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 E). The left column lists NEI 99-01 Revision 5; the adjacent columns list the proposed Revision 6 changes and 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.

Due to the width of the table columns and table formatting constraints, the line breaks and indentation appearing in this document 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 stressed 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.

Revision 5 FAQs

Another goal of the Revision 6 process was to resolve the outstanding Revision 5 FAQs. Attachment 2 provides a summary of how the Revision 5 FAQs were resolved within the Revision 6 document.

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 and 3	AA1	2, 3 and 4
AA1	4	Deleted	
AA1	5	Deleted	
AA2	1	AA2	1
AA2	2	AA2	2
AA2	N/A	AA2	3
AA3	1	AA3	1
N/A	N/A	AA3	2
AS1	1	AS	1
AS1	2	AS1	2
AS1	3	Deleted	
AS1	4	AS1	3
N/A	N/A	AS2	1
AG1	1	AG1	1
AG1	2	AG1	2
AG1	3	Deleted	
AG1	4	AG1	3
N/A		AG2	1
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

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**
CU6	2	CU5	2 & 3
CU7	1	CU4	1
CU8	1 (BWR)	Deleted	
CU8	1 (PWR)	Deleted	
CA1	1	CA1	1
CA1	2	CA1	2
CA3	1	CA2	1
CA4	1	CA3	1
CA4	2	CA3	2
N/A	N/A	CA6	1
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

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	**Example EAL**	**IC**	**Example EAL**
D-AU2	2	PD-AU2	2
D-SU1	1	PD-SU1	1
D-HU1	1	PD-HU1	1
D-HU1	2	PD-HU1	2
N/A		PD-HU1	3
D-HU2	1	PD-HU3	1
D-HU3	1	PD-HU2	1
D-HU3	2	All addressed in IC PD-HU2 EAL #1	
D-HU3	3		
D-HU3	4		
D-HU3	5		
D-HU3	6		
D-HU3	7		
D-HU3	8		
D-AA1	1	PD-AA1	1
D-AA1	N/A	PD-AA1	2
D-AA1	2	PD-AA1	3
D-AA1	N/A	PD-AA1	4

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**
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
E-HU1	1	E-HU1	1
FU1	1	Deleted	
FA1	1	FA1	1
FS1	1	FS1	1
FG1	1	FG1	1
HU1	1	HU2	1
HU1	2	HU3	1
HU1	3	HU3	2
HU1	4	Deleted	
HU1	5	HU3	5
HU2	1	HU4	1
HU2	2	Deleted	
HU3	1	Deleted	

NEI 99-01 Revision 5		NEI 99-01 Revision 6	
IC	**Example EAL**	**IC**	**Example EAL**
HU3	2	HU3	3
N/A		HU3	3
HU4	1	HU1	1
HU4	2	HU1	2
HU4	3	HU1	3
N/A		HU4	2
N/A		HU4	3
N/A		HU4	4
HU5	1	HU7	1
HA1	1	All addressed in ICs CA6/SA9 EAL #1	
HA1	2		
HA1	3		
HA1	4		
HA1	5		
HA1	6		
HA2	1		
HA3	1	HA5	1
HA4	1	HA1	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**
HA4	2	HA1	2
HA5	1	HA6	1
HA6	1	HA7	1
HS2	1	HS6	1
HS3	1	HS7	1
HS4	1	HS1	1
HG1	1	HG1	1
HG1	2	HG1	1
HG2	1	HG7	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		SU4	3
SU6	1	SU6	1
SU6	2	SU6	2
N/A		SU6	3
N/A		SU7	1
N/A		SU7	2
SU8	1 (BWR)	Deleted	
SU8	1 (PWR)	Deleted	
SA2	1	SU5	1
SA4	1	SA2	1
SA5	1	SA1	1
N/A	N/A	SA9	1
SS1	1	SS1	1
SS2	1	SA5	1
SS3	1	SS8	1
SS6	1	Deleted	
SG1	1	SG1	1
SG2	1	SS5	1
N/A		SG8	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. Included new material supporting new and revised ICs/EALs, and made minor editorial changes.
1.0 Methodology for Development of Emergency Action Levels	See below. Also: • Added new section 1.4 to address NRC Order EA-12-051 (post-Fukushima Spent Fuel Pool level instrumentation requirements) and associated new EALs. • Added new section 1.5 to address applicability to advanced and small modular reactor designs.
1.1 Background	Information incorporated into Executive Summary and Section 3, Design of the NEI 99-01 Emergency Classification Scheme.
2.0 Changes Incorporated With Revision 5	Deleted. Changes incorporated in Revision 5 are not relevant to changes incorporated in Revision 6. This change summary discusses changes made to Revision 6.
3.0 Development of Basis for Generic Approach	See below
3.1 Regulatory Context	Information included in Section 1, Regulatory Background. Also updated regulatory language and references, and incorporated relevant information from Rev. 5 Appendices D and E.
3.2 Definitions Used to Develop EAL Methodology	Information included in Section 2, Key Terminology Used in NEI 99-01, and Appendix B Definitions. 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 Used in NEI 99-01.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
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 Classification Level Upgrading	Information included in Section 5, Guidance on Making Emergency Classifications.
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.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
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.
CIVIL DISTURBANCE	Deleted. Term not used in Revision 6.
CONFINEMENT BOUNDARY	Revised to allow for incorporation of a site-specific definition.
CONTAINMENT CLOSURE	Revised to allow for incorporation of a site-specific definition.
EXPLOSION	Revised to address industry Operating Experience.
EXTORTION	Deleted. Term not used in Revision 6.
FAULTED	Reworded to improve clarity; no change in intent.
FIRE	No change.
HOSTAGE	No change.
HOSTILE ACTION	No change.
HOSTILE FORCE	No change.
IMMINENT	Reworded to improve clarity; no change in intent.
INTRUSION	Deleted. Term not used in Revision 6.
ISFSI	No change.
NORMAL LEVELS	Added new defined term per Rev 5, FAQ 5.
NORMAL PLANT OPERATIONS	Deleted. Term not used in Revision 6.
OWNER CONTROLLED AREA	Added term to support use in EALs.

NEI 99-01 Rev. 5 Section	NEI 99-01 Rev. 6 Change Summary
PROJECTILE	No change.
PROTECTED AREA	Revised to allow for incorporation of a site-specific definition.
REFUELING PATHWAY	Added term to support use in EALs.
RUPTURED	Reworded to improve clarity; no change in intent. Clarified that a RUPTURE requires an SI, not a reactor trip (i.e., for many plants, SG leaks require a reactor trip but not an SI).
SAFETY SYSTEM	Added term to support use in EALs.
SABOTAGE	Deleted. Term not used in Revision 6.
SECURITY CONDITION	No change.
SIGNIFICANT TRANSIENT	Deleted from Definition Section. Incorporated into IC SA2 EAL.
STRIKE ACTION	Deleted. Term not used in Revision 6.
UNISOLABLE	Reworded to improve clarity; no change in intent.
UNPLANNED	Reworded to improve clarity; no change in intent.
VALID	Deleted per Rev 5, FAQ #4.
VISIBLE DAMAGE	Definition revised to support application in assessing EALs in new ICs SA9 and CA6.
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	Release of gaseous or liquid radioactivity greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer. MODE: All	Reworded to reference the appropriate site-specific effluent release controlling document.

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 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.		**Notes:** • The Emergency Director should declare the Unusual Event promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded. • If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes. • If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.		Reworded and reformatted note for clarity. Added guidance for determining validity of an isolated release path.
1	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)	1	Reading on ANY effluent radiation monitor greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer: (site-specific monitor list and threshold values corresponding to 2 times the controlling document limits)	Incorporates FAQ #4 – deleted VALID. Reworded to reference the appropriate site-specific effluent release controlling document.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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 – deleted VALID.
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	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.	Reworded to reference the appropriate site-specific effluent release controlling document. Similar to FAQ #4, deleted term “confirmed”.
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 level above irradiated fuel MODE: All	Revised IC to be consistent with intent of EALs and Basis, i.e., wording addresses the cause (a lowering of water level) vs. the effect (a rise in radiation levels).

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 a reactor refueling pathway 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 REFUELING PATHWAY as indicated by ANY of the following: (site-specific level indications). **AND** b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors. (site-specific list of area radiation monitors)	Incorporates FAQ #6. Added defined term REFUELING PATHWAY to address staff review comments. Incorporates FAQ #4 – deleted VALID. Added UNPLANNED to EAL 1.b to align with EAL 1.a.
2	UNPLANNED VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1000 over normal* levels. *Normal can be considered as the highest reading in the past twenty-four hours excluding the current peak value.	N/A	N/A	Deleted. The occurrence of an off-normal high area radiation level in the plant, in and of itself, does not constitute a radiological emergency. There would be no impact on the ability to implement either the Emergency Plan or Security Plan. Actions to address the event would not require ERO mobilization or offsite support. For many areas of the plant, normal area radiation levels are such that even at 1,000 times the normal levels, the elevated dose rates would have little, if any, impact on normal or safe plant operations. If the initiating event has actual radiological emergency implications, then it would be classified under (bounded by) an IC/EAL contained in Rev 6. Depending upon several factors, an event causing this condition may be reported in accordance with the requirements of 10 CFR 50.72.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
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: All	AA1	Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE. MODE: All	Revised IC to reflect offsite doses of 10% of the SAE threshold (1% of the PAGs). The dose assessment methodologies employed during an emergency may vary significantly from those used to assess routine effluent releases, and which provided the basis for the Revision 5 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. Based on a review of different licensee EALs, this change should preclude such an overlap while still providing an appropriate gradation between the UE and Alert classification thresholds. This change also reflects a more consistent ECL escalation path from Alert to GE – 1%, 10% and 100% of EPA PAG values.

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 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.		**Notes:** ● The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes. ● If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. ● The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.		Reworded and reformatted note for clarity. Added guidance for determining validity of isolated release paths. Added guidance concerning the expected use of pre-calculated effluent monitor readings.
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 threshold values)	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 values)	Incorporates FAQ #4 – deleted VALID.
2	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.	N/A	N/A	Subsumed into example EAL #1 consistent with revised approach to this IC.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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).	Added a dose assessment-based EAL consistent with revised approach to this IC.
3	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.	3	Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point) for one hour of exposure.	Added new threshold values based on 1% of EPA PAG values consistent with revised approach to this IC. Gaseous releases are addressed by EAL #1 and EAL #2. Used one hour of exposure to be consistent with EALs from IC AS1 and AG1.
N/A	N/A	4	Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point): • 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.	Added new threshold values based on 1% of EPA PAG values consistent with revised approach to this IC. Used one hour of exposure to be consistent with EALs from IC AS1 and AG1.
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	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 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	having such capability]			

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	Significant lowering of water level above, or damage to, irradiated fuel. MODE: All	Revised IC title to be more descriptive of EALs. Deleted "outside the reactor vessel" as this is addressed in the EALs. Note that the definition of REFUELING PATHWAY, as used in EAL below, is "(Insert a site-specific definition for this term.) Developer Note – This description should include all the cavities, tubes, canals and pools through which irradiated fuel may be moved, *but not including the reactor vessel*."

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.	Based on industry and staff review comments, changed "will result in irradiated fuel becoming uncovered" to "Uncovery". The Rev 5 wording was subjective and difficult to qualify. The Rev 6 wording is much less subjective and more readily assessable. Replaced list of refueling pathway areas with single defined term.
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 from the fuel 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 – deleted VALID. Revised to focus this EAL on mechanical damage to irradiated fuel. Damaging events may include the dropping, bumping or binding of an assembly, or dropping a heavy load onto an assembly. The loss of water level events are addressed by EALs #1 and #3.
N/A	N/A	3	Lowering of spent fuel pool level to (site-specific Level 2 value).	See discussion in NEI 99-01 Rev 6, section 1.4.

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 levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown	Revised IC title to address staff review comments.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A		**Note:** If the equipment in the listed room or area was already inoperable, or out-of-service, before the event occurred, then no emergency classification is warranted		Added note to specify certain conditions under which the IC and EAL are not applicable. If equipment in a room was inoperable at the time of the event, then there is no need to access the room to manually operate it.
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: • Control Room • Central Alarm Station • (other site-specific areas/rooms)	Reworded for clarity. Pulled up information from Rev 5 basis.
N/A	N/A	2	An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	Added new EAL to include loss of access to areas where entry is required for normal plant operation, cooldown and shutdown under the current plant operating mode. This new EAL aligns with revised IC HA5, and addresses staff review comments.

