

ATTACHMENT 10

**DISCUSSION OF REVISION
TO THE
RADIOLOGICAL EMERGENCY PLAN ANNEX
FOR
QUAD CITIES NUCLEAR POWER STATION
EP-AA-1006**

Enclosures

- Enclosure 10A - EAL Comparison Matrix Document
- Enclosure 10B - EAL Red-Line Basis Document
- Enclosure 10C - EAL Basis Document



NEI 99-01

REVISION 6

DEVELOPMENT OF EMERGENCY ACTION LEVELS FOR NON-PASSIVE REACTORS

ATTACHMENT 10

**DISCUSSION OF REVISION TO THE RADIOLOGICAL
EMERGENCY PLAN ANNEX FOR**

QUAD CITIES NUCLEAR STATION



Exelon Generation.

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AG1</p> <p>Initiating Condition – GENERAL EMERGENCY</p> <p>Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.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. <p>1. Reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <p>(site specific monitor list and threshold values)</p> <p>2. Dose assessment actual meteorology indicates doses greater than 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond (site specific dose receptor point)</p> <p>3. Field survey results indicate EITHER of the following at or beyond (site specific dose receptor point):</p> <ul style="list-style-type: none"> Closed window dose rates greater than 1000 mR/hr expected to continue for 60 minutes or longer. Analysis of field survey samples indicate thyroid CDE greater than 5000 mrem for one hour of inhalation. 	<p style="text-align: right;">RG1</p> <p>Initiating Condition:</p> <p>Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mRem TEDE or 5,000 mRem thyroid CDE.</p> <p>Operating Mode Applicability:</p> <p>1,2,3,4,5,D</p> <p>Emergency Action Level (EAL):</p> <p>Notes:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event 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. Classification based on effluent monitor readings assumes that a release path to the environment is established. 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. <p>1. The sum of readings on the Rx Bldg and Chimney SPINGs > 3.84 E+09 uCi/sec for ≥ 15 minutes (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate).</p> <p>OR</p> <p>2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of EITHER:</p> <p>a. > 1000 mRem TEDE</p> <p>OR</p> <p>b. > 5000 mRem CDE Thyroid</p> <p>OR</p> <p>3. Field survey results at or beyond the site boundary indicate EITHER:</p> <p>a. Gamma (closed window) dose rates >1000 mR/hr are expected to continue for ≥ 60 minutes.</p> <p>OR</p> <p>b. Analyses of field survey samples indicate > 5000 mRem CDE Thyroid for 60 minutes of inhalation.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitors and Threshold values to ensure timely classification.</p> <p>2) Added the following to bullet #3 " Classification based on effluent monitor readings assumes that a release path to the environment is established." In order to delete the following from the basis "Classification based on effluent monitor readings assumes that a release path to the environment is established. 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." This allows for more timely classification since all the basis information pertaining to Note bullet 3 will be contained in the IC and therefor readily available on the 11x17 procedure matrix used by the SM.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AS1</p> <p>Initiating Condition – SITE AREA EMERGENCY Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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. <p>1. Reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <p>(site specific monitor list and threshold values)</p> <p>2. Dose assessment actual meteorology indicates doses greater than 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond (site specific dose receptor point)</p> <p>3. Field survey results indicate EITHER of the following at or beyond (site specific dose receptor point):</p> <ul style="list-style-type: none"> Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer. Analysis of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation. 	<p style="text-align: right;">RS1</p> <p>Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 100 mRem TEDE or 500 mRem thyroid CDE.</p> <p>Operating Mode Applicability: 1,2,3,4,5,D</p> <p>Emergency Action Level (EAL):</p> <p>Notes:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event 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. Classification based on effluent monitor readings assumes that a release path to the environment is established. 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. <p>1. The sum of readings on the Rx Bldg and Chimney SPINGs > 3.84 E+08 uCi/sec for ≥ 15 minutes (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate).</p> <p>OR</p> <p>2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of EITHER:</p> <p>a. > 100 mRem TEDE</p> <p>OR</p> <p>b. > 500 mRem CDE Thyroid</p> <p>OR</p> <p>3. Field survey results at or beyond the site boundary indicate EITHER:</p> <p>a. Gamma (closed window) dose rates >100 mR/hr are expected to continue for ≥ 60 minutes.</p> <p>OR</p> <p>b. Analyses of field survey samples indicate > 500 mRem CDE Thyroid for 60 minutes of inhalation.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitors and Threshold values to ensure timely classification.