: NORMAL LEVELS: As applied to radiological IC/EALs, the highest reading in	A	This is an administrative choice by licensees as it does not alter the EAL scheme, or change any staff expectations. This is considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2,	Added definition as suggested

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**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

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			<p>the past twenty-four hours excluding the current peak value.</p> <p>Add the formal definition to the definitions section and remove the asterisk definition from the EALs.</p>		and as such, does not alter the intent of the specified EALs as endorsed by the staff.	
6	AU2.1, AA2.1	McCain	<p>Revise AU2.1.a wording as follows:</p> <p>UNPLANNED water level drop in (Site specific reactor refueling pathway) as indicated by (site specific level or indication).</p>	A	<p>The staff agrees that consistent terminology is beneficial for EALs, particularly for those in the same EAL set. The proposed changes to AU2.1.a and AA2.1 are acceptable as long as the information in the EAL Technical Basis defining 'site specific refueling pathway' is maintained in AU2.1.a and added to AA2.1.</p> <p>This is considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff.</p>	Incorporated FAQ intent in AU2 and AA2
7	AA1	Egdorf		X		X
8	AS1. AG1	McCain	<p>Is there a technical reason for the capitalization or non-capitalization of the abbreviation REM?</p> <p>The abbreviation can be stated as mRem, mrem, or mREM.</p>	A	<p>The staff agrees that the capitalization, or non-capitalization, of the abbreviated terms are inconsistent. It is not the staff's expectation to adhere to the acronym/abbreviation format proposed by the industry/NEI and endorsed by the NRC for terms that can be formatted in a</p>	Standardized on "mRem"

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					<p>multitude of ways without compromising the understanding of its use. However, for terminology related to radiation, the staff generally defers to those terms defined in 10 CFR 20.</p> <p>This is considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff.</p>	
9	AS1, AG1	McCain	<p>Add the wording 'using actual meteorology.' to AS1 IC. Delete the note and Threshold 1 from both AS1 and AG1 leaving these EALs as Dose Assessment/Projection only. Delete the basis wording which sends the user to the dose assessment/projection conclusion in any case.</p>	P	<p>The NRC agrees that the “actual meteorology” language in AG1 was carried over from the original NUREG-0654 Appendix 1 EALs. Similar language was not in the NUREG-0654 language for the EAL corresponding to AS1. The staff also agrees that the effluent monitors are based on annual average meteorology, the basis for which is explained in Appendix A to NEI 99-01. In addition, the NRC would not object to the inclusion of the phrase “using actual meteorology” to the IC for AS1. These are considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff.</p> <p>However, the NRC rejects the suggestion that</p>	<p>Deleted the wording 'using actual meteorology.' in AG1 IC.</p>

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					<p>the note and Threshold 1 from AS1 and AG1 be omitted. Although the NRC agrees that substantial radioactivity releases that would warrant offsite protective measures will generally be preceded by the occurrences of one or more precursors to core damage, the existence of radiological ICs such as AS1 and AG1 provide desirable redundancy and diversity to the EAL scheme. The NRC also views the radiological monitor EALs as important triggers to initiate the dose assessments that the FAQ proposes to solely rely upon. The NRC notes that not every abnormal condition that could result in a radioactivity release could be classified under the fission product barrier matrix EALs. Consider a spent fuel pool handling accident that results in a radioactivity release. The DBA analysis results in most FSARs project an offsite dose that exceeds the EPA PAGs at the site boundary. What fission product barrier thresholds would be exceeded by this event? Similarly, many steam generator tube rupture DBA analyses project an offsite dose that exceeds the EPA PAGs at the site boundary from an event that assumes a stuck open relief</p>	