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 IMMINENT 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	Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE. MODE: All	Simplified IC statement. The individual EALs appropriately address whether the dose is actual or projected. The IMMINENT criterion applies to all ICs per discussion in NEI 99-01 Rev 6 section 5.5.

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:** ● The Emergency Director should declare the Site Area Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes. ● If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. ● The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.		Reworded and reformatted note for clarity. Added guidance for determining validity of isolated release paths. Added guidance concerning the expected use of pre-calculated effluent monitor readings.
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 – deleted VALID.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	threshold values)		values)	
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” so that EALs will be consistent with site-specific dose assessment and PAR decision-making methodologies.
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): • 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” so that EALs will be consistent with site-specific dose assessment and PAR decision-making methodologies. . .

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	AS2	Spent fuel pool level at (site-specific Level 3 description). MODE: All	Added new IC to address Fukushima Operating Experience. See discussion in NEI 99-01 Rev 6, section 1.4.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	Lowering of spent fuel pool level to (site-specific Level 3 value).	This EAL addresses a significant loss of spent fuel pool inventory control and makeup capability leading to IMMINENT fuel damage.

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 IMMINENT 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	Release of gaseous radioactivity resulting in 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 the dose is actual or projected. The IMMINENT criterion applies to all ICs per discussion in NEI 99-01 Rev 6 section 5.5.

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:** ● The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes. ● If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. ● The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.		Reworded and reformatted note for clarity. Added guidance for determining validity of isolated release paths. Added guidance concerning the expected use of pre-calculated effluent monitor readings.
1	VALID reading on **ANY** of the following radiation monitors greater than the reading shown	1	Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer:	Incorporates FAQ #4 – deleted VALID. .

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	for 15 minutes or longer: (site specific monitor list and threshold values)		(site-specific monitor list and threshold values)	
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” so that EALs will be consistent with site-specific dose assessment and PAR decision-making methodologies.
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): • 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” so that EALs will be consistent with site-specific dose assessment and PAR decision-making methodologies.

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	AG2	Spent fuel pool level cannot be restored to at least (site-specific Level 3 description) for 60 minutes or longer. MODE: All	Added new IC to address Fukushima Operating Experience. See discussion in NEI 99-01 Rev 6, section 1.4.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
		Note: The Emergency Director should declare the General Emergency promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded		Added a timing note to support proper EAL assessment.
N/A	N/A	1	Spent fuel pool level cannot be restored to at least (site-specific Level 3 value) for 60 minutes or longer.	This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to a prolonged uncovery of spent fuel.

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	UNPLANNED loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory 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. Address staff review comments.

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 Unusual Event promptly upon determining that 15 minutes 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	UNPLANNED loss of reactor coolant results in (reactor vessel/RCS [PWR] or RPV [BWR]) level less than a required lower limit for 15 minutes or longer.	Revised EAL to address combination of CU1 and CU2. EAL #1 recognizes that the minimum required (reactor vessel/RCS [PWR] or RPV [BWR]) level can change several times during the course of a refueling outage as different plant configurations and system lineups are implemented. This EAL is met if the minimum level, specified for the current plant conditions, cannot be maintained for 15 minutes or longer. The minimum level is typically specified in the applicable operating procedure but may be specified in another controlling document. Changed “RCS leakage” to “loss of reactor coolant” to address staff review comments. Changed to better accommodate PWR terminology.
N/A	N/A	2	a. (Reactor vessel/RCS [*PWR*] or RPV [*BWR*]) level cannot be monitored. **AND** b. UNPLANNED increase in	Incorporates Rev. 5 CU2.3 for conditions when RPV/RCS inventory cannot be monitored. Changed to better accommodate PWR terminology.

			(site-specific sump and/or tank) levels.	

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	Rev 5 CU2 IC and example EALs incorporated into Rev 6 IC 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		Rev 5 CU2 IC and example EALs incorporated into Rev 6 IC CU1.
1	UNPLANNED RCS/RPV level drop as indicated by either of the following: • 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	Rev 5 CU2 IC and example EALs incorporated into Rev 6 IC CU1.
2	RCS/RPV level cannot be monitored with a loss of RCS/RPV inventory as indicated by an unexplained level rise in	N/A	N/A	Rev 5 CU2 IC and example EALs incorporated into Rev 6 IC CU1.

	(site specific sump or tank).			

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	Loss of all but one AC power source to emergency buses for 15 minutes or longer. MODE: Cold Shutdown, Refueling, Defueled	Added Defueled mode applicability. This provides an escalation path to CA2 for a complete loss of power to AC emergency buses 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. The new wording "loss of all but one AC power source" provides better consistency with other loss of AC power IC statements, and addresses a staff review comment.

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 Unusual Event promptly upon determining that 15 minutes 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	a. AC power capability to (site-specific emergency buses) is reduced to a single power source for 15 minutes or longer. **AND** b. Any additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS.	Replaced "station blackout" with "loss of all AC power to SAFETY SYSTEMS" to be more descriptive of the IC 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 increase in RCS temperature. MODE: Cold Shutdown, Refueling	Revised IC statement to focus on an unplanned increase in RCS temperature; this wording is independent of the cause. The phrase “with irradiated fuel in the RPV” has been deleted since the Mode applicability addresses this criterion. Implements EAL FAQ #11.

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 Unusual Event promptly upon determining that 15 minutes 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 increase in RCS temperature to greater than (site-specific Technical Specification cold shutdown temperature limit).	Reworded for clarity.
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.	Reworded for clarity.

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 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
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. Loss of all onsite communications affects ability to perform routine operations.
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 Rev 5 EAL #2 into loss of ORO notification capability and loss of NRC notification capability for Rev 6. This reflects the different methods used by licensees to perform these notifications.
N/A	N/A	3	Loss of **ALL** of the following NRC communications methods: (site-specific list of communications methods)	Split example Rev 5 EAL #2 into loss of ORO notification capability and loss of NRC notification capability for Rev 6. This reflects the different methods used by licensees to perform these notifications.

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 Vital DC power for 15 minutes or longer. MODE: Cold Shutdown, Refueling	Deleted “required” – this aspect is addressed in the EAL. Inserted the term “Vital” since this is the commonly used term that describes the DC power of interest.

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 Unusual Event promptly upon determining that 15 minutes 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 Vital DC buses for 15 minutes or longer.	Reworded for clarity.

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	IC CU8 and associated EALs have been deleted. 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: "*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*." 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). 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 transients during startups.
1	UNPLANNED sustained positive startup rate observed on nuclear instrumentation. (PWR)	N/A	N/A	

				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. Also, this event would not inhibit implementation of the emergency plan or security plan. Therefore, IC CU8 and associated EALs have been deleted. To the extent that an inadvertent criticality adds heat to the RCS, it would be classified in accordance with IC CU3.

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	Changed to better accommodate PWR terminology.

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 Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.		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).	Changed to better accommodate PWR terminology. Specifics on determining level setpoints were placed in the Developer Notes. Refer to Developer Notes for details of change to PWR level setpoint; this change addressed a staff review comment.
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 increase in (site-specific sump and/or tank) levels due to a loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory.	Reworded EAL statement, and split into separate statements (2a. and b.), to improve readability. No change to the intent of the EAL. Changed to better accommodate PWR terminology. Replaced “unexplained” with defined term “UNPLANNED”.

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 buses 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 Alert promptly upon determining that 15 minutes 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 buses) 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
CA4	Inability to maintain plant in cold shutdown. MODE: Cold Shutdown, Refueling	CA3	Inability to maintain the 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 Alert 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 increase in RCS temperature to greater than (site-specific Technical Specification cold shutdown temperature limit) for greater than the duration specified in the following table.	Reworded to improve clarity.
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 RCS pressure increase greater than (site-specific pressure reading). (This EAL does not apply during water-solid plant conditions. [*PWR*])	Reworded to improve clarity. Replaced "10 psi" value with "(site-specific pressure reading)" to accommodate differences in plant design and instrumentation capabilities. Implementation guidance provided in Developers Notes.

Minor/editorial changes 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.		

(1) Revision 6:

Table: RCS Heat-up Duration Thresholds		
RCS Status	**Containment Closure Status**	**Heat-up Duration**
Intact (but not at reduced inventory [*PWR*])	Not applicable	60 minutes*
Not intact (or at 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.		

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	CA6	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Cold Shutdown, Refueling	New IC and EAL. This IC addresses the focus of concern of Rev 5 ICs HA1 and HA2; specifically, a hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. The new wording is intended to improve classification accuracy by providing more readily identifiable and assessable EAL criteria.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	a. The occurrence of ANY of the following hazardous events: • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • (site-specific hazards) • Other events with similar hazard characteristics as determined by the Shift Manager **AND** b. **EITHER** of the following: 1. Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current	Added new EAL that subsumes the Hazards-based event EALs in Rev 5 ICs HA1 and HA2, and aligns with the new IC. The new wording is intended to improve classification accuracy by providing more readily identifiable and assessable EAL criteria.

			operating mode. **OR** 2. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode.	

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	Changed to better accommodate PWR terminology.

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 Site Area Emergency promptly upon determining that 30 minutes 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. Changed to better accommodate PWR terminology. Specifics on determining level setpoints were placed in the Developer Notes; see these for setpoint details.
2	With CONTAINMENT CLOSURE established, RCS/RPV level less than (site specific level for TOAF).	2	a. CONTAINMENT CLOSURE established. **AND** b. (Reactor vessel/RCS [*PWR*] or RPV [*BWR*]) level less than (site-specific level).	Reformatted to improve readability. Changed to better accommodate PWR terminology. Specifics on determining level setpoints were placed in the Developer Notes; see these for setpoint details.
3	RCS/RPV level cannot be monitored for 30 minutes or longer with a loss of RCS/RPV inventory as indicated by ANY of	3	a. (Reactor vessel/RCS [*PWR*] or RPV [*BWR*]) level cannot be monitored for 30 minutes or longer.	Reformatted to improve readability. Changed to better accommodate PWR terminology. Pulled-up Rev 5 basis information that indications of interest are

	the following: • (Site specific radiation monitor) reading greater than (site specific value). • Erratic Source Range Monitor Indication. • Unexplained level rise in (site specific sump or tank).		**AND** b. Core uncovery is indicated by ANY of the following: • (Site-specific radiation monitor) reading greater than (site-specific value) • Erratic source range monitor indication [*PWR*] • UNPLANNED increase in (site-specific sump and/or tank levels) of sufficient magnitude to indicate core uncovery • (Other site-specific indications)	those for core uncovery. 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. Expanded threshold expectation that sump and/or tank levels changes must be of sufficient magnitude to indicate core uncovery. Replaced “unexplained” with defined term “UNPLANNED”. Added provision for other site-specific indications. Wording addresses staff review comment.

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	Changed to better accommodate PWR terminology.

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 General Emergency promptly upon determining that 30 minutes 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 (see below)	Reworded to improve readability. Changed to better accommodate PWR terminology. Specifics on determining level setpoints were placed in the Developer Notes; see these for setpoint details.
2	a. RCS/RPV level cannot be monitored with core uncovery indicated by **ANY** of the following for 30 minutes or longer. • (Site specific radiation monitor) reading greater than (site specific setpoint). • Erratic source range monitor indication • UNPLANNED level rise in	2	a. (Reactor vessel/RCS [*PWR*] or RPV [*BWR*]) vessel level cannot be monitored for 30 minutes or longer. **AND** b. Core uncovery is indicated by **ANY** of the following: • (Site-specific radiation monitor) reading greater than (site-specific value) • Erratic source range monitor	Reformatted for readability. Changed to better accommodate PWR terminology. 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. Expanded threshold expectation that sump and/or tank levels changes must be of sufficient magnitude to indicate core uncovery.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	(site specific sump or tank). • [Other site specific indications] **AND** b. **ANY** containment challenge indication (see Table):		indication [*PWR*] • UNPLANNED increase in (site-specific sump and/or tank levels) of sufficient magnitude to indicate core uncovery • (Other site-specific indications) **AND** c. **ANY** indication from the Containment Challenge Table (see below).	A Developer Note was added. Added note to Containment Challenge Table that if containment closure is re-established prior to 30 min. limit classification is not required. Wording addresses staff review comment.

Revision 5:

Table: Containment Challenge Indications
• 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 Table
• CONTAINMENT CLOSURE not established*
• (Explosive mixture) exists inside containment
• UNPLANNED increase 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 uncovery time limit, then escalation to a General Emergency is not required.

Section 5.7

Category D
Permanently Defueled Station Malfunction

(Section PD has been moved to Attachment C)

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	Release of gaseous or liquid radioactivity greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer. MODE: N/A	Reformatted to reference the site-specific effluent release controlling document.