</p> <p>2) Added the following to bullet #3 " Classification based on effluent monitor readings assumes that a release path to the environment is established." In order to delete the following from the basis "Classification based on effluent monitor readings assumes that a release path to the environment is established. 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." This allows for more timely classification since all the basis information pertaining to Note bullet 3 will be contained in the IC and therefor readily available on the 11x17 procedure matrix used by the SM.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AA1</p> <p>Initiating Condition – ALERT</p> <p>Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Note:</p> <ul style="list-style-type: none"> 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. <p>1. Reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <p>(site-specific monitor list and threshold values)</p> <p>2. Dose assessment actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site specific dose receptor point)</p> <p>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.</p> <p>4. Field survey results indicate EITHER of the following at or beyond (site specific dose receptor point):</p> <ul style="list-style-type: none"> Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer. Analysis of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation. 	<p style="text-align: right;">RA1</p> <p>Initiating Condition:</p> <p>Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Notes:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event 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. Classification based on effluent monitor readings assumes that a release path to the environment is established. 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. <p>1. The sum of readings on the Rx Bldg and Chimney SPINGs > 3.84 E+07 uCi/sec for ≥ 15 minutes (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate).</p> <p>OR</p> <p>2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of EITHER:</p> <p>a. > 10 mRem TEDE</p> <p>OR</p> <p>b. > 50 mRem CDE Thyroid</p> <p>OR</p> <p>3. Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than EITHER of the following at or beyond the site boundary</p> <p>a. 10 mRem TEDE for 60 minutes of exposure</p> <p>OR</p> <p>b. 50 mRem CDE Thyroid for 60 minutes of exposure</p> <p>OR</p> <p>4. Field survey results at or beyond the site boundary indicate EITHER:</p> <p>a. Gamma (closed window) dose rates > 10 mR/hr are expected to continue for ≥ 60 minutes.</p> <p>OR</p> <p>b. Analyses of field survey samples indicate > 50 mRem CDE Thyroid for 60 minutes of inhalation.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitors and Threshold values to ensure timely classification.</p> <p>2) Added the following to bullet #3 " Classification based on effluent monitor readings assumes that a release path to the environment is established." In order to delete the following from the basis "Classification based on effluent monitor readings assumes that a release path to the environment is established. 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." This allows for more timely classification since all the basis information pertaining to Note bullet 3 will be contained in the IC and therefor readily available on the 11x17 procedure matrix used by the SM.</p> <p>3) A calculation was performed, in accordance with (IAW) guidance provided in NEI 99-01 revision 6 EAL AA1, to determine the effluent monitor response for a radioactive liquid release via the normal site release pathway. The liquid release would contain activity equivalent to provide 10mrem TEDE or 50mrem thyroid CDE at the site boundary. The calculation determined the effluent monitor response would be >110% of the instrument maximum range and as such, IAW NEI 99-01 Rev 6 guidance, was not included in this EAL.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AU1</p> <p>Initiating Condition – UNUSUAL EVENT</p> <p>Release of gaseous or liquid radioactivity greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Note:</p> <ul style="list-style-type: none"> 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, indicating that the release path is isolated, the effluent monitor reading is no longer valid for classification purposes. <ol style="list-style-type: none"> 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) 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. 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. 	<p style="text-align: right;">RU1</p> <p>Initiating Condition:</p> <p>Release of gaseous or liquid radioactivity greater than 2 times the ODCM limits for 60 minutes or longer.</p> <p>Operating Mode Applicability: 1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Notes:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event 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 60 minutes. Classification based on effluent monitor readings assumes that a release path to the environment is established. 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. <ol style="list-style-type: none"> Reading on ANY of the following effluent monitors > 2 times alarm setpoint established by a current radioactive release discharge permit for ≥ 60 minutes. <ul style="list-style-type: none"> Radwaste Effluent Monitor 1/2-1799-01 <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Discharge Permit specified monitor <p style="text-align: center;">OR</p> The sum of readings on the Rx Bldg and Chimney SPINGS > 4.38 E+05 uCi/sec for ≥ 60 minutes (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate). <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates > 2 times ODCM Limit with a release duration of ≥ 60 minutes. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitors and Threshold values to ensure timely classification.</p> <p>2) Added the following to bullet #3 " Classification based on effluent monitor readings assumes that a release path to the environment is established." In order to delete the following from the basis "Classification based on effluent monitor readings assumes that a release path to the environment is established. 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." This allows for more timely classification since all the basis information pertaining to Note bullet 3 will be contained in the IC and therefor readily available on the 11x17 procedure matrix used by the SM.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AG2</p> <p>Initiating Condition -- GENERAL EMERGENCY</p> <p>Spent fuel pool level cannot be restored to at least (site-specific Level 3 description) for 60 minutes or longer .</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels:</p> <p>NOTES: The Emergency Director should declare the General Emergency promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded</p> <p>1. Spent fuel pool level cannot be restored to at least (site-specific Level 3 description) for 60 minutes or longer.</p>	<p style="text-align: right;">RG2</p>	<p> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) EAL not used in accordance with the discussion in Section 1.4, NRC Order EA-12-051, it is recommended that this EAL be implemented when the enhanced spent fuel pool level instrumentation is available for use. The completion of the enhanced SFP level indicators and need for the inclusion of this EAL is being tracked in accordance with Exelon Generation Company, LLC's Initial Status Report to March 12, 2012 Commission Order Modifying Licenses with Regard for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) dated October 25,2012.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AS2</p> <p>Initiating Condition – SITE AREA EMERGENCY</p> <p>Spent fuel pool level cannot be restored to at least (site-specific Level 3 description)</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels:</p> <ol style="list-style-type: none"> Spent fuel pool level cannot be restored to at least (site-specific Level 3 description) 	<p style="text-align: right;">RS2</p>	<p> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) EAL not used in accordance with the discussion in Section 1.4, NRC Order EA-12-051, it is recommended that this EAL be implemented when the enhanced spent fuel pool level instrumentation is available for use. The completion of the enhanced SFP level indicators and need for the inclusion of this EAL is being tracked in accordance with Exelon Generation Company, LLC's Initial Status Report to March 12, 2012 Commission Order Modifying Licenses with Regard for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) dated October 25, 2012.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification		
<p style="text-align: right;">AA2</p> <p>Initiating Condition – ALERT</p> <p>Significant lowering of water level above, or damage to, irradiated fuel.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <ol style="list-style-type: none"> 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. 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) 3. Lowering of spent fuel pool level to (site-specific Level 2 value). 	<p style="text-align: right;">RA2</p> <p>Initiating Condition:</p> <p>Significant lowering of water level above, or damage to, irradiated fuel.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. <p>OR</p> <ol style="list-style-type: none"> 2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by ANY Table R1 Radiation Monitor reading >1000 mRem/hr. <table border="1" data-bbox="846 558 1270 698" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Table R1 Fuel Handling Incident Radiation Monitors</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"> <ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Monitor • 1(2) 1705-16B Fuel Pool Rad Monitor </td> </tr> </tbody> </table>	Table R1 Fuel Handling Incident Radiation Monitors	<ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Monitor • 1(2) 1705-16B Fuel Pool Rad Monitor 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitors and Threshold values to ensure timely classification.</p> <p>2) EAL #3 not used in accordance with the discussion in Section 1.4, NRC Order EA-12-051, it is recommended that this EAL be implemented when the enhanced spent fuel pool level instrumentation is available for use. The completion of the enhanced SFP level indicators and need for the inclusion of this EAL is being tracked in accordance with Exelon Generation Company, LLC's Initial Status Report to March 12, 2012 Commission Order Modifying Licenses with Regard for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) dated October 25, 2012.</p>
Table R1 Fuel Handling Incident Radiation Monitors				
<ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Monitor • 1(2) 1705-16B Fuel Pool Rad Monitor 				