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					valve and a pre-incident iodine spike of a lesser magnitude than the RCS activity threshold for a lost RCS barrier. Although the NRC recognizes that DBA analyses by their very nature are conservative, they are nonetheless credible and fall within the EP planning basis in Chapter1 of NUREG-0654. This part of the EALFAQ is DENIED.	
10	CU2.2, CA1.2, CS1.3 Table 5-F-2 CTMT L1A Table 5-F-3 CTMT L2A	McCain	Revise the definition of UNPLANNED to accommodate the concept of explained as follows: A parameter change or an event, the reasons for which may be known or unknown, that is not the result of an intended evolution and requires corrective or mitigative actions. Replace all instances of the undefined term 'unexplained' with the defined term 'UNPLANNED'.	A	The staff disagrees that a commonly used term such as UNEXPLAINED requires formal definition and questions how much confusion there could be with the use of this term. In addition, the proposed definition fails to account for expected plant response to transients. If a licensee is confused about these terms and desires to combine them into the term UNPLANNED, then this term needs to be defined as follows to meet the expectations of the staff: "UNPLANNED: A parameter change or an event, the reasons for which may be known or unknown, that is not the result of an intended evolution or expected plant	Revised definition and replaced term "unexplained" with "unplanned" throughout

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					<p>response to a transient."</p> <p>The definition of UNPLANNED as stated above, and the corresponding replacement of UNEXPLAINED with UNPLANNED, is considered a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff.</p>	
11	CU4	McCain	<p>Revise IC wording as follows: "UNPLANNED loss of decay heat removal capability."</p> <p>Revise EAL #1 wording as follows: "RCS temperature greater than (site specific Technical Specification cold shutdown temperature limit) due to an UNPLANNED loss of decay heat removal capability."</p>	P	<p>The staff considers the proposed change to the IC to be a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EAL as endorsed by the staff.</p> <p>The staff considers the proposed change to CU4.1 to be of little value, therefore this part of the EALFAQ is DENIED.</p>	<p>Revise IC wording as suggested</p> <p>Revised Example EAL #1 to read: <i>" UNPLANNED loss of decay heat removal results in RCS temperature greater than the Technical Specification cold shutdown temperature limit"</i></p>
12	CU7	Stobaugh	Delete UNPLANNED from the IC matrix	A	<p>The staff agrees that the wording in table 5.6 is inconsistent with the actual IC wording.</p> <p>The staff considers the proposed change to be a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EAL as endorsed by the staff.</p>	Revised as suggested

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
13	CA4.2	McCain	Revise EAL wording from: An UNPLANNED event results in RCS pressure increase greater than 10 psi due to a loss of RCS cooling To: RCS pressure increase greater than 10 psi due to an UNPLANNED loss of decay heat removal capability.	A	The staff considers the proposed change to be a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EAL as endorsed by the staff.	Revised Example EAL #2 to read: " UNPLANNED loss of decay heat removal capability resulting in an RCS pressure rise greater than (site-specific pressure reading). (This EAL does not apply during water-solid plant conditions.[PWR])"
14	Notes - 4th bullet	Lee	Delete second sentence in 4 th Bullet of the notes on Table 5-F-1.	A	The staff considers the proposed change to be a DIFFERENCE in accordance with RIS 2003-18, Supplement 2, and as such, does not alter the intent of the EALs as endorsed by the staff. In addition, the staff agrees with the NEI Task Force in maintaining consistency between the various endorsed EAL schemes.	Deleted bases sentence as suggested
15	CTMT Loss IC CTMT Pot Loss IC SU9	Baker	Remove FU1 to eliminate the possible option of declaring an Unusual Event for Loss or Potential Loss of Containment from Tables 5-F-1, 5-F-2 and 5-F-3. Add new IC SU9, "Failure of Containment to Isolate Following a High-Energy Line Break" to support elimination of FU1. See	S	The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of	Deleted FU1 Justified in Attachment 1