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 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		**Notes:** ● The Emergency Director should declare the Unusual Event promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded. ● If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes. ● If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.		Reworded and reformatted note for clarity. Added guidance related to validity of isolated release paths.
1	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).	1	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 – deleted VALID. Revised wording to improve usability and reflect potential changes in effluent allowable limits (as reflected in the “current radioactivity discharge permit”).

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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	Sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer.	Reworded to reference the site-specific effluent release controlling document. Similar to FAQ #4, deleted term “confirmed”.

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 ANY of the following: (site-specific level indications). **AND** b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors. (site-specific list of area radiation monitors).	Incorporates FAQ #4 – Deleted VALID. Minor/editorial wording changes to improve readability. Added the term “Unplanned” to the radiation rise threshold to align EAL 1.b with 1.a.
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	Area radiation monitor reading or survey result indicates an UNPLANNED rise of 25 mR/hr over NORMAL LEVELS.	Incorporates FAQ #5 – NORMAL LEVELS is a new defined term. Minor/editorial wording changes to improve readability.

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.

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	Deleted "…threat which indicates a potential degradation in the level of safety of the plant" as the potential degradation aspect was considered in the linkage of this IC to definitions of security condition and threat described in site security plans. This change simplifies the IC wording and does not change the 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 assessment readability and accuracy.
N/A		3	A validated notification from the NRC providing information of an aircraft threat.	Added 3rd 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).

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 a (NO)UE. MODE: N/A	IC # changed from D-HU2 to PD-HU3 for improved grouping of EALs.

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 systems occurs.	Revised EAL Text to match Rev 6 HU7 - removed the title of Shift Supervisor from EAL wording as it is redundant to the term Emergency Director.

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	Hazardous event affecting SAFETY SYSTEM equipment necessary for spent fuel cooling. MODE: N/A	IC # changed for D-HU3 to PD-HU2 for improved grouping of EALs. New IC and EAL. This IC addresses Rev 5 IC D-HU3. This new IC addresses an UNPLANNED or hazardous event that causes damage to equipment necessary for spent fuel cooling (i.e., "to maintain spent fuel integrity"). The IC focuses on the effects to plant systems, regardless of the initiating event.

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: • Seismic event confirmed by (site specific indication or method) • Earthquake felt in plant • National Earthquake Center	1	a. The occurrence of ANY of the following hazardous events: • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • (site-specific hazards) • Other events with similar hazard characteristics as determined by the Shift Manager AND b. The event has damaged at least one train of a SAFETY SYSTEM needed for spent fuel cooling.	Added new EAL that subsumes the Hazards-based event EALs in Rev 5 IC P-HU3, and aligns with the new IC.
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.			
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)			
4	Vehicle crash within the PROTECTED AREA that has the potential to affect equipment needed to maintain spent fuel			

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	integrity.		AND c. The damaged SAFETY SYSTEM train(s) cannot, or potentially cannot, perform its design function based on EITHER: • Indications of degraded performance • VISIBLE DAMAGE	
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	Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE. MODE: N/A	Revised IC to align with offsite doses specified in Rev 6 IC AA1. See change discussion for IC AA1.

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 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.		**Notes:** ● The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. ● If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes. ● If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. ● The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.		Reworded and reformatted note for clarity. Added guidance for validity of isolated release paths. Added note concerning expected use of pre-calculated effluent monitor readings.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
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 threshold values)	Incorporates FAQ #4 – Deleted VALID. Deleted "UNPLANNED " as such release would never be planned.
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)	Added EAL to align with approach used in Rev 6 IC AA1. See change discussion for IC AA1.
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	Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point) for one hour of exposure	Revised EAL to align with approach used in Rev 6 IC AA1. See change discussion for IC AA1. Similar to FAQ #4, deleted “confirmed”.
N/A	N/A	4	Field survey results indicate **EITHER** of the following at or beyond (site-specific dose receptor point): • 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.	Added EAL to align with approach used in Rev 6 IC AA1. See change discussion for IC AA1.

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.

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	The Rev 6 preparation team believes that if a HOSTILE ACTION is occurring within the OCA of a permanently defueled plant, an Alert declaration is warranted. Staff and offsite resource mobilization and response should not wait for the HOSTILE ACTION to reach the “fuel building or control room”. Included airborne attack threat to be consistent with Rev 6 IC HA1.

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 CONTROLED AREA as reported by the (site security shift supervision).	The Rev 6 preparation team believes that if a HOSTILE ACTION is occurring within the OCA of a permanently defueled plant, an Alert declaration is warranted. Staff and offsite resource mobilization and response should not wait for the HOSTILE ACTION to reach the “fuel building or control room”.
N/A		2	A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.	Included airborne attack threat to be consistent with Rev 6 IC HA1.

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	IC # changed for D-HA2 to PD-HA3 for improved grouping of EALs.

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

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: All	Changed mode applicability to “All” for consistency with overall scheme. Also addressed a staff review comment.

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 similar criterion used in IC AU1. The new EAL is better defined and more readily assessable.

Section 5.9

Category F
Fission Product Barrier Degradation
BWR
PWR

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	**NOTES** The logic used for these initiating conditions reflects the following considerations: • 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 Emergency. • The ability to escalate to	N/A	**NOTES** 1. The logic used for these initiating conditions reflects the following considerations: • The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier. • Unusual Event ICs associated with fission product barriers are addressed in Recognition Category S. 2. For accident conditions involving a radiological release, evaluation of the fission product barrier thresholds will need to be performed in conjunction with dose assessments to ensure correct and timely escalation of the emergency classification. For example, an evaluation of the fission product barrier thresholds may result in a Site Area Emergency classification while a dose assessment may indicate that an EAL for General Emergency IC AG1 has been exceeded. 3. The fission product barrier thresholds specified within a scheme are expected to	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. Second bullet: Deleted. This note provides no guidance on the implementation of the fission product barrier thresholds. Third bullet: Deleted. This note provides no guidance on the implementation of the fission product barrier thresholds.

	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.		reflect plant-specific design and operating characteristics. This may require that developers create different thresholds than those provided in the generic guidance. 4. Alternative presentation methods for the Recognition Category F ICs and fission product barrier thresholds are acceptable and include flow charts, block diagrams, and checklist-type tables. Developers must ensure that the site-specific method addresses all possible threshold combinations and classification outcomes shown in the BWR or PWR EAL fission product barrier tables. The NRC staff considers the presentation method of the Recognition Category F information to be an important user aid and may request a change to a particular proposed method if, among other reasons, the change is necessary to promote consistency across the industry. 5. As used in this Recognition Category, the term RCS leakage encompasses not just those types defined in Technical Specifications but also includes the loss of RCS mass to any location–	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. Added clarifying guidance that fission product barrier thresholds need to reflect plant specific design considerations and that differences in design characteristics may potentially require unique thresholds to be identified.

			inside containment, a secondary-side system (i.e., PWR steam generator tube leakage), an interfacing system, or outside of containment. The release of liquid or steam mass from the RCS due to the as-designed/expected operation of a relief valve is not considered to be RCS leakage. 6. At the Site Area Emergency level, classification decision-makers should maintain cognizance of how far present conditions are from meeting a threshold that would require a General Emergency declaration. For example, if the Fuel Clad and RCS fission product barriers were both lost, then there should be frequent assessments of containment radioactive inventory and integrity. Alternatively, if both the Fuel Clad and RCS fission product barriers were potentially lost, the Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency. 7. The ability to escalate to a higher emergency classification level in response to degrading	

			conditions should be maintained. For example, a steady increase in RCS leakage would represent an increasing risk to public health and safety.	

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	**RCS Activity** A. (Site-specific indications that reactor coolant activity is greater than 300 µCi/gm dose equivalent I-131).	Changed "Primary Coolant" to "RCS" to standardize terminology. Revised threshold to specify site-specific indications of RCS coolant activity > 300 µCi/gm dose equivalent I-131 whether by sampling or by other available indications such as radiation monitors.
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** A. Primary containment radiation monitor reading greater than (site specific value).	Deleted the word "Monitoring" as the term is unnecessary.
FC Loss 5	**Other (Site-Specific) Indications** A. (site specific) as applicable	FC Loss 5	**Other Indications** A. (site specific as applicable)	No change
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

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 1	**Primary Coolant Activity Level** Not Applicable.	FC P-Loss 1	**RCS Activity** Not Applicable.	Changed "Primary Coolant" to "RCS" 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** Not Applicable	Deleted the word "Monitoring" as the term is unnecessary.
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
FC P-Loss 6	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier	FC P-Loss 6	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier	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) or cannot be determined	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology. Expanded bases discussion to define the term "cannot be restored and maintained" and exclude intentional lowering of RPV level under ATWS conditions. Expanded bases to specify that the intended threshold is met after Emergency RPV Depressurization is required.
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	Reworded threshold placing the example list of high energy systems in the threshold bases discussion. Deleted the words "is required" to clarify that the threshold is met when the RPV is actually been depressurized.
RCS Loss 4	**Primary Containment Radiation Monitoring** A. Primary containment radiation monitor reading greater than (site specific value).	RCS Loss 4	**Primary Containment Radiation** A. Primary containment radiation monitor reading greater than (site specific value).	Deleted the word "Monitoring" as the term is unnecessary.
RCS Loss 5	**Other Site-Specific Indications** A. (site specific) as applicable	RCS Loss 5	**Other Indications** A. (site specific as applicable)	No change
RCS Loss 6	**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-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 1	**Primary Containment Pressure** Not Applicable	RCS P-Loss 1	**Primary Containment Pressure** Not Applicable	No change
RCS P-Loss 2	**Reactor Vessel Water Level** Not applicable	RCS P-Loss 2	**RPV Water Level** Not applicable	Replaced term "Reactor Vessel" with "RPV" to standardize to common BWR terminology.
RCS P-Loss 3	**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.	RCS P-Loss 3	**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	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. 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. Added the words "Operating" and "Level" consistent with BWR EOP terminology. Expanded bases discussion for RCS Potential Loss 3.C supporting use of Max Normal Operating Levels.
RCS P-Loss 4	**Primary Containment Radiation Monitoring** Not applicable	RCS P-Loss 4	**Primary Containment Radiation** Not applicable	Deleted the word "Monitoring" as the term is unnecessary.
RCS P-Loss 5	**Other Site Specific Indications** (site specific) as applicable	RCS P-Loss 5	**Other Indications** (site specific as applicable)	No change
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.	RCS P-Loss 6	**Emergency Director Judgment** Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier	No change

Table 5-F-2 BWR Fission Product Barrier Thresholds

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	**Primary Containment Conditions** A. Primary containment pressure rise followed by a rapid unexplained drop in primary containment pressure. **OR** B. Primary containment pressure response not consistent with LOCA conditions.	CMT Loss 1	**Primary Containment Conditions** A. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise **OR** B. Primary containment pressure response not consistent with LOCA conditions	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	**Reactor Vessel Water Level** Not applicable	CNMT Loss 2	**RPV Water Level** Not applicable	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	**Primary Containment Isolation Failure or Bypass** 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** B. Intentional primary containment venting per EOPs. **OR** 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.	CNMT Loss 3	**Primary Containment Isolation Failure** A. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal **OR** B. Intentional primary containment venting per EOPs **OR** 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	Deleted the word "or Bypass" from the threshold category title. The threshold addresses 'direct' unisolable release path. 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 unisolable downstream pathway. Added the term "Unisolable" to clarify that actions have been taken to isolate the release pathway if the automatic isolation failed. 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. 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. 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.
CMT Loss 4	**Primary Containment Radiation Monitoring** Not applicable	CNMT Loss 4	**Primary Containment Radiation** Not applicable	Deleted the word "Monitoring" as the term is unnecessary.
CMT Loss 5	**Other Site Specific Indications** (site specific) as applicable	CMT Loss 5	**Other Indications** (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
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) **OR** B. (site-specific explosive mixture) exists inside primary containment **OR** C. HCTL exceeded	Reworded threshold B to support inclusion of site-specific explosive mixture concentrations. Revised threshold C to simplify to "HCTL exceeded" since the HCTL also has a suppression pool level component.
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** Primary containment radiation monitor reading greater than (site specific value).	Deleted the word "Monitoring" as the term is unnecessary.
CMT P-Loss 5	**Other Site Specific Indications** (site specific) as applicable	CMT P-Loss 5	**Other Indications** (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
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	[The method for incorporating thresholds based on Westinghouse CSFSTs is addressed in Developer Notes. Where employed by a licensee, application will be consistent with the Rev 5 usage.]	See Developer Notes for discussion on revised application of CSFSTs to thresholds for plants that use Westinghouse ERGs.
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 μCi/gm dose equivalent I-131).	Changed "Primary" to "RCS" to standardize terminology. Regrouped Rev. 5 FC Loss 2 and Loss 6 into FC Loss 3. Revised category to read " RCS Activity/Containment Radiation " Revised generic wording to provide greater latitude in the use of site-specific indications and terminology. No change in intent.
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 wording change; no change in intent. For consistency with new category titles, relocated threshold to Inadequate Heat Removal.
FC Loss 4	**Reactor Vessel Water Level** Not Applicable	N/A	N/A	Not applicable in revised sequence.
FC Loss 5	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.
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).	No change to threshold. Regrouped Rev. 5 FC Loss 2 and Loss 6 into FC Loss 3. 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 wording change; no change in intent.
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	[The method for incorporating thresholds based on Westinghouse CSFSTs is addressed in Developer Notes. Where employed by a licensee, application will be consistent with the Rev 5 usage.]	See Developer Notes for discussion on revised application of CSFSTs to thresholds for plants that use Westinghouse ERGs.
		FC P-Loss 2	**Inadequate Heat Removal** B. Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications).	Added new generic threshold “Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications).” This threshold addresses the condition described by Westinghouse ERG term “Heat Sink-Red”. Revised approach will facilitate better alignment of EOPs and EALs at CE and B&W plants. See Developer Notes for discussion.
FC P-Loss 2	**Primary Coolant Activity Level** Not Applicable	N/A	N/A	Not applicable in revised sequence.
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. No change in intent. For consistency with new category titles, relocated threshold to Inadequate Heat Removal.