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">AU2</p> <p>Initiating Condition: UNUSUAL EVENT UNPLANNED loss of water level above irradiated fuel. Operating Mode Applicability: All</p> <p>Example Emergency Action Levels:</p> <p>1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by ANY of the following: (site-specific level indications).</p> <p>AND</p> <p>b. UNPLANNED rise in area radiation levels as indicated by ANY of the following radiation monitors. (site-specific list of area radiation monitors)</p>	<p style="text-align: right;">RU2</p> <p>Initiating Condition: UNPLANNED loss of water level above irradiated fuel .</p> <p>Operating Mode Applicability: 1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by ANY of the following:</p> <ul style="list-style-type: none"> • Refueling Cavity water level < 282 in. (Upper Wide range simulated signal). OR • Spent Fuel Pool water level < 19 ft. above the fuel (< - 4 ft. indicated level). OR • Indication or report of a drop in water level in the REFUELING PATHWAY. <p>AND</p> <p>b. UNPLANNED Area Radiation Monitor reading rise on ANY radiation monitors in Table R1.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; margin: 0;">Table R1</p> <p style="text-align: center; margin: 0;">Fuel Handling Incident Radiation Monitors</p> <ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Mon • 1(2) 1705-16B Fuel Pool Rad Mon </div>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific level indication and monitors to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification										
<p style="text-align: right;">AA3</p> <p>Initiating Condition – ALERT</p> <p>Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>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</p> <ol style="list-style-type: none"> Dose rate greater than 15 mR/hr in ANY of the following areas: <ul style="list-style-type: none"> Control Room Central Alarm Station (other site-specific areas/rooms) 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) 	<p style="text-align: right;">RA3</p> <p>Initiating Condition:</p> <p>Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5,D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. <ol style="list-style-type: none"> Dose rate > 15 mR/hr in ANY of the following Table R2 areas: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Table R2 Areas Requiring Continuous Occupancy</p> <ul style="list-style-type: none"> Main Control Room (Unit 1 ARM Station #22) Central Alarm Station – (by survey) </div> <p style="text-align: center;">OR</p> UNPLANNED event results in radiation levels that prohibit or significantly impede access to ANY of the following Table R3 plant rooms or areas: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Table R3 Areas with Entry Related Mode Applicability</th> </tr> <tr> <th style="width: 50%; text-align: center;">Area</th> <th style="width: 50%; text-align: center;">Entry Related Mode Applicability</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Reactor Building*</td> <td style="text-align: center;">Mode 3 and 4</td> </tr> <tr> <td style="text-align: center;">Turbine Building*</td> <td style="text-align: center;">Mode 3</td> </tr> <tr> <td colspan="2" style="text-align: center;">*Areas required to establish shutdown cooling</td> </tr> </tbody> </table> </div> 	Table R3 Areas with Entry Related Mode Applicability		Area	Entry Related Mode Applicability	Reactor Building*	Mode 3 and 4	Turbine Building*	Mode 3	*Areas required to establish shutdown cooling		<p style="text-align: center;"><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <p>1) Listed site specific plant rooms and areas with identified mode applicability to ensure timely classification.</p>
Table R3 Areas with Entry Related Mode Applicability												
Area	Entry Related Mode Applicability											
Reactor Building*	Mode 3 and 4											
Turbine Building*	Mode 3											
*Areas required to establish shutdown cooling												