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			attached Technical Analysis document.		existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."	
16	FC L2A, FCPL2A, RCS L2A, SG2.1	Walker	Revise Table 5-F-2 Fuel Clad Loss and Potential Loss 2A threshold/basis, RCS Loss 2A basis, and SG2 basis per attached detailed discussion.	D	While the staff finds the justification for revision persuasive, this change is considered a DEVIATION in accordance with RIS 2003-18 and its supplements. Licensees must evaluate the change against their approved Emergency Plan in accordance with 10 CFR 50.54(q). The proposed change is intended to clarify the expectations for EAL declaration and to improve EAL timeliness by reducing ambiguity. Subsequent revisions of the EAL development guidance should adopt the wording as proposed in this EALFAQ.	Incorporated intent of RAI and justified in Attachment 2
17	RCS PL2A	McCain	Revise Table 5-F-3, RCS potential loss 2A threshold to the following: A. RCS leak resulting in the inability to maintain (site specific pressurizer level operating band) with Letdown isolated.	D	The staff disagrees with this approach as it may result in confusion when differentiating between the Table 5-F-3 (PWR) Loss-2A and Potential Loss 2-A. An RCS leak rate greater than the capacity of one charging pump with Letdown isolated is indicative of a Potential Loss of the RCS Barrier. This EALFAQ is DENIED.	See Change Summary for PWR FPB Thresholds

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
18	FC PL1B	McCain	Revise FPB Table 5-F-3 Fuel Clad and RCS Barrier Potential Loss 1B thresholds to: Heat Sink-Red entry conditions met. AND Heat Sink is require	S	The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."	See Change Summary for PWR FPB Thresholds
19	CNMT PL2C	McCain	Revise NEI 99-01 Rev 5 to include a section to address the design specific deviations for the U.S. EPR plants per the attached bases pages.	A	The staff agrees that the proposed revision is based upon the unique design characteristics of the EPR design. However the staff considers this to be a DEVIATION in accordance with RIS 2003-18 (with supplements). Also, the staff recommends an addendum to NEI 99-01 be developed that discusses the EAL differences specifically for the EPR design once the EPR design has been certified. In the meantime, new reactor applicants can use this EALFAQ in the development of their application to ensure consistency.	Implemented in PWR Containment Potential Loss 4.C

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
20	CTMT L4	Young	<p>1) Revise the basis to clearly reflect that the threshold applies to a FAULTED SG.</p> <p>2) See attached proposed basis for revised wording which addresses all items above.</p> <p>NOTE - the attached basis reflects changes proposed in FAQ #15 (eliminate IC FU1), FAQ#17 (change to RCS barrier potential loss threshold), and FAQ #38 (change primary-to-secondary leak rate value from 10 gpm to 25 gpm).</p>	S	The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."	See Change Summary for PWR FPB Thresholds
21	HU1.1	Baker	<p>Clarification is needed regarding the declaration criteria for Threshold #1, which states "Earthquake felt in plant". Does this limit the vibratory motion being felt to reports from in-plant personnel only or should reports from personnel outside the plant but on-site be considered as satisfying this threshold?</p> <p>Revise the EAL threshold to provide a plant specific indication or method of indication in conjunction with a non-instrumented criteria. Revise the basis to support the new EAL clarifying the intent of the Seismic</p>	D	The staff finds that the changes made to this EAL during the last revision served to clarify the intent and to allow flexibility in implementation for licensees with suspect seismic monitoring equipment. Any two of the three developed thresholds would result in an EAL declaration. Relying solely on site-specific confirmation as a precursor to the declaration would cause unnecessary delay in classification for those licensees that take a long time to confirm a seismic event. The wording as currently endorsed allows for timely confirmation without unnecessarily delaying classification if the other two thresholds are	HU1.1 threshold deleted.