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 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)	Revised "RPV" to "reactor vessel" to use common PWR terminology. Deleted reference to TOAF. Value should match that used in site-specific EOPs and/or functional restoration procedures. See clarification added to Basis and Developer Notes. For consistency with new category titles, relocated threshold to RCS or SG Tube Leakage.
FC P-Loss 5	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.
FC P-Loss 6	**Containment Radiation Monitoring** Not Applicable	N/A	N/A	Not applicable in revised sequence.
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 wording change; no change in intent.
FC P-Loss 8	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.	FC P-Loss 6	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier	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	Not applicable in revised sequence.
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	Revised category title to incorporate all RCS leakage conditions. Revised wording better 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 parameters beyond just the RCS leak rate) and aligns better with EOP implementation. Also eliminates potential threshold inconsistencies among developers (e.g., "loss of RCS subcooling" could mean below an AOP/EOP-specified minimum value or zero). Revised approach also promotes alignment with assessment of SG tube ruptures.
RCS Loss 3	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.
RCS Loss 4	**SG Tube Rupture** A. RUPTURED SG results in an ECCS (SI) actuation.	RCS Loss 1	**RCS or SG Tube Leakage** A. An automatic or manual ECCS (SI) actuation is required by **EITHER** of the following: 2. SG tube RUPTURE.	Revised category title to incorporate all RCS leakage conditions. Minor/editorial wording change; no change in intent. Clarified that ECCS (SI) actuation could be automatic or manual.
RCS Loss 5	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.

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).	Revised category to read " RCS Activity/Containment Radiation". No change to threshold.
RCS Loss 7	**Other (Site-Specific) Indications** A. (Site-specific) as applicable	RCS Loss 5	**Other Indications** A. (site-specific as applicable)	Minor/editorial wording change; no change in intent.
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	**Critical Safety Function Status** A. RCS Integrity-Red Entry Conditions Met. **OR** B. Heat Sink-Red Entry Conditions Met.	RCS P-Loss 1	[The method for incorporating thresholds based on Westinghouse CSFSTs is addressed in Developer Notes. Where employed by a licensee, application will be consistent with the Rev 5 usage.]	See Developer Notes for discussion on revised application of CSFSTs to thresholds for plants that use Westinghouse ERGs.
			RCS or SG Tube Leakage B. RCS cooldown rate greater than (site-specific pressurized thermal shock criteria/limits defined by site-specific indications).	Added new generic threshold "RCS cooldown rate greater than (site-specific pressurized thermal shock criteria/limits defined by site-specific indications)." This threshold addresses the condition described by Westinghouse ERG term "RCS Integrity-Red". Revised approach will facilitate better alignment of EOPs and EALs at CE and B&W plants. See Developer Notes for discussion.
		RCS P-Loss 2	**Inadequate Heat Removal** A. Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications).	Added new generic threshold "Inadequate RCS heat removal capability via steam generators as indicated by (site-specific indications)." This threshold addresses the condition described by Westinghouse ERG term "Heat Sink-Red". Revised approach will facilitate better alignment of EOPs and EALs at CE and B&W plants. See Developer Notes for discussion.

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.	New category title. 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 (make-up) pump is required. This action would be directed by an AOP/EOP 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). This approach provides much better alignment with site-specific AOPs/EOPs and normally expected operator actions, and thus promotes more timely and accurate emergency classifications. The revised wording also addresses large steam generator tube leaks below those considered to be a “rupture”, i.e., leaks not of sufficient size to require an ECCS (SI) actuation.
RCS P-Loss 3	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.
RCS P-Loss 4	**SG Tube Rupture** Not Applicable	N/A	N/A	Not applicable in revised sequence.
RCS P-Loss 5	**Not Applicable** Not Applicable	N/A	N/A	Not applicable in revised sequence.
RCS P-Loss 6	**Containment Radiation Monitoring** Not Applicable	N/A	N/A	Not applicable in revised sequence.
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 wording change; no change in intent.

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 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	Not applicable in revised sequence.
CNMT Loss 2	**Containment Pressure** A. A containment pressure rise followed by a rapid unexplained drop in containment pressure. **OR** B. Containment pressure or sump level response not consistent with LOCA conditions.	CNMT Loss 4	**Containment Integrity or Bypass** A. Containment isolation is required **AND** **EITHER** of the following: 1. Containment integrity has been lost based on Emergency Director judgment. B. Indications of RCS leakage outside of containment.	New category title. Rev 5 Loss 2.A = Rev 6 Loss 4.A.1; the intent of the Rev 5 wording was to identify a loss of containment integrity. The Rev. 5 threshold was revised to allow the Emergency Director to consider a variety of indications that may indicate a loss of containment integrity (not just containment pressure); this will improve classification timeliness and accuracy. There are several variables that may affect the rate of change of containment pressure; in some cases, containment pressure may remain stable or increase even though the barrier has been lost. In other cases, containment pressure may fall but the containment barrier has not been lost. For this reason, the threshold was revised to allow for consideration of all relevant indications (e.g., radiation monitors outside containment). Unplanned increases in radiation levels outside of containment may provide more timely indication of a loss of containment integrity. The revised wording removed the subjective term “rapid” in cases where pressure is falling. The addition of “Containment isolation is required” is consistent with the Rev. 5 intent (i.e., an event in progress requiring mitigation by the Containment barrier). In this case, the containment has received system energy of sufficient magnitude to cause pressure increases that may lead to leakage, rupture or catastrophic failure. The conditions associated with the pressure increase will require containment isolation. Rev 5 Loss 2.B = Rev 6 Loss 4.B. This wording expands the range of indications of RCS leakage outside of containment; see Basis section for discussion. There is no change to the intent. Because of the structure and logic of

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
				the Rev. 6 FPB matrix (i.e., the containment thresholds serve an escalatory function only), this threshold would be evaluated only if an RCS loss or potential loss threshold was already met; it thus eliminates the potentially subjective term "LOCA". Incorporated a graphic to clarify intent.
CNMT Loss 3	**Core Exit Thermocouple Readings** Not applicable	N/A	N/A	Not applicable in revised sequence.
CNMT Loss 4	**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.	CNMT Loss 1	**RCS or SG Tube Leakage** A. A leaking or RUPTURED SG is FAULTED outside of containment.	New category title. Rev 5 Loss 4.A = Rev 6 Loss 1.A. The revised wording also addresses large steam generator tube leaks below those considered to be a "rupture", i.e., leakage values greater than the capacity of a normally operating charging pump but less than that requiring Safety Injection actuation. Rev 5 Loss 4.B was deleted. The 10 gpm leak rate value is no longer required because the lower bound of the RCS leak rate is that necessary to meet the RCS Barrier Potential Loss 1.A threshold. This change also reflects the deletion of IC FU1 – see related justification in this change summary. The lower limit of the size of the unisolable steam release has been appropriately bounded to that which causes the SG to be considered FAULTED. This condition is readily recognizable with Control Room instrumentation, aligns with AOP/EOP diagnostic steps, and excludes small/incidental steam releases.
CNMT Loss 5	**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	CNMT Loss 4	**Containment Integrity or Bypass** A. Containment isolation is required **AND** **EITHER** of the following: 2. UNISOLABLE	New category title. Rev 5 Loss 5.A = Rev 6 Loss 4.A.2. The revised wording continues to specify a containment isolation requirement and uses the defined term "UNISOLABLE". A "failure of all valves in any one line to close" with a "direct downstream pathway to the environment" (Rev 5) is equivalent to "UNISOLABLE pathway from containment to the environment exists" (Rev 6).

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
	signal.		pathway from containment to the environment exists	
CNMT Loss 6	**Containment Radiation Monitoring** Not Applicable	N/A	N/A	Not applicable in revised sequence.
CNMT Loss 7	**Other (Site-Specific) Indications** A. (Site-specific) as applicable	CNMT Loss 5	**Other Indications** A. (site-specific as applicable)	Minor/editorial wording change; no change in intent.
CNMT Loss 8	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	CNMT Loss 6	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	No change
CNMT P-Loss 1	**Critical Safety Function Status** A. Containment-Red Entry Conditions Met.	CNMT P-Loss 4	[The method for incorporating thresholds based on Westinghouse CSFSTs is addressed in Developer Notes. Where employed by a licensee, application will be consistent with the Rev 5 usage.]	See Developer Notes for discussion on revised application of CSFSTs to thresholds for plants that use Westinghouse ERGs.
CNMT P-Loss 2	**Containment Pressure** A. Containment pressure greater than (site specific value) and rising. **OR** B. Explosive mixture exists inside containment. **OR** C. a. Pressure greater than	CNMT P-Loss 4	**Containment Integrity or Bypass** A. Containment pressure greater than (site specific value). **OR** B. Explosive mixture exists inside containment. **OR**	Category name changed to “Containment Integrity or Bypass” to reflect improved grouping of thresholds. Rev 5 PL 2.A = Rev 6 PL 4.A. Deleted “and rising”. If containment pressure exceeds the design pressure, then containment integrity is challenged, whether or not it continues to rise. Also eliminates what some developers/users saw as a logic inconsistency; if containment pressure is greater than design pressure, then it must have risen to get to that value (i.e., the “and rising”

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
	containment depressurization actuation setpoint. **AND** b. Less than one full train of depressurization equipment operating.		C. 1. Containment pressure greater than (site-specific pressure setpoint) **AND** 2. Less than one full train of (site-specific system or equipment) is operating per design for 15 minutes or longer.	was automatically met). Rev 5 PL 2.B = Rev 6 PL 4.B. No change. Rev 5 PL 2.C = Rev 6 PL 4.C. Made the operational requirements parenthetical to indicate that plants should use site-specific operational design criteria for containment heat removal systems. Included a 15-minute criterion to allow operators time to manually start equipment that may not have automatically started. This is similar to approach used for other EALs and will promote appropriate classifications. An applicability exclusion was incorporated into the developer notes for PL 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 LOCA and Main Steam Line Break 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 DBA for the US EPR; therefore, there is no automatic actuation setpoint for this PL 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.
CNMT P-Loss 3	**Core Exit Thermocouple Readings** A. a. Core exit thermocouples in excess of (site specific) º F. AND b. Restoration procedures not effective within 15	CNMT P-Loss 2	**Inadequate Heat Removal** A. 1. (Site-specific criteria for entry into core cooling restoration procedure) **AND** 2. Restoration	Category name changed to “Inadequate Heat Removal” to reflect improved grouping of thresholds. The Rev 5 wording reflected the Westinghouse ERG logic for a Core Cooling CSFST Red path (i.e., 3.A.a, and 3.B.a + 3.B.b). CE and B&W EOPs use different logic paths and associated parameters to drive actions for restoration of core cooling. To reflect this fact, the Rev 6 wording employs a generic approach that directs usage of “Site-

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
	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.		procedure not effective within 15 minutes.	specific criteria for entry into core cooling restoration procedure". This approach will ensure consistency between the site-specific EOPs and emergency classification scheme, and thus facilitate more timely and accurate classification assessments For plants using the Westinghouse ERGs, the Rev 5 and Rev 6 wording is identical.
CNMT P-Loss 4	**SG Secondary Side Release with P-to-S Leakage** Not applicable	N/A	N/A	Not applicable in revised sequence.
CNMT P-Loss 5	**Containment Isolation Failure or Bypass** Not Applicable	N/A	N/A	Not applicable in revised sequence.
CNMT P-Loss 6	**Containment Radiation Monitoring** A. Containment radiation monitor reading greater than (site specific value).	CNMT P-Loss 3	**RCS Activity/Containment Radiation** A. Containment radiation monitor reading greater than (site specific value).	New category title. No change to threshold.
CNMT P-Loss 7	**Other (Site-Specific) Indications** A. (Site-specific) as applicable	CNMT P-Loss 5	**Other (Site-Specific) Indications** A. (site-specific as applicable)	Minor/editorial wording change; no change in intent.
CNMT P-Loss 8	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that indicates Potential Loss	CNMT P-Loss 6	**Emergency Director Judgment** A. Any condition in the opinion of the Emergency Director that	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
	of the Containment Barrier.		indicates Potential Loss of the Containment Barrier.	