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SU3</p> <p>Initiating Condition: UNUSUAL EVENT Reactor coolant activity greater than Technical Specification allowable limits.</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <ol style="list-style-type: none"> 1. (Site-specific radiation monitor) reading greater than (site-specific value). <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. Sample analysis indicates that a reactor coolant activity value is greater than an allowable limit specified in Technical Specifications. 	<p style="text-align: right;">RU3</p> <p>Initiating Condition: Reactor coolant activity greater than Technical Specification allowable limits.</p> <p>Operating Mode Applicability: 1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. Offgas system radiation monitor HI-HI alarm. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. Specific coolant activity > 4.0 uCi/gm Dose equivalent I-131. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitor and threshold value to ensure timely classification.</p> <p>2) Listed this system category EAL in the radiological category EAL section to maintain consistency with current and previous revisions of Exelon EALs. This will ensure a timely classification since the threshold values are more aligned with the radiological category vice system category.</p>

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		Hot Matrix
FG1 Loss of any two barriers AND Loss or Potential Loss of third barrier. 1,2,3		FS1 Loss or Potential Loss of ANY two barriers. 1,2,3		FA1 ANY Loss or ANY Potential Loss of either Fuel Clad or RCS 1,2,3		1,2,3
Sub-Category	FC – Fuel Clad		RC – Reactor Coolant System		CT - Containment	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
1. RCS Activity / Primary Containment Pressure / Primary Containment Conditions	A. (Site specific indications that reactor coolant activity is greater than 300 uCi/gm dose equivalent I-131)	None	A. Primary containment pressure greater than (site-specific value) due to RCS leakage.	None	A. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise OR B. Primary containment pressure response not consistent with LOCA conditions.	A. Primary containment pressure greater than (site-specific value) OR B. (site-specific explosive mixture) exists inside primary containment OR C. HCTL exceeded.
2. RPV Water Level	A. Primary containment flooding required.	A. RPV water level cannot be restored and maintained above (site-specific RPV water level corresponding to top of active fuel) or cannot be determined.	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.	None	None	A. Primary containment flooding required.
3. RCS Leak Rate/ Primary Containment Isolation Failure	None	None	A. UNISOLABLE break in any of the following: (site-specific systems with potential for high-energy line breaks) OR B. Emergency RPV Depressurization	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.	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 that results in exceeding EITHER of the following: 1. Max Safe Operating Temperature. OR 2. Max Safe Operating Area Radiation Level.	None
4. Primary Containment Radiation	A. Primary Containment Radiation Monitor reading greater than (site-specific value).	None	A. Primary Containment Radiation Monitor reading greater than (site-specific value).	None	None	A. Primary Containment Radiation Monitor reading greater than (site-specific value).
5. Emergency Director Judgment	A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.	A. ANY Condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.