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			threshold values.		met. The proposed changes are DENIED.	
22	HU2.1, HA2.1	Baker, Stobaugh	<p>Add the following to the Basis to clearly define the intent of the 15 minute timer in threshold 1:</p> <p>The purpose of this threshold is to address the magnitude and extent of fires that may be potentially significant precursors to damage to safety systems. As used here, notification is visual observation and report by plant personnel or sensor alarm indication. The 15-minute period to extinguish the fire begins with a credible notification that a fire is occurring or indication of a valid fire detection system alarm. Determination of a valid fire detection system alarm includes actions that can be taken within the Control Room or at nearby Fire Panels to determine that the alarm is not spurious. These actions include the use of direct or indirect indications such as redundant alarms or instrumentation readings associated with the area to ensure the alarm is not spurious and is an indication of a fire. An alarm verified in this manner is assumed to be an</p>	S	<p>The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."</p>	<p>HU2 Deleted.</p> <p>See HA2 Change Summary</p>

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			indication of a fire unless personnel dispatched to the scene disprove the alarm within the 15-minute period. The report, however, shall not be required to verify the alarm. If the alarm cannot be verified by redundant Control Room or nearby Fire Panel indications, notification from the field that a fire exists would be required to start the 15-minute classification and fire extinguishment clocks.			
23	HU2.2, HA2.2	Baker	<p>Revise threshold as follows: EXPLOSION within PROTECTED AREA resulting in damage to permanent structure or equipment associated with plant operations.</p> <p>Add the following statement to the Basis: Permanent structures and equipment are those where an explosion could indicate a potential degradation of the level of safety of the plant and is not meant to include warehouses or administrative buildings.</p>	D	The proposed changes to these EALs are DENIED as the current expectation for declaration of HU2 and HA2 are already well defined in the latest NRC approved guidance. An explosion in the Protected Area warrants an EAL declaration (HU2), and HA2 already is worded to limit the areas of concern as well as a determination of Visible Damage and/or indication of degraded performance.	Deleted HU2. See HA2 Change Summary
24	HU3, HA3	Egdorf	<p>Add in Bases section: A 20 lb CO2 extinguisher discharge will not</p>	P	The staff finds the proposed change for HU3 to be in alignment with expectations and the approved guidance and is considered a	Deleted HU3. See HA3 change summary.

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			create an IDLH atmosphere unless the room volume is less than 2500 cubic feet. (Reference: OE25324, Alert Declared Due to CO2 Fire Extinguisher Discharge)		DIFFERENCE in accordance with RIS 2003-18, including supplements. The staff finds the proposed change for HA3 related to handheld fire extinguishers inappropriate as the approved EAL Basis language already provides some latitude with determining the risk. The HA3 change related to fire fighting activities is considered a DIFFERENCE in accordance with RIS 2003-18, including supplements, and the HA3 change related to handheld fire extinguishers is DENIED	
25	HU4, HA4, HS4, HG1	Lee	Complete revision of NEI 03-12, Rev 6 so that the security events match and are binned to allow usage of the EALs as written	R-48	EALFAQ already addressed via EALFAQ 2009-048.	No action required
26	HU4.3, HA4.2	McCain	An airliner is defined as a large aircraft in the NEI 99-01 Rev 5 bases section of HU4 and HA4. Are the two terms synonymous with regards to the EALs? Yes, the two terms are synonymous. The following definition should be added to the definitions section: AIRLINER/LARGE AIRCRAFT: Any size or type of aircraft with	A	The staff finds the proposed changes to be a DIFFERENCE in accordance with RIS 2003-18, including supplements, and the EALs as proposed continue to meet staff's expectations.	Definition of Airline/Large Aircraft not required in Rev. 6.