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	HU2 HU3	Seismic event greater than OBE levels. MODE: All Hazardous event. MODE: All	To improve usability, reorganized EALs from where they are listed under one Rev 5 IC to list them under two Rev 6 ICs.

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: • Seismic event confirmed by (site specific indication or method) • Earthquake felt in plant • National Earthquake Center	HU2 EAL#1	Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: a. (site-specific indication that a seismic event met or exceeded OBE limits)	This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE). An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE) should have no significant impact on safety-related systems, structures and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (e.g., performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant. Reflecting the fact that seismic events of lesser magnitude are bounded by the plant OBE design basis, the Rev 5 IC HA1 EAL #1 was relocated to Rev 6 IC HU2 EAL #1, and the Rev 5 IC HU1 EAL #1 was deleted. Earthquakes less than OBE levels may be, and are more appropriately, reported under the requirements of 10 CFR 50.72.
2	Tornado striking within PROTECTED AREA boundary or high winds greater than (site specific mph).	HU3 EAL #1	A tornado strike within the PROTECTED AREA.	Minor/editorial wording change to tornado strike EAL; no change in intent. The UE “high winds” EAL was deleted. This event does not, by itself, constitute a radiological emergency. To the extent that the event damages plant equipment, or requires precautionary or compensatory measures, it may be reportable under the requirements of 10 CFR 50.72. If the event resulted in damage to SAFETY SYSTEM equipment, it would be classified as an Alert under IC CA6 or SA9. The upper and lower bounding of this event (reportable and Alert) obviates the need for an UE EAL for this

				event.
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 following areas: (site specific area list)	HU3 EAL #2	Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode.	Changed the criterion "potential to affect" to "of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component" to address industry Operating Experience with this EAL. The revised criterion addresses the area of concern from the Rev 5 wording – wetting or submerging of equipment – but is more readily observable and assessable. This change will promote more accurate and consistent emergency classifications.
4	Turbine failure resulting in casing penetration or damage to turbine or generator seals.	N/A	Deleted	This EAL was deleted. This event does not, by itself, constitute a radiological emergency, and does not preclude implementation of emergency or security plans. To the extent that the event damages plant equipment, or requires precautionary or compensatory measures, it may be reportable under the requirements of 10 CFR 50.72. If the event resulted in damage to SAFETY SYSTEM equipment, it would be classified as an Alert under IC CA6 or SA9. The upper and lower bounding of this event (reportable and Alert) obviates the need for an UE EAL for this event.
5	(Site specific occurrences affecting the PROTECTED AREA).	HU3 EAL #5	(Site-specific list of natural or technological hazard events)	Minor/editorial wording change; no change in intent.
N/A	N/A	HU3 EAL #4	A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles.	This EAL addresses an event causing on-site impediments to normal site access. Examples of such an event include site flooding caused by a hurricane, heavy rains, up-river water releases, dam failure, etc., or an on-site train derailment blocking the access road. This change addresses a staff review comment.

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	HU4	FIRE potentially degrading the level of safety of the plant. MODE: All	Revised the FIRE IC wording to better reflect the concerns addressed in the revised EALs. The UE EXPLOSION EAL was deleted. This event does not, by itself, constitute a radiological emergency, and does not preclude implementation of emergency or security plans. To the extent that an EXPLOSION damages plant equipment, it may be reportable under the requirements of 10 CFR 50.72. If the event resulted in damage to SAFETY SYSTEM equipment, it would be classified as an Alert under IC CA6 or SA9. An EXPLOSION related to a security event would be classified under one of the security-related ICs. The upper and lower bounding of an EXPLOSION event (reportable and Alert) obviates the need for an UE EAL for this event.

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)	1	a. A FIRE is NOT extinguished within 15-minutes of ANY of the following FIRE detection indications: • Report from the field (i.e., visual observation) • Receipt of multiple (more than 1) fire alarms or indications • Field verification of a single fire alarm **AND** b. The FIRE is located within ANY of the following plant rooms or areas: (site-specific list of plant rooms or areas)	Revised EAL #1 to address industry Operating Experience and staff review comments. This EAL was broken out into 2 EALs – EAL #1 and EAL #2. The Rev 6 approach to EAL #1 is consistent with that of Rev 5. Included new EAL #2 to address industry Operating Experience and staff review comments. Independent field verification of a single fire alarm may take longer than the 15 minutes currently allowed under Rev. 5. This time has been increased to 30 minutes. The basis for this new EAL is discussed in the IC HU4 Basis section. Included new EALs #3 and #4 to address other fire-related events that may indicate a potential reduction in the level of safety of the plant. These addressed staff review comments.

		2	a. Receipt of a single fire alarm (i.e., no other indications of a FIRE). AND b. The FIRE is located within ANY of the following plant rooms or areas: (site-specific list of plant rooms or areas) AND c. The existence of a FIRE is not verified within 30-minutes of alarm receipt.	
		3	A FIRE within the plant or ISFSI [for plants with an ISFSI outside the plant Protected Area] PROTECTED AREA not extinguished within 60-minutes of the initial report, alarm or indication.	
		4	A FIRE within the plant or ISFSI [for plants with an ISFSI outside the plant Protected Area] PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish.	
2	EXPLOSION within the PROTECTED AREA.	N/A	Deleted	See discussion in IC section above.

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	IC was deleted.	Deleted HU3; see below.

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	EAL was deleted.	The occurrence of a gaseous release as specified in Revision 5 HU3 example EAL #1 does not, by itself, constitute a radiological emergency. To the extent that the event affected normal plant operation (e.g., implementation of precautionary or compensatory measures), it may be reportable under the requirements of 10 CFR 50.72. If the event impedes access to SAFETY SYSTEM equipment, it would be classified as an Alert under IC HA5. The upper and lower bounding of this event (reportable and Alert) obviates the need for an UE EAL for this event This change also reflects industry Operating Experience with this EAL. As an example, NORMAL PLANT OPERATIONS is defined as "Activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. *Entry into abnormal or emergency operating procedures, or deviation from normal security or radiological controls posture, is a departure from NORMAL PLANT OPERATIONS*". Most sites enter an AOP for a gas release regardless of the amount released or the consequences; in many actual events, plant operations were not impacted during the period that operators were responding to the event in accordance with an AOP.
2	Report by local, county or state officials for evacuation or sheltering of site personnel based on an off-site event.	HU3 EAL#3	Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or	Revised wording to remove the source of the direction for protective actions (e.g., evacuation or sheltering). Such direction could come from either "local, county or state officials" or site management (e.g., the Shift Manager). Changed the affected area from "the site" to the "PROTECTED AREA". This change recognizes that many

			toxic gas release).	sites have sections of the owner controlled area (i.e., the site) that are well removed from the PROTECTED AREA; an event affecting these remote areas would not have the potential to significantly impact plant operations. For clarity, changed “off-site event” to “offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release)”.

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	Deleted “…threat which indicates a potential degradation in the level of safety of the plant” as the potential degradation aspect was considered in the linkage of this IC to definitions of security condition and threat described in site security plans. This change simplifies the IC wording and does not change the 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 assessment readability and accuracy.
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.

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	HU7	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

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	HU2 EAL#1	Seismic event greater than OBE levels. MODE: All	See discussion below.
		CA6 EAL #1	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Cold Shutdown, Refueling	See discussion below.
		SA9 EAL #1	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	See discussion below.

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

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
1	a. Seismic event greater than Operating Basis Earthquake (OBE) as indicated by (site specific seismic instrumentation) reading (site specific OBE limit). **AND** b. Earthquake confirmed by **ANY** of the following: • Earthquake felt in plant • National Earthquake Center • Control Room indication of degraded performance of systems required for the safe shutdown of the plant.	HU2 EAL #1	Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: a. (site-specific indication that a seismic event met or exceeded OBE limits)	This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE) . An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE) should have no significant impact on safety-related systems, structures and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (e.g., performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant. Reflecting the fact that seismic events of lesser magnitude are bounded by the plant OBE design basis, the Rev 5 IC HA1 EAL #1 was relocated to Rev 6 IC HU2 EAL #1, and the Rev 5 IC HU1 EAL #1 was deleted. Earthquakes less than OBE levels may be, and are more appropriately, reported under the requirements of 10 CFR 50.72. Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event (e.g., typical lateral accelerations are in excess of 0.08g). Operators may seek external verification if deemed appropriate; however, the verification action must not preclude a timely emergency declaration.
2	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: (site specific structure list)	CA6 EAL#1 SA9 EAL #1	a. The occurrence of ANY of the following hazardous events: • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • (site-specific hazards)	The Rev 5 EAL event is bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
			• Other events with similar hazard characteristics as determined by the Shift Manager **AND** b. The event has damaged at least one train of a SAFETY SYSTEM needed for the current operating mode. **AND** c. The damaged SAFETY SYSTEM train(s) cannot, or potentially cannot, perform its design function based on **EITHER**: • Indications of degraded performance •VISIBLE DAMAGE	
3	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: (site specific area list)	CA6 EAL#1 SA9 EAL #1	See above.	The Rev 5 EAL event is bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6. The electrical shock hazard component of this EAL was deleted. The Rev 6 task force believes that if a room is sufficiently flooded to present a shock hazard to personnel, then the equipment in the room would already be inoperable due to electrical isolation - either automatically due to a breaker or relay trip, or by manual actions taken in the control room or locally at an “upstream” bus in another location. There would be no need or direction for personnel to enter the room.
4	Turbine failure-generated PROJECTILES resulting in VISIBLE DAMAGE to or penetration of **ANY** of the following structures containing safety systems or components **OR** control	CA6 EAL#1 SA9 EAL #1	See above.	The Rev 5 EAL event is bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6. A turbine failure is subsumed with “Other events with similar hazard characteristics as determined by the Shift Manager”.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	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)	CA6 EAL#1 SA9 EAL #1	See above.	The Rev 5 EAL event is bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6. Depending upon the circumstance, vehicle crashes may also be classified under one of the security-related ICs.
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:	CA6 EAL#1 SA9 EAL #1	See above.	The Rev 5 EAL event is bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6.

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	CA6	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Cold Shutdown, Refueling	See discussion below.
N/A	N/A	SA9	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	See discussion below.

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)	CA6 EAL#1 SA9 EAL #1	a. The occurrence of ANY of the following hazardous events: • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • (site-specific hazards) • Other events with similar hazard characteristics as determined by the Shift Manager **AND** b. The event has damaged at least one train of a SAFETY	The Rev 5 EAL events are bounded by Rev 6 IC CA6 EAL #1 and IC SA9 EAL #1. The Rev 5 criteria for damage and degradation are more clearly bounded and defined in Rev 6.

			SYSTEM needed for the current operating mode. **AND** c. The damaged SAFETY SYSTEM train(s) cannot, or potentially cannot, perform its design function based on **EITHER**: • Indications of degraded performance • VISIBLE DAMAGE	

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	Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown. MODE: All	Revised IC title to align with new EAL basis and to address staff review comments.

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 equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.		Simplified note wording for users.
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 into any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified) **AND** b. Entry into the room or area is prohibited or impeded.	Revised EAL to require declaration if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect at the time of the gaseous release. The emergency classification is not contingent upon whether entry is actually necessary at the time of the release. This change addressed staff review comments.

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. criterion for airborne attack to be 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 CONTROLED 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.	After review of FAQ #26, the Rev 6 preparation team believes that “aircraft attack” is a better term for this application than “airliner attack” (i.e., a more common term that is easily understood and agreed upon by different parties).