Proposed Fission Product Barrier Matrix
Fission Product Barrier Matrix

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		Hot Matrix
FG1 Loss of any two barriers AND Loss or Potential Loss of third barrier. 1 2 3		FS1 Loss or Potential Loss of ANY two barriers. 1 2 3		FA1 ANY Loss or ANY Potential Loss of either Fuel Clad or RCS 1 2 3		
Sub-Category	FC – Fuel Clad		RC – Reactor Coolant System		CT - Containment	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
1. RCS Activity	Coolant activity > 300 uCi/gm Dose Equivalent I-131.	None	None	None	None	None
2. RPV Water Level	1. Plant conditions indicate Primary Containment flooding is required.	2. RPV water level <u>cannot</u> be restored and maintained > -142 Inches (TAF) OR 3. RPV water level <u>cannot</u> be determined.	1. RPV water level <u>cannot</u> be restored and maintained > -142 Inches (TAF) OR 2. RPV water level <u>cannot</u> be determined.	None	None	Plant conditions indicate Primary Containment flooding is required.
3. Primary Containment Pressure/Conditions	None	None	1. Drywell pressure >2.5 psig. AND 2. Drywell pressure rise is due to RCS leakage	None	1. UNPLANNED rapid drop in Drywell pressure following primary containment pressure rise. OR 2. Drywell pressure response <u>not</u> consistent with LOCA conditions.	3. Primary Containment pressure > 56 psig. OR 4. a. Drywell or torus hydrogen concentration ≥ 6%. AND b. Drywell or torus oxygen concentration ≥ 5%. OR 5. Heat Capacity Limit (QGA 200, Figure M) exceeded.
4. RCS Leak Rate	None	None	1. UNISOLABLE Main Steam Line (MSL), HPCI, Feedwater, RWCU or RCIC line break OR 2. Emergency RPV Depressurization is required.	3. UNISOLABLE primary system leakage that results in EITHER of the following: a. Secondary Containment area temperature > QGA 300 Maximum Normal operating levels. OR b. Secondary Containment area radiation level > QGA 300 Maximum Normal operating level.	None	None
5. Primary Containment Radiation	Drywell radiation monitor reading > 6.65 E+02 R/hr.	None	Drywell radiation monitor reading > 100R/hr (>1.00 E+02 R/hr).	None	None	Drywell radiation monitor reading > 1.55 E+03 R/hr
6. Primary Containment Isolation Failure	None	None	None	None	1. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal. OR 2. Intentional Primary Containment venting/purging per EOPs or SAMGs due to accident conditions. OR 3. UNISOLABLE primary system leakage that results in EITHER of the following: a. Secondary Containment area temperature > QGA 300, Maximum Safe operating levels. OR b. Secondary Containment area radiation level > QGA 300, Maximum Safe operating levels	None
7. Emergency Director Judgment	A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier	A. ANY Condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">FC1</p> <p>Category: Fuel Clad Barrier RCS Activity Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. (Site specific indications that reactor coolant activity is greater than 300 uCi/gm dose equivalent I-131)</p>	<p style="text-align: right;">FC1</p> <p>Category: Fuel Clad Barrier RCS Activity Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> Coolant activity > 300 uCi/gm Dose Equivalent I-131.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">FC2</p> <p>Category: Fuel Clad Barrier RPV Water Level Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. Primary containment flooding required. Potential Loss A. RPV water level cannot be restored and maintained above (site-specific RPV water level corresponding to top of active fuel) or cannot be determined.</p>	<p style="text-align: right;">FC2</p> <p>Category: Fuel Clad Barrier RCS Activity Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. Plant conditions indicate Primary Containment flooding is required. <u>Potential Loss</u> 2. RPV water level <u>cannot</u> be restored and maintained > -142 inches (TAF) OR 3. RPV water level <u>cannot</u> be determined.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">FC4</p> <p>Category: Fuel Clad Barrier Primary Containment Radiation Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. Primary Containment Radiation Monitor reading greater than (site-specific value).</p>	<p style="text-align: right;">FC5</p> <p>Category: Fuel Clad Barrier Primary Containment Radiation Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> Drywell radiation monitor reading > 6.65 E+02 R/hr.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitor and threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">FC6</p> <p>Category: Fuel Clad Barrier Emergency Director Judgment Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: <u>Loss</u> A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier. <u>Potential Loss</u> A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.</p>	<p style="text-align: right;">FC7</p> <p>Category: Fuel Clad Barrier Emergency Director Judgment Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. Any Condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier. <u>Potential Loss</u> 2. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">RC1</p> <p>Category: Reactor Coolant System Barrier Primary Containment Pressure Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. Primary containment pressure greater than (site-specific value) due to RCS leakage.</p>	<p style="text-align: right;">RC3</p> <p>Category: Reactor Coolant System Barrier Primary Containment Pressure/Conditions Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. Drywell pressure >2.5 psig. AND 2. Drywell pressure rise is due to RCS leakage.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">RC2</p> <p>Category: Reactor Coolant System Barrier RPV Water Level Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. RPV water level cannot be restored and maintained above (site-specific RPV level corresponding to the top of active fuel) or cannot be determined.</p>	<p style="text-align: right;">RC2</p> <p>Category: Reactor Coolant System Barrier RPV Water Level Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. RPV water level <u>cannot</u> be restored and maintained > -142 inches (TAF) . OR 2. RPV water level <u>cannot</u> be determined.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">RC3</p> <p>Category: Reactor Coolant System Barrier RCS Leak Rate Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. UNISOLABLE break in any of the following: (site-specific systems with potential for high-energy line breas) OR B. Emergency RPV Depressurization Potential Loss A. UNISOLABLE primary system leakage that results in exceeding EITHER of the following: 1. Max Normal Operating Temperature. OR 2. Max Normal Operating Area Radiation Level.</p>	<p style="text-align: right;">RC4</p> <p>Category: Reactor Coolant System Barrier RCS Leak Rate Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: Loss 1. UNISOLABLE Main Steam Line (MSL), HPCI, Feedwater, , RWCU or RCIC line break. OR 2. Emergency RPV Depressurization is required. <u>Potential Loss</u> 3. UNISOLABLE primary system leakage that results in EITHER of the following: a. Secondary Containment area temperature > QGA 300 Maximum Normal operating levels. OR b. Secondary Containment area radiation level > QGA 300 Maximum Normal operating levels.