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			the potential for causing significant damage to the plant (refer to the Security Plan for a more detailed definition).			
27	HA3	McCain	The NEI 99-01 Rev 5 IC and EAL wording is overly confusing by its multiple use of versions of the word 'operate' within the same sentence. The EAL note provides ample clarity of the IC and EAL making the confusing language unnecessary Revise the HA3 IC to match the HA3-1 threshold wording.	D	The proposed change basically returns the IC to the wording from the previous NRC approved version of the development guidance, in addition, the staff does not find the redundant use of the term to be confusing nor has there been any feedback from licensees about this beyond this specific EALFAQ. The proposed EALFAQ is DENIED.	Rev. 6 IC reworded to read: " Gas release impeding access to safety systems "
28	HA5.1	McCain	Revise HA5.1 wording as follows: Control Room evacuation has been initiated.	A	The staff finds the proposed wording to be consistent with expectations for this EAL and is considered a DIFFERENCE in accordance with RIS 2003-18, including supplements.	Rev. 6 IC reworded to read: " Plant control transferred to locations outside the Control Room "
29	HG1.2	McCain	Revise HG2.1 wording as follows: A HOSTILE ACTION has caused failure of spent fuel cooling systems and IMMINENT fuel damage is likely.	A	The staff DENIES the changes as proposed as they state the incorrect EALs to be clarified. However, the clarification of HG1.2, i.e., to remove reference to freshly off-loaded fuel, is considered a DIFFERENCE in accordance with RIS 2003-18, including supplements. EAL HG1.1, as approved by the staff, is adequate as is and does not to be clarified.	Revised HG1.1 to read: (1) a. A HOSTILE ACTION has occurred. AND b. EITHER of the following: 1. ANY of the following safety functions cannot be controlled or maintained. Reactivity control

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					Corresponding changes to the EAL Basis information to support the clarification to HG1.2 is also considered a DIFFERENCE in accordance with RIS 2003-18, including supplements.	Core cooling [PWR] / RPV water level [BWR] RCS heat removal. 2. Damage to spent fuel has occurred or is IMMINENT.
30	SU2	McCain	Revise SU2 wording as follows: Inability to reach required operating mode within Technical Specification limits	A	The staff finds the proposed change to be a DIFFERENCE in accordance with RIS 2003-18, including supplements. The expectation is maintained, i.e., the proposed changes only clarifies the intent of the EAL.	SU2 deleted.
31	SA2.1, SS2.1, SG2.1	McCain	The sentences and language terms used are not consistent throughout the escalation pathway, making evaluation more difficult than it needs to be. The EAL wording for the challenge to core cooling in the GE is inappropriately limiting. If the site specific condition for degraded or loss of core cooling or heat removal exists it doesn't matter whether it was caused by continued heat generation or not. The Alert IC and EAL wording contain extraneous wording that is unnecessary for	A	The staff finds the proposed changes to be a DIFFERENCE in accordance with RIS 2003-18, including supplements. The proposed wording clarifies the intent of these EALs and is in alignment with staff expectations.	See Rev. 6 Change Summary for SA2, SS2 and SG2

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			classification			
32	SU3, SA4, SS6	Young	Revise each Basis section to clarify that radiation monitor indications are considered to be part of the "control room safety system indication" EAL; a separate EAL for radiation monitor indications is not necessary or intended. The "loss of indication" EAL should be developed with consideration of the totality of 1) the main control board indications (position lights, meters, recorders, etc.) and 2) the radiation monitoring indications (area, process and airborne) that are available in the Control Room and identified in the Abnormal Operating Procedures, Emergency Operating Procedures, and in other EALs. In other words, the 'denominator' to be used when assessing the loss of "control room safety system indication" EAL is the sum of indications from 1) the main control boards and 2) the radiation monitor system.	S	The staff finds that the proposed changes do not clarify the intent of these EALs and is therefore DENIED. The present wording already discusses this to some extent. The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."	See Rev. 6 Change Summary for SU3, SA4 and SS6
33	SU3, SA4, SS6, SA7, SS7	McCain	Revise NEI 99-05 to include a section to address the design specific deviations for the U.S. EPR plants per the attached	A	The staff would encourage the development of an EPR specific addendum to the approved guidance which would capture all the DEVIATIONS from the guidance for the EPR	Incorporated EPR specific guidance where applicable.