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	HA6	Control Room evacuation resulting in transfer of plant control to alternate locations. MODE: All	Revised IC to reflect the actual transfer of control to outside of the Control Room rather than simply beginning the process for Control Room evacuation. This approach aligns better with relevant licensee event response strategies as described in AOPs/EOPs.

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 event has resulted in plant control being transferred from the Control Room to (site-specific remote shutdown panels and local control stations).	Revised EAL to reflect the actual transfer of control to outside of the Control Room rather than simply beginning the process for Control Room evacuation. This approach aligns better with relevant licensee event response strategies as described in AOPs/EOPs.

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	HA7	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

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 R5 basis intent by specifying the inability to control key safety function(s) from outside the Control Room.

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). • Reactivity control • Core cooling [*PWR*] / RPV water level [*BWR*] • RCS heat removal.	Revised EAL to reflect the actual transfer of control to outside of the Control Room rather than simply beginning the process for Control Room evacuation. This approach aligns better with relevant licensee event response strategies as described in AOPs/EOPs. Changed "… control of the plant . . . " to control of the listed safety functions. This change "pulled up" clarifying guidance from the R5 basis section.

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. MODE: All	HS8	Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area 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 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.

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 HOSITLE 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 physical control of the facility. MODE: All	No 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. ▪ 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 a criterion for control of the listed safety functions. This change "pulled up" clarifying guidance from the R5 basis section. The intent of this EAL did not change. R6 EAL #(1).b.2 - references actual or IMMINENT occurrence of 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 indications of actual or IMMINENT damage to spent fuel. The intent of this EAL did not change. [Also refer to FAQ #29.]
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.			

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 IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels 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 IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.	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 all offsite AC power capability to emergency buses 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 buses 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 definition of an UE.

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 Unusual Event promptly upon determining that 15 minutes 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 buses) 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 buses 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 definition of an UE.

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	Deleted	The occurrence of this condition does not, by itself, constitute a radiological emergency. There is no associated ECL escalation path for the condition. It also would not prohibit implementation of the emergency plan or security plan. To the extent that a required shutdown was impeded by an equipment-related issue, the event may be reportable under the requirements of 10 CFR 50.72, or classified as an emergency via other ICs in Recognition Category H or S.

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	Deleted	The occurrence of this condition does not, by itself, constitute a radiological emergency. There is no associated ECL escalation path for the condition. It also would not prohibit implementation of the emergency plan or security plan. To the extent that a required shutdown was impeded by an equipment-related issue, the event may be reportable under the requirements of 10 CFR 50.72, or classified as an emergency via other ICs in Recognition Category H or S.

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 Control Room indications for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	This IC addresses the difficulty associated with monitoring normal plant conditions without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. The Rev 6 approach was developed to address industry Operating Experience with this IC and EAL, and staff review comments. See IC Basis and Developer Notes for discussion of the Rev 6 approach.

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 Unusual Event promptly upon determining that 15 minutes 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	An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer. [see table below]	This IC addresses the difficulty associated with monitoring normal plant conditions without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. The Rev 6 approach was developed to address industry Operating Experience with this IC and EAL, and staff review comments. See IC Basis and Developer Notes for discussion of the Rev 6 approach.

[*BWR parameter list*]	[*PWR parameter list*]
Reactor Power	Reactor Power
RPV Water Level	RCS Level
RPV Pressure	RCS Pressure
Primary Containment Pressure	In-Core/Core Exit Temperature
Suppression Pool Level	Levels in at least (site-specific number) steam generators

[*BWR parameter list*]	[*PWR parameter list*]
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
SU4	Fuel Clad Degradation MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SU3	Reactor coolant activity greater than Technical Specification allowable limits. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Revised IC wording to better reflect the concern addressed by the EALs, i.e., RCS activity levels that exceed Technical Specification allowable limits.

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) reading greater than (site-specific value).	Simplified EAL wording by moving development wording to the Developer Notes.
2	(Site specific coolant sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits.)	2	Sample analysis indicates that a reactor coolant activity value is greater than an allowable limit specified in Technical Specifications.	Reworded for clarity. The Rev 6 wording is inclusive of all Technical Specification limits; however, the Developer Notes allow this option, “If desired, developers may enter all the reactor coolant activity parameter(s) specified in Technical Specifications and the associated allowable limit(s) (e.g., values for dose equivalent I-131 and gross activity, time-dependent or transient values, etc.).”

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 result in more appropriate emergency classifications.

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 Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.		Added timing note associated with addition of the 15-minute EAL clock.
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 "(site-specific value)” to allow the use of an appropriate higher value if specified in site-specific Technical Specifications. See Developer Notes. The criterion “for 15 minutes or longer” was added to the EAL to preclude classification for brief and readily isolable RCS leaks.
2	Identified leakage greater than 25 gpm,	2	RCS identified leakage greater than (site-specific value) for 15 minutes or longer	Replaced the "25 gpm" value with "(site-specific value)” to allow the use of an appropriate higher value if specified in site-specific Technical Specifications. See Developer Notes The criterion “for 15 minutes or longer” was added to the EAL to preclude classification for brief and readily isolable RCS leaks.
N/A	N/A	3	Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer	Added EAL to address leakage from the RCS to a location outside containment. Used 25 gpm to align with the minimum value for identified leakage (i.e., this value should be readily quantifiable during the condition of interest using normally available Control Room indications). Included the criterion “for 15 minutes or longer” to preclude classification for brief and readily isolable RCS leaks. Addition of this EAL addressed a staff review comment.

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 or manual (trip [PWR] / scram [BWR]) fails to shutdown the reactor. MODE: Power Operation	Added new IC and associated EALs based on the failure of an automatic or manual trip/scram to shutdown the reactor. Following the failure on an automatic reactor (trip [PWR] / scram [BWR]), operators will promptly initiate manual actions at the reactor control consoles to shutdown the reactor (e.g., initiate a manual reactor (trip [PWR] / scram [BWR])). If these manual actions are successful in shutting down the reactor, core heat generation will quickly fall to a level within the capabilities of the plant's decay heat removal systems. If an initial manual reactor (trip [PWR] / scram [BWR]) is unsuccessful, operators will promptly take manual action at another location(s) on the reactor control consoles to shutdown the reactor (e.g., initiate a manual reactor (trip [PWR] / scram [BWR])) using a different switch). Depending upon several factors, the initial or subsequent effort to manually (trip [PWR] / scram [BWR]) the reactor, or a concurrent plant condition, may lead to the generation of an automatic reactor (trip [PWR] / scram [BWR]) signal. If a subsequent manual or automatic (trip [PWR] / scram [BWR]) is successful in shutting down the reactor, core heat generation will quickly fall to a level within the capabilities of the plant's decay heat removal systems. The plant response to the failure of an automatic or manual reactor (trip [PWR] / scram [BWR]) will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If subsequent operator manual actions taken at the reactor control consoles are also unsuccessful in shutting down the reactor, then the emergency classification level will escalate to an Alert via IC SA5. Depending upon the plant response, escalation is also possible via IC FA1. Absent the plant conditions needed to meet either IC SA5 or FA1, an Unusual Event declaration is appropriate for this event.

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

	N/A	**Note:** A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.		Added new Note to assist with EAL assessment and promote accurate classification.
N/A	N/A	1	a. An automatic (trip [PWR] / scram [BWR]) did not shutdown the reactor. **AND** b. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor.	Added new EALs based on the failure of an automatic or manual trip/scram to shutdown the reactor. Extensive industry Operating Experience with this event, as presented to operators in plant simulators, indicates that it is very short-lived provided that a subsequent manual or automatic scram/trip is successful. A prompt and successful manual trip/scram from the reactor control consoles, or automatic trip/scram will successfully preclude a loss or potential loss of either the RCS or fuel clad barriers. As noted above, absent the plant conditions needed to meet either IC SA5 or FA1, an Unusual Event declaration is appropriate for this event.
		2	a. A manual trip ([PWR] / scram [BWR]) did not shutdown the reactor. **AND** b. **EITHER** of the following: 1. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor. **OR** 2. A subsequent automatic (trip [PWR] / scram [BWR]) is successful in shutting down the reactor.	

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	No change.

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. Loss of all onsite communications affects ability to perform routine operations.
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 Rev 5 EAL #2 into loss of ORO notification capability and loss of NRC notification capability for Rev 6. This reflects the different methods used by licensees to perform these notifications.
N/A	N/A	3	Loss of **ALL** of the following NRC communications methods: (site-specific list of communications methods)	Split example Rev 5 EAL #2 into loss of ORO notification capability and loss of NRC notification capability for Rev 6. This reflects the different methods used by licensees to perform these notifications.

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	SU7	Failure to isolate containment or loss of containment pressure control. [PWR] MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Added new IC and EALs to support deletion of Rev 5 IC FU1. The added EALs addressed two Rev 5 conditions that would not be classified under other Rev 6 ICs/EALs; see attachment 1 of this change summary for additional information. The two Rev 5 condition are PWR Containment Potential Loss 2.C and Containment Loss 5.A. The EAL wording was modified as needed to reflect relocation to Recognition Category S and inclusion as stand-alone EALs.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	a. Failure of containment to isolate when required by an actuation signal. **AND** b. **ALL** required penetrations are not closed within 15 minutes of the actuation signal.	This EAL addresses a failure of one or more containment penetrations to automatically isolate (close) when required by an actuation signal. [Addresses Rev 5 PWR Containment Loss 5.A] The 15-minute criterion is included to allow operators time to manually isolate the required penetrations, if possible.
N/A	N/A	2	a. Containment pressure greater than (site-specific pressure). **AND** b. Less than one full train of (site-specific system or equipment) is operating per design for 15 minutes or longer.	This EAL addresses an event that results in high containment pressure with a concurrent failure of containment pressure control equipment or systems. [Addresses Rev 5 PWR Containment Potential Loss 2.C] The 15-minute criterion is included to allow operators time to manually start equipment that may not have automatically started, if possible.

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	IC SU8 and associated EALs have been deleted. 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: "*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*." 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). 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 transients during startups.
1	UNPLANNED sustained positive startup rate observed on nuclear instrumentation. [*PWR*]	2	N/A	

				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. Also, this event would not inhibit implementation of the emergency plan or security plan. Therefore, IC CU8 and associated EALs have been deleted.

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SA2	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. MODE: Power Operation, Startup	SA5	Automatic or manual (trip [PWR] / scram [BWR]) fails to shutdown the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor. MODE: Power Operation	This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor (trip [PWR] / scram [BWR]) that results in a reactor shutdown, and subsequent operator manual actions taken at the reactor control consoles to shutdown the reactor are also unsuccessful. The plant response to the failure of an automatic or manual reactor (trip [PWR] / scram [BWR]) will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If the failure to shutdown the reactor is prolonged enough to cause a challenge to the core cooling [PWR] / RPV water level [BWR] or RCS heat removal safety functions, the emergency classification level will escalate to a Site Area Emergency via IC SS5. Depending upon plant responses and symptoms, escalation is also possible via IC FS1. Absent the plant conditions needed to meet either IC SS5 or FS1, an Alert declaration is appropriate for this event. Deleted Startup mode; see Developer Notes for discussion.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
	N/A	**Note:**	A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.	Added new Note is assist with EAL assessment and promote accurate classification.
1	a. An automatic scram (trip) failed to shutdown the reactor. **AND** b. Manual actions taken at the reactor control console successfully shutdown the	1	a. An automatic or manual (trip [PWR] / scram [BWR]) did not shutdown the reactor. **AND** b. Manual actions taken at the reactor control consoles are not successful in shutting	EALs revised to align with revised IC. Eliminated “site specific indications of plant shutdown” to address a staff comment. The Basis addresses this criterion. The Developer Notes allow for inclusion depending upon site preferences.

	reactor as indicated by (site specific indications of plant shutdown).		down the reactor.	

Rev. 5 IC#	Rev. 5 IC Wording and Mode Applicability	Rev. 6 IC#	Rev. 6 IC Wording and Mode Applicability	Change Summary
SA4	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. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	SA2	UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	This IC addresses the difficulty associated with monitoring rapidly changing plant conditions during a transient without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. The Rev 6 approach was developed to address industry Operating Experience with this IC and EAL, and staff review comments. See IC Basis and Developer Notes for discussion of the Rev 6 approach.

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 Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.		Reworded for clarity.
1	a. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer: • (Site specific control room safety system annunciation) **OR** • (Site specific control room safety system indication) **OR** b. **EITHER** of the following: • A SIGNIFICANT TRANSIENT is in progress. • Compensatory indications are unavailable.	1	a. An UNPLANNED event results in the inability to monitor one or more of the following parameters from within the Control Room for 15 minutes or longer. [see table below] **AND** b. ANY of the following transient events in progress. • Automatic or manual runback greater than 25% thermal reactor power • Electrical load rejection greater than 25% full electrical load • Reactor scram [BWR] / trip	This IC addresses the difficulty associated with monitoring rapidly changing plant conditions during a transient without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. The Rev 6 approach was developed to address industry Operating Experience with this IC and EAL, and staff review comments. See IC Basis and Developer Notes for discussion of the Rev 6 approach. Deleted definition of SIGNIFICANT TRANSIENT and included the specific transients of interest in EAL 1.b.

			[PWR] • ECCS (SI) actuation • Thermal power oscillations greater than 10% [BWR]	

[*BWR parameter list*]	[*PWR parameter list*]
Reactor Power	Reactor Power
RPV Water Level	RCS Level
RPV Pressure	RCS Pressure
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	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: Power Operation, Startup, Hot Standby, Hot Shutdown	SA1	Loss of all but one AC power source to emergency buses for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	Simplified IC wording. The criterion "such that any additional single failure would result in station blackout" provided no additional clarification to the IC statement. The new wording "loss of all but one AC power source" provides better consistency with other loss of AC power IC statements, and addresses a staff review comment.

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 Alert promptly upon determining that 15 minutes 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	a. AC power capability to (site-specific emergency buses) is reduced to a single power source for 15 minutes or longer. **AND** b. Any additional single power source failure will result in a loss of all AC power to SAFETY SYSTEMS.	Replaced "station blackout" with "loss of all AC power to SAFETY SYSTEMS" to be more descriptive of the IC intent.

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	SA9	Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	New IC and EAL. This IC addresses the focus of concern of Rev 5 ICs HA1 and HA2; specifically, a hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. The new wording is intended to improve classification accuracy by providing more readily identifiable and assessable EAL criteria.

Rev. 5 EAL #	Rev. 5 Example EAL Wording	Rev. 6 EAL #	Rev. 6 Example EAL Wording	Change Summary
N/A	N/A	1	a. The occurrence of ANY of the following hazardous events: • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • (site-specific hazards) • Other events with similar hazard characteristics as determined by the Shift Manager **AND** b. **EITHER** of the following: 1. Event damage has caused indications of degraded performance in at least one train of a	Added new EAL that subsumes the Hazards-based event EALs in Rev 5 ICs HA1 and HA2, and aligns with the new IC. The new wording is intended to improve classification accuracy by providing more readily identifiable and assessable EAL criteria.

			SAFETY SYSTEM needed for the current operating mode. **OR** 2. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode.	

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 buses 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 Site Area Emergency promptly upon determining that 15 minutes 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 buses) 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	Inability to shutdown the reactor causing a challenge to (core cooling [PWR] / RPV water level [BWR]) or RCS heat removal. MODE: Power Operation	This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor (trip [PWR] / scram [BWR]) that results in a reactor shutdown, all subsequent operator actions to manually shutdown the reactor are unsuccessful, and continued power generation is challenging the capability to adequately remove heat from the core and/or the RCS. This condition is appropriately classified as a Site Area Emergency. If the event continues to be unmitigated to the extent that the containment barrier becomes challenged, the emergency will escalate to General Emergency via IC FG1 (i.e., receipt of indications for a potential loss or loss of the containment barrier). Deleted Startup mode; see Developer Notes for discussion.

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 or manual (trip [PWR] / scram [BWR]) did not shutdown the reactor. **AND** b. All manual actions to shutdown the reactor have been unsuccessful. **AND** c. EITHER of the following conditions exist: (Site-specific indication of an inability to adequately remove heat from the core) (Site-specific indication of an inability to adequately remove heat from the RCS)	EALs revised to align with revised IC.

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	SS8	Loss of all Vital DC power 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 Site Area Emergency promptly upon determining that 15 minutes 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 buses) for 15 minutes or longer.	Reworded for clarity.

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	The condition described by this IC is generally bounded by the Rev 6 IC SA2, UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress. As stated in the Basis (and further explained in the Developer Notes), an "inability to monitor" means that values for one or more of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room indications for the given parameter(s). For example, the indications for reactor power are unavailable from all analog, digital and recorder sources within the Control Room (i.e., both normal and compensatory indications are lost). Absent a total loss of AC and/or DC power, the Rev 6 preparation team believes that this condition is more appropriately classified as an Alert. This ECL will result in mobilization of the ERO, and activation of the TSC and OSC. ERO personnel at the onsite ERFs will be available to assist the Control Room with event assessment, recovery of lost indications and plant shutdown. It should be noted that the "common cause" initiating events most likely result in this condition (i.e., simultaneous loss of both normal and compensatory indications), will be classified as SAEs or GEs. See SS1, SS8, SG1 and SG2.

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: • (Site specific control room	N/A	N/A	See discussion above.

	safety system annunciation) **OR** • (Site specific control room safety system indication) **AND** b. A SIGNIFICANT TRANSIENT is in progress. **AND** c. Compensatory indications are unavailable.			

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 buses 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 General Emergency promptly upon determining that (site-specific hours) has been exceeded, or will likely be exceeded.		Added timing note.
1	a. Loss of all off-site and all on-site AC power to (site specific emergency busses). **AND** b. **EITHER** of the following: • 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 buses). **AND** b. **EITHER** of the following: • Restoration of at least one emergency bus in less than (site-specific hours) is not likely. • (Site-specific indication of an inability to adequately remove heat from the core)	Deleted “based on Fission Product Barrier monitoring.” Assessment of this EAL is not dependent upon monitoring required for the fission product barrier thresholds. All EALs and thresholds must be continuously monitored. Replaced term “Site specific indication of continuing degradation of core cooling with “Site-specific indication of an inability to adequately remove heat from the core” and revised the associated Developer Notes to provide better guidance on expected EAL content.

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	This IC was relocated to IC SS5. See discussion for that IC.

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: • (Site specific indication that core cooling is extremely challenged.) • (Site specific indication that heat removal is extremely challenged.)	1	N/A	This IC was relocated to IC SS5. See discussion for that IC.

NEI IC#	NEI IC Wording	CCNPP IC#(s)	CCNPP IC Wording	Difference/Deviation Justification
N/A	N/A	SG8	Loss of all AC and Vital DC power sources for 15 minutes or longer. MODE: Power Operation, Startup, Hot Standby, Hot Shutdown	This IC and EAL were added to Revision 6 to address operating experience from the March, 2011 accident at Fukushima Daiichi.

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 General Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.		Added timing note.
N/A	• N/A	1	Loss of **ALL** offsite and **ALL** onsite AC power to (site-specific emergency buses) for 15 minutes or longer. AND Indicated voltage is less than (site-specific bus voltage value) on **ALL** (site-specific vital DC busses) for 15 minutes or longer.	This IC and EAL were added to Revision 6 to address operating experience from the March, 2011 accident at Fukushima Daiichi.

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 applicable Recognition Category A and PD IC and EAL bases.
Appendix D: Basis for Permanently Defueled Station EALs	Deleted. Incorporated material in section 1.2 and the applicable Recognition Category PD IC and EAL bases.
Appendix E: Basis for ISFSI EALs	Deleted. Incorporated material in section 1.3 and the Recognition Category E IC and EAL basis.

Attachment 1
Justification for Deletion of IC FU1 - Unusual Event Based on a Loss or Potential Loss of Containment Loss

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.

ANALYSIS APPROACH

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 either an existing Unusual Event IC/EAL would be applicable or existing containment Technical Specification criteria is deemed to adequately address the condition.

Because the PWR Containment Barrier thresholds are relatively more complex, the following table presents the details of this analysis for PWRs. The table presents the logic used to support the elimination of Rev 5 IC FU1.

CONCLUSION

This technical analysis supports the conclusion that the Section 5.9 fission product barrier IC FU1 should be deleted from the fission product barrier classification scheme based on the fact that each of the existing specific loss or potential loss thresholds, as defined, either:

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- represents a challenge to one or more of the other barriers (escalatory to a SAE or GE), or
- would result in declaration of a UE under another existing EAL threshold, or
- is adequately controlled under Technical Specification containment operability requirements.

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Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
PL 1.A	Containment-Red Entry Conditions Met	PL 4.D	The method for incorporating thresholds based on Westinghouse CSFSTs is addressed in Developer Notes. Where employed by a licensee, application will be consistent with the Rev 5 usage. See Developer Notes for discussion on revised application of CSFSTs to thresholds for plants that use Westinghouse ERGs.	A containment pressure exceeding design limits (i.e., the Red condition) cannot exist independent of a loss of the RCS barrier, or a loss of containment pressure control systems. A loss of the RCS barrier requires an Alert declaration per IC FA1. A loss of containment pressure control, absent a challenge to the RCS barrier, requires an Unusual Event declaration per IC SU7. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
L 2.A	A containment pressure rise followed by a rapid unexplained drop in containment pressure	L 4.A.1	Containment isolation is required **AND** Containment integrity has been lost based on Emergency Director judgment	A containment pressure rise due to an RCS leak would be classified as an Alert per IC FA1. In the event that a containment pressure rise was caused by a break in non-RCS piping (e.g., a main steam line break), a drop in containment pressure caused by a failure to isolate containment would be classified as an Unusual Event in accordance with new IC SU7. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
L 2.B	Containment pressure or sump level response not consistent with LOCA conditions	L 4.B	Indications of RCS leakage outside of containment	A LOCA condition due to an RCS leak would be classified as an Alert per IC FA1. RCS leakage outside of containment for values less than those associated with a LOCA would be classified as an Unusual Event in accordance with IC SU4. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
PL 2.A	Containment pressure greater than (site specific value) and rising	PL 4.A	Containment pressure greater than (site specific value)	A containment pressure exceeding design limits cannot exist independent of a loss of the RCS barrier, or a loss of containment pressure control systems. A loss of the RCS barrier requires an Alert declaration per IC FA1. A loss of containment pressure control, absent a challenge to the RCS barrier, requires an Unusual Event declaration per IC SU7. An Unusual Event IC within the PWR FPB for this condition is

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Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
				unnecessary.
PL 2.B	Explosive mixture exists inside containment	PL 4.B	Explosive mixture exists inside containment	An explosive mixture inside containment cannot exist independent of a loss or potential loss of the RCS and fuel clad barriers (i.e., preconditions for the high temperature zircaloy-water reactions that release hydrogen). A loss or potential loss of both the RCS and fuel clad barriers requires a Site Area Emergency declaration. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
PL 2.C	Pressure greater than containment depressurization actuation setpoint **AND** Less than one full train of depressurization equipment operating	PL 4.C	Containment pressure greater than (site-specific pressure setpoint) **AND** Less than one full train of (site-specific system or equipment) is operating per design for 15 minutes or longer.	A new Unusual Event IC and EAL were added to address this condition in the event that there is no loss or potential loss of the RCS fission product barrier. Such a condition could occur if the containment pressure increase was due to a break in a high-energy, non-RCS system (e.g., main steam or feedwater systems). See IC SU7. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
PL 3.A	Core exit thermocouple in excess of (site specific) ^{o}F **AND** Restoration procedures not effective within 15 minutes	PL 2.A	(Site-specific criteria for entry into core cooling restoration procedure) **AND** Restoration procedure not effective within 15 minutes.	The conditions requiring entry into a core cooling restoration procedure cannot exist independent of a loss or potential loss of the RCS barrier. A loss or potential loss of the RCS barrier requires an Alert declaration. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
PL 3.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.	PL 2.A	(Site-specific criteria for entry into core cooling restoration procedure) **AND** Restoration procedure not effective within 15 minutes.	The conditions requiring entry into a core cooling restoration procedure cannot exist independent of a loss or potential loss of the RCS barrier. A loss or potential loss of the RCS barrier requires an Alert declaration. An Unusual Event IC within the PWR FPB for this condition is unnecessary.