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			bases pages.		design. The EPR design should use the applicable wording from NEI 07-01 for SA7 and SS7, in addition to CU7 and CA7. The staff agrees that SU3 is not applicable to the EPR design. These are all considered DEVIATIONS in accordance with RIS 2003-18, including supplements.	
34	SU5.1, SU5.2, CU1.1 & 1.2 (Rev. 4)	Egdorf	1) Add the following to the associated EAL Bases section: "Refer to plants Technical Specifications for Identified, Unidentified and Pressure Boundary Leakage definition." 2) Add "15 minutes or longer" to the EAL's	S	This EALFAQ is DENIED as the RCS Leakage is not based upon Tech Specs. In addition, the staff's expectations for CU1 was already clarified in Revision 5 (from the wording in Revision 4) of NEI 99-01.	Intent implemented in Rev. 6
35	SA2.1.a	Young	Revise the 2nd and 3rd sentences in the 4th paragraph of the basis to read: "This condition is more than a potential degradation of the safety system in that a front line automatic protection system did not function in response to a scram (trip) signal. Thus the plant safety has been compromised because of the failure of the RPS to automatically shutdown the plant.	P	The staff agrees that the intent of the EAL is not based upon a transient but upon the failure of the RPS system to scram the plant when required by design. Removing the words 'plant transient' and substituting 'scram (trip) signal' is in alignment with the staff's expectations and is considered a DIFFERENCE in accordance with RIS 2003-18, including supplements. However, the staff sees no value	See SA2 Change Summary

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					in removing the information from the 3rd sentence in the 4th paragraph and that change is DENIED.	
36	SA5.1.b, CU3.1.b	McCain	Revise SA5 and CU3 wording as follows: "AC power capability to emergency busses reduced to a single source for 15 minutes or longer" and Revise SA5.1.b and CU3.1.b wording as follows: "Any additional single power source failure will result in a loss of all AC power to the emergency busses."	A	The staff finds that the proposed wording clarifies the intent of these EALs and is considered a DIFFERENCE in accordance with RIS 2003-18, including supplements.	See SA5 and CU3 Change Summary
37	SG2.1.c	McCain	The EAL threshold should be revised as follows: 1.c. EITHER of the following exist or have occurred"	R-31	This EALFAQ is DENIED as it is redundant with EALFAQ 2009-031.	See FAQ #31
38	CTMT L4A	Walker	Revise PWR Containment Loss 4 SG tube leakage value to specify 25 gpm vs. 10 gpm.	R-20	This EALFAQ is redundant with EALFAQ # 2009-20 and is therefore DENIED.	See FAQ #20
39	Definitions, SA4, SS6	Stobaugh	Delete the definition of SIGNIFICANT TRANSIENT, replace the EAL with a site specific wording in those locations where	A	The removal of this defined term from the approved development guidance and incorporating it into the specific EALs of	Kept Definition

NRC Status: S - Out of Scope D - Disapproved A - Approved P - Partially Approved R-# - Repeat X - Not Submitted

**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			applicable, and add a developer note to provide guidance for development of the site specific element of the EAL.		concern is considered a DIFFERENCE in accordance with RIS 2003-18, including its supplements. However, for this to be considered a DIFFERENCE the EAL Technical Basis information must be included in each EAL, and it is NOT considered EAL developer information.	
40	AU1, AA1, AS1, AG1	Egdorf		X		X
41	CU1, CU2	Walker	Revise IC CU2 to read "RCS Leakage" consistent with IC CU1 and SU1	S	This EALFAQ is beyond the scope of the EALFAQ process and is therefore DENIED. The approved guidance includes EAL/IC numbering and noun conventions as proposed by NEI and approved by the staff. Proposed changes to this must be submitted and evaluated as part of a revision to the development guidance.	Combined CU1 and CU2 in Rev. 6
42	HG1	R. Walker		X		X
43			Deleted			X
44	HU1, HU2, HA1, HA2	Stobaugh	Create a standard list that contains the structures that meet the following criteria: The site specific list of areas should include	S	This EALFAQ is beyond the scope of the EALFAQ process and is therefore DENIED. Proposed changes to this must be submitted	Standardized all Category H site specific areas to containing components of

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Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			all areas containing safety structure, system, or components. Typically these will include all Category 1, VITAL AREAS, and safe shutdown structures/areas.		and evaluated as part of a revision to the development guidance.	safety systems.
45	Definitions	Walker	Delete SIGNIFICANT TRANSIENT from section 5.4 and add the specific wording to the basis for SA4 and SS6 which are the only two using the defined term.	R-39	See FAQ# 39.	See FAQ #39
46	CA1, CS1	Walker	Revise wording of CA1 example EAL to read: "Loss of RCS/RPV inventory as indicated by level less than (site specific level). [low pressure motor driven ECCS initiation setpoint (BWR)]" Revise BWR specific wording of CS1 example EAL #1 to read: "... level less than (site specific level). [6" below the low pressure motor driven ECCS initiation setpoint (BWR)]"	S	The proposed change(s) will fundamentally change the endorsed scheme, which is beyond the scope of the EALFAQ process, and is therefore DENIED. Proposed significant changes to the scheme should be made during subsequent revisions to the guidance. As stated: "The EP [EAL] FAQ process is intended to clarify the staff's interpretation of existing regulatory guidance issued or endorsed by NRC, and will not be used to create new regulatory positions or guidance."	See CA1 and CS1 change summary. FAQ intent implemented in Rev. 6.
47	Other indications	Lee	Add a statement to the basis for all the "Other Specific Indication" thresholds that point out that the intent for these indications is to provide an indication that	A	The proposed clarification is considered a DIFFERENCE in accordance with RIS 2003-18, with Supplements. The proposed wording clarifies the expectation that the thresholds	Implemented in Rev. 6

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**Attachment 3
Disposition of NEI 99-01 Revision 5 FAQs**

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			exceeds the leakage thresholds which would exceed the loss or potential loss thresholds.		developed follow a consistent threat-based approach for the entire barrier Loss-Potential Loss thresholds.	
48	HU4		Staff to review the Security EALs as worded in NEI 99-01 R5 and Bulletin 05-02 and determine if the changes result in a reduction in the effectiveness of the Security EALs.	A	<p>Based upon the justification provided, the staff concludes that:</p> <p><1> It is the responsibility of the licensee to make the determination whether an emergency plan change does, or does not, result in a reduction in the effectiveness of their emergency plan.</p> <p><2> If the licensee implemented the Security EALs EXACTLY (emphasis added) as worded in the Bulletin or NRC endorsed White Paper, and the licensee wants to adopt the Security EALs as stated in NEI 99-01 R5, then it is reasonable to assume that a licensee can reach the conclusion that the changes do not reduce the effectiveness of the emergency plan.</p>	No action required for this FAQ

NRC Status: S - Out of Scope D - Disapproved A - Approved P - Partially Approved R-# - Repeat X - Not Submitted

Attachment 4

Additional Information on Change to IC AA2

With a gaseous release rate at the NEI EAL criterion of 200 x the TS (or ODCM) release rate limit, under average meteorological conditions, the dose rate at the site boundary will be approximately 100 mRem/hr, not the 10 mRem/hr derived within the basis of NEI 99-01. Hence, such a release should be at least a Site Area Emergency, not an Alert. The reason for this error within the NEI basis is the use of the wrong type of “average” meteorology, as explained below.

During the development of the first draft of the NUMARC EAL’s, there was significant discussion on whether or not worst case (95% X/Q’s used in Chapter 15 design basis accident calculations) meteorology or average meteorology should be used. It was decided that average meteorology should be used for the Unusual Event and Alert classifications. This was a reasonable decision, recognizing that no public protective actions are taken at these levels and hence use of average meteorology would be most likely to approximate the desired dose conditions. The error was introduced when it was decided to address the use of average meteorology by reference to the TS (ODCM) limits, since it was known that the TS (ODCM) limit is based on average meteorology. The NUMARC task force failed to recognize that the TS (ODCM) limit is based on an “annual average X/Q,” and that the average meteorology that should have been used is the “average one-hour X/Q.”