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Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
L 4.A	RUPTURED SG is also FAULTED outside of containment	L 1.A	A leaking or RUPTURED SG is FAULTED outside of containment.	A RUPTURED steam generator has a primary-to-secondary leak rate sufficient to cause an ECCS/SI actuation. This leak rate is well in excess of the leak rate specified in Unusual Event IC SU4. In addition, conditions associated with a RUPTURE meet the threshold for a loss of the RCS barrier; this requires an Alert declaration. An Unusual Event threshold for this condition is unnecessary.
L 4.B	Primary-to-Secondary leakrate greater than 10 gpm **AND** UNISOLABLE steam release from affected SG to the environment	SU4 – EAL #2	RCS identified leakage greater than (site-specific value) for 15 minutes or longer. Developer Note – "For the site-specific leak rate value, enter the higher of 25 gpm or value specified in the site's Technical Specifications for this type of leakage." L.1.A A leaking or RUPTURED SG is FAULTED outside of containment.	The approach used in Rev. 6 addresses the primary concerns of the Rev. 5 wording and corrects related legacy issues. The following points relevant to this change are noted: • The original NUMARC-007 specified a leak rate greater than Technical Specifications for this threshold. • The original NUMARC-007 specified an RCS leak rate of 25 gpm for identified leakage (see SU5). The associated regulatory analysis concluded that this was a reasonable value that could be readily observed with normal control room indications. • PWR Technical Specifications consider primary-to-secondary leakage to be "identified leakage". • In NEI 99-01 Rev. 4, the leak rate value for this threshold was changed to 10 gpm; the basis stated that this value reflected the pressure boundary leakage value from IC SU5. The associated Regulatory Analysis stated, "The 10 gpm leak rate is consistent with the value used in IC SU5 for RCS leakage." The Rev 6 task force believes that the decision to use this value was incorrect. As noted above, primary-to-secondary leakage is identified leakage, not pressure boundary leakage. The value specified in NEI 99-01 Rev. 4 should have been 25 gpm, not 10 gpm.

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

Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
				• As noted above, the NUMARC-007 regulatory analysis determined that 25 gpm is an appropriate value for identified leakage because it can be readily observed with normal control room indications. The decision to use a lower leak rate value (i.e., 10 gpm) for primary-to-secondary leakage was not consistent with this analysis. Not only would operators be expected to determine a smaller value (10 gpm vs. 25 gpm), they would have to do so during transient conditions when RCS and steam generator pressure and level changes would be affected by the "UNISOLABLE steam release" thus making timely and accurate leak rate determinations extremely difficult. The identification of lower leak rate value during the expected transient conditions would not be "readily observable" (and more challenging than under steady-state conditions). • The NEI 99-01 Rev 4 regulatory analysis states, "In addition, the condition 'RUPTURED S/G is also FAULTED outside of Containment' was added to this EAL. This condition would be encompassed by the 10 gpm leak rate condition and, therefore, is redundant to this condition." The NEI Rev 6 task force is not aware of any site that considers a 10 gpm primary-to-secondary leak rate to be equivalent to a RUPTURED steam generator. Under the Rev. 6 EALs, primary-to-secondary (identified) leakage greater than 25 gpm (or the site-specific Technical Speciation value) is classified as an Unusual Event in accordance with IC SU4. This eliminates the need to have a conditional statement related to a steam release and uses a value that is "readily observable" as in accordance with the NUMARC-007 regulatory analysis. The remaining and limited set of conditions from Rev.

Attachment 1
Justification for Deletion of IC FU1 - Unusual Event Based on a Loss or Potential Loss of Containment Loss

Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
				5 – a primary-to-secondary leak rate greater than 10 gpm but less than 25 gpm, and occurring with an UNISOLABLE steam release to the environment – is not risk significant and does not warrant the declaration of an Unusual Event. It's elimination also restores consistency with the change basis discussed in the NEI 99-01 Rev 4 regulatory analysis. If the primary-to-secondary leak rate increases to a point that operation of a second charging pump or safety injection is required, the emergency classification would escalate to an Alert. If this occurred in conjunction with the steam generator being faulted, a Site Area Emergency would be declared. A table illustrating the classification escalation for this condition is presented in the Rev 6 basis of PWR Containment Barrier Loss threshold 1.A.
L 5.A	Failure of all valves in any one line to close **AND** Direct downstream pathway to the environment exists after containment isolation signal	L 4.A.2	Containment isolation is required **AND** UNISOLABLE pathway from the containment to the environment exists	A new Unusual Event IC and EAL were added to address this condition in the event that there is no loss or potential loss of the RCS fission product barrier (since either would require an Alert declaration). Such a condition could occur if the containment pressure increase was due to a break in a high-energy, non-RCS system (e.g., main steam or feedwater systems). See IC SU7. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
PL 6.A	Containment radiation monitor reading greater than (site specific value)	PL 3.A	Containment radiation monitor reading greater than (site-specific value)	The conditions associated with 20% fuel cladding failure (as referred to in the Developer Notes) cannot exist independent of a loss or potential loss of the RCS and fuel clad barriers. A loss or potential loss of both the RCS and fuel clad barriers requires a Site Area Emergency declaration. An Unusual Event IC within the PWR FPB for this condition is unnecessary.
L 7.A	(site specific) as applicable	L 5.A	(site-specific as applicable)	N/A

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Rev. 5 ID	Rev. 5 Threshold Wording	Rev. 6 ID	Rev. 6 Threshold Wording	Basis for Deleting FU1
PL 7.A	(site specific) as applicable	PL 5.A	(site-specific as applicable)	N/A
L 8.A	Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier	L 6.A	ANY condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	N/A
PL 8.A	Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier	PL 6.A	ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier	N/A

Attachment 2
Disposition of NEI 99-01 Revision 5 FAQs

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
1	Notes	McCain	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? 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."	A	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. 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	Implemented in Rev. 6 Clarified in Section 4.3
2	Definitions	Stobaugh	Section 5.4 Definitions contains the following: AFFECTING SAFE SHUTDOWN, BOMB, CIVIL DISTURBANCE, EXTORTION, HOSTAGE, INTRUSION, SABOTAGE, and STRIKE ACTION None of these definitions are used in the document. Therefore the definitions are no longer needed. Delete the definitions	D	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, 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.	Deleted definitions not used within the Rev. 6 document

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Attachment 2
Disposition of NEI 99-01 Revision 5 FAQs

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					This EALFAQ is DENIED	
3	AU1, AA1	Egdorf	Add the below wording as clarification to the EAL basis section for AU1 and AA1: 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	D	The radiation monitor readings are VALID as defined in the endorsed guidance, hence the proposed resolution is DENIED. 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 .	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 limited subset of EALs : "All EALs and FPBs (i.e., all thresholds) assume valid indications."	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 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	Deleted term "valid" in all instances

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Disposition of NEI 99-01 Revision 5 FAQs

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					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 the past twenty-four hours excluding the current peak value. Add the formal definition to the definitions section and remove the asterisk definition from the EALs.	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, and as such, does not alter the intent of the specified EALs as endorsed by the staff.	Added definition as suggested
6	AU2.1, AA2.1	McCain	Revise AU2.1.a wording as follows: UNPLANNED water level drop in (Site specific reactor refueling pathway) as indicated by (site specific level or indication).	A	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. 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.	Considered in revision to IC AU2 and AA2
7	AA1	Egdorf		X		X
8	AS1. AG1	McCain	Is there a technical reason for the	A	The staff agrees that the capitalization, or	Standardized on "mRem"

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			capitalization or non-capitalization of the abbreviation REM? The abbreviation can be stated as mRem, mrem, or mREM.		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 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. 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.	
9	AS1, AG1	McCain	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	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. However, the NRC rejects the suggestion that the note and Threshold 1 from AS1	Deleted the wording 'using actual meteorology.' in AG1 IC.

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Disposition of NEI 99-01 Revision 5 FAQs

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					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 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	

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Attachment 2
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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
					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 response to a transient." 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.	Revised definition and replaced term "unexplained" with "unplanned" throughout
11	CU4	McCain	Revise IC wording as follows: "UNPLANNED loss of decay heat removal capability." Revise EAL #1 wording as follows: "RCS temperature greater than (site specific Technical Specification cold shutdown temperature limit) due to an	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. The staff considers the proposed change	Revise IC wordingto read UNPLANNED increase in RCS temeperature" Revised Example EAL #1 to read: ″UNPLANNED increase in RCS temperature to greater

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			UNPLANNED loss of decay heat removal capability."		to CU4.1 to be of little value, therefore this part of the EALFAQ is DENIED.	than (site-specific Technical Specification cold shutdown temperature limit).″
12	CU7	Stobaugh	Delete UNPLANNED from the IC matrix	A	The staff agrees that the wording in table 5.6 is inconsistent with the actual IC wording. 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 as suggested
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 RCS pressure increase 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 4th 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	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	Deleted FU1 Justified in Attachment 1

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Disposition of NEI 99-01 Revision 5 FAQs

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			Containment to Isolate Following a High-Energy Line Break" to support elimination of FU1. See attached Technical Analysis document.		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."	
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 Developers Notes
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
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	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	See Change Summary for PWR FPB Thresholds

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			Heat Sink is require		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."	
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
20	CTMT L4	Young	1) Revise the basis to clearly reflect that the threshold applies to a FAULTED SG. 2) See attached proposed basis for revised wording which addresses all items above. 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).	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

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
21	HU1.1	Baker	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? 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 threshold values.	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 met. The proposed changes are DENIED.	HU1.1 (HU2) revised to read: (1) a. Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: (site-specific indication that a seismic event met or exceeded OBE limits) **AND** b. The vibratory ground motion is felt and recognized as an earthquake based on a consensus of control room operators on duty at the time..
22	HU2.1, HA2.1	Baker, Stobaugh	Add the following to the Basis to clearly define the intent of the 15 minute timer in threshold 1: 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	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 HU2 and HA2 Change Summary

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			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 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	Revise threshold as follows: EXPLOSION within PROTECTED AREA resulting in damage to permanent structure or equipment associated with plant operations. 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.	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.	See HU2 and HA2 Change Summary

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FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
24	HU3, HA3	Egdorf	Add in Bases section: A 20 lb CO2 extinguisher discharge will not create an IDLH atmosphere unless the room volume is less than 2500 cubic feet. (Reference: OE25324, Alert Declared Due to CO2 Fire Extinguisher Discharge)	P	The staff finds the proposed change for HU3 to be in alignment with expectations and the approved guidance and is considered a 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	See HU3 and HA3 change summary.
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 the potential for causing significant damage to the plant (refer to the Security Plan for a more detailed definition).	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.
27	HA3	McCain	The NEI 99-01 Rev 5 IC and EAL wording is overly confusing by its	D	The proposed change basically returns the IC to the wording from the previous	Rev. 6 IC reworded to read: " Gas release impeding

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			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.		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.	access to equipment... "
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: " Control Room evacuation resulting in transfer of plant control to alternate locations "
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. 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.	Revised HG1.1 to read: (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 has occurred: 1. **ANY** of the following safety functions cannot be controlled or maintained. Reactivity control Core cooling

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						[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 revised as suggested.
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 classification	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
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	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	See Rev. 6 Change Summary for SU3, SA4 and SS6

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Attachment 2
Disposition of NEI 99-01 Revision 5 FAQs

FAQ #	IC/EAL	Initiator	Issue	NRC Status	NRC Disposition	Rev. 6 Disposition
			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.		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."	
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 bases pages.	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 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.	Incorporated EPR specific guidance where applicable.
34	SU5.1, SU5.2, CU1.1 &	Egdorf	1) Add the following to the associated EAL Bases section: "Refer to plants Technical Specifications for Identified,	S	This EALFAQ is DENIED as the RCS Leakage is not based upon Tech Specs. In addition, the staff’s expectations for	Intent implemented in Rev. 6

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	1.2 (Rev. 4)		Unidentified and Pressure Boundary Leakage definition." 2) Add "15 minutes or longer" to the EAL's		CU1 was already clarified in Revision 5 (from the wording in Revision 4) of NEI 99-01.	
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 in removing the information from the 3rd sentence in the 4th paragraph and that change is DENIED.	See SA2 Change Summary
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	R-20	This EALFAQ is redundant with EALFAQ # 2009-20 and is therefore DENIED.	See FAQ #20

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			vs. 10 gpm.			
39	Definitions, SA4, SS6	Stobaugh	Delete the definition of SIGNIFICANT TRANSIENT, replace the EAL with a site specific wording in those locations where applicable, and add a developer note to provide guidance for development of the site specific element of the EAL.	A	The removal of this defined term from the approved development guidance and incorporating it into the specific EALs of 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.	Deleted Definition
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 all areas containing safety structure, system, or components. Typically these will include all Category 1, VITAL AREAS, and safe shutdown structures/areas.	S	This EALFAQ is beyond the scope of the EALFAQ process and is therefore DENIED. Proposed changes to this must be submitted and evaluated as part of a revision to the development guidance.	Standardized all Category H site specific areas to containing components of safety systems.

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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 exceeds the leakage thresholds which would exceed the loss or potential loss thresholds.	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 developed follow a consistent threat-based approach for the entire barrier Loss-Potential Loss thresholds.	Implemented in Rev. 6
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	Based upon the justification provided, the staff concludes that: <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	No action required for this FAQ

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					their emergency plan. <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.	

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