(Note – the following is a simplification of X/Q calculations, as there are other factors involved.) To calculate the 95% one-hour and average one-hour X/Q’s the computer program takes the actual meteorological conditions for each hour of the year from hour 1 through hour 8760. For example, for January 1, 2006, from 00:00 to 01:00 hours, it takes the wind speed, wind direction (which determines the distance to the EAB in that sector), and atmospheric stability, as measured for that hour at the meteorological tower, and inputs those parameters into a formula to calculate the X/Q for that hour. The one-hour X/Q could be 5E-3 sec/m³ for low wind speed very stable conditions or 1E-7 sec/m³ for high wind speed, very unstable conditions. Then the program ranks all 8760 values from highest to lowest. The program then selects the 438th highest value (5% of 8760) to get the 95% one-hour X/Q. For a typical plant that might be in the range of 5E-4 sec/m³. The average one-hour X/Q is determined by taking the 4380th highest value, which is 50% of 8760 calculated one hour X/Q values. For a typical plant that might be 5E-5 sec/m³. The 8760 values are all calculated in the downwind direction for that hour and hence are never zero.

The annual average X/Q calculated for use in the TS (ODCM) instantaneous release rate limit is calculated differently. The receptor point stays in one sector and the computer calculates the average X/Q in that sector over an entire year. Therefore, that average is

made up of approximately 800 hours when the wind is blowing in that sector and there is a positive value (which should average close to the one-hour average X/Q), and another 8000 hours, when the X/Q in that sector is essentially zero because the wind is blowing another direction. This is done for each of the 16 compass sectors and the worst of the 16 is chosen for TS (ODCM) use, and hence it is sometimes referred to as the maximum annual average X/Q, since it represents the maximum of the 16 values calculated. Since the wind doesn’t blow into each sector an equal number of hours during the year, this maximum annual average X/Q will normally be about 1/10 of the one-hour average downwind X/Q instead of 1/16. For a typical plant, an annual average X/Q might be 5E-6 sec/m³.

The same principle applies to dose as it does to X/Q since they are directly and linearly related. The instantaneous TS (ODCM) limit is based on a member of the public receiving a dose of 500 mRem, assuming annual average meteorology. The NEI basis incorrectly assumed that, if one assumes average meteorology, then the dose rate when releasing at the TS (ODCM) limit must be $500/8760 = 0.06$ mRem/hr. That was the basis for the 200 x TS (ODCM) limit, because such a release rate would, by this logic, correspond to approximately 10 mRem/hr ($0.06 \times 200 = 12$ mRem/hr). In reality, the 0.06 mRem/hr will be the average dose rate at that one location, in that one sector, when averaged over the entire year when releasing at the TS(ODCM) limit. However, that average dose rate is made up two components. The first component is the approximately 800 hours when the wind is blowing into that sector and the dose rate is, on the average using one-hour average meteorology, approximately $500/800 = 0.6$ mRem/hr in that sector. The second component is the other 8000 hours in the year when the dose rate is approximately 0 mRem/hr in that sector, because the wind is blowing another direction. Hence, the average dose rate, under average meteorological conditions, when releasing at the TS (ODCM) limit is

Attachment 4

Additional Information on Change to IC AA2

approximately 0.6 mRem/hr in the downwind direction. At 200 x TS (ODCM) limit, the dose rate would be approximately 100 mRem/hr. Under emergency conditions, decisions are based on the instantaneous dose rate to the affected population in the downwind sector, not the expected average over an entire year. At a release rate at 200 x TS (ODCM) limit, this instantaneous dose rate in the downwind sector will be approximately 100 mRem/hr, and warrant a Site Area Emergency classification.

Therefore, for the Alert classification, rather than underclassifying by using a multiple of 200 x TS (ODCM) release limits, a dose-based threshold for gaseous releases is more appropriate. The use of 1% of the EPA PAG limit of 10 mRem TEDE or 50 mRem thyroid CDE provides a logical gradient between the Unusual Event (2 times ODCM release limits) and the Site Area Emergency (10% EPA PAG limits) for emergency classification.