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific systems and threshold values to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">RC4</p> <p>Category: Reactor Coolant System Barrier Primary Containment Radiation Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss A. Primary Containment Radiation Monitor reading greater than (site-specific value).</p>	<p style="text-align: right;">RC5</p> <p>Category: Reactor Coolant System Barrier Primary Containment Radiation Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> Drywell radiation monitor reading > 100 R/hr (>1.00E+02 R/hr).</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitor and threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">RC6</p> <p>Category: Reactor Coolant System Barrier Emergency Director Judgment</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Fission Product Barrier Threshold: Loss A. Any Condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.</p> <p>Potential Loss A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.</p>	<p style="text-align: right;">RC7</p> <p>Category: Reactor Coolant System Barrier Emergency director Judgment</p> <p>Operating Mode Applicability: 1, 2, 3</p> <p>Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. ANY Condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.</p> <p><u>Potential Loss</u> 2. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CT1</p> <p>Category: Containment Barrier Primary Containment Conditions Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss C. UNPLANNED rapid drop in primary containment pressure following primary containment pressure rise OR B. Primary containment pressure response not consistent with LOCA conditions. Potential Loss D. Primary containment pressure greater than (site-specific value) OR E. (site-specific explosive mixture) exists inside primary containment OR 3. HCTL exceeded.</p>	<p style="text-align: right;">CT3</p> <p>Category: Containment Barrier Primary Containment Pressure/Conditions Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. UNPLANNED rapid drop in Drywell pressure following Drywell pressure rise. OR 2. Drywell pressure response <u>not</u> consistent with LOCA conditions. <u>Potential Loss</u> 3. Drywell pressure > 56 psig and rising. OR 4. a. Drywell or torus Hydrogen concentration \geq 6%. AND b. Drywell or torus Oxygen concentration \geq 5%. OR 5. Heat Capacity Limit (QGA 200, Fig. M) exceeded.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold values to ensure timely classification.</p> <p>2) The words "and rising" were added to account for the momentary spike in pressure where pressure is now lowering, the risk of a potential loss of containment is no longer present, this wording is also consistent with present EAL wording.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CT2</p> <p>Category: Containment Barrier RPV Water Level Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Potential Loss A. Primary containment flooding required.</p>	<p style="text-align: right;">CT2</p> <p>Category: Containment Barrier RPV Water Level Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Potential Loss</u> Plant conditions indicate Primary Containment flooding is required.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CT3</p> <p>Category: Containment Barrier Primary Containment Isolation Failure Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Loss 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 that results in exceeding EITHER of the following: 1. Max Safe Operating Temperature. OR 2. Max Safe Operating Area Radiation Level.</p>	<p style="text-align: right;">CT6</p> <p>Category: Containment Barrier Primary Containment Isolation Failure Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: Loss 1. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal. OR 2. Intentional Primary Containment venting/purging per EOPs or SAMGs due to accident conditions. OR 3. UNISOLABLE primary system leakage that results in EITHER of the following: a. Secondary Containment area temperature > QGA 300 Maximum Safe operating levels. OR b. Secondary Containment area radiation level > QGA 300 Maximum Safe operating levels.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific threshold values to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CT4</p> <p>Category: Containment Barrier Primary Containment Radiation Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown Fission Product Barrier Threshold: Potential Loss A. Primary Containment Radiation Monitor reading greater than (site-specific value).</p>	<p style="text-align: right;">CT5</p> <p>Category: Containment Barrier Primary Containment Radiation Operating Mode Applicability: 1, 2, 3 Fission Product Barrier (FPB) Threshold: <u>Potential Loss</u> Drywell radiation monitor reading > 1.55 E+03 R/h .</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site-specific monitor and threshold value to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CT6</p> <p>Category: Containment Barrier Emergency director Judgment</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Fission Product Barrier Threshold: <u>Loss</u> A. Any Condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.</p> <p><u>Potential Loss</u> A. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.</p>	<p style="text-align: right;">CT7</p> <p>Category: Containment Barrier Emergency Director Judgment</p> <p>Operating Mode Applicability: 1, 2, 3</p> <p>Fission Product Barrier (FPB) Threshold: <u>Loss</u> 1. Any Condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.</p> <p><u>Potential Loss</u> 2. Any Condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SG1</p> <p>Initiating Condition: GENERAL EMERGENCY</p> <p>Prolonged loss of all offsite and all onsite AC power to emergency buses.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the General Emergency promptly upon determining that (site-specific hours) has been exceeded, or will likely be exceeded.</p> <p>1. a. Loss of ALL offsite and ALL onsite AC power to (site-specific emergency buses).</p> <p style="padding-left: 40px;">AND</p> <p>b. EITHER of the following:</p> <ul style="list-style-type: none"> • Restoration of at least one emergency bus in less than (site-specific hours) is not likely. • (Site-specific indication of an inability to adequately remove heat from the core) 	<p style="text-align: right;">MG1</p> <p>Initiating Condition:</p> <p>Prolonged loss of all offsite and all onsite AC power to emergency buses.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1 Loss of ALL offsite AC power to unit ECCS busses.</p> <p style="padding-left: 40px;">AND</p> <p>2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to unit ECCS busses.</p> <p style="padding-left: 40px;">AND</p> <p>3. EITHER of the following:</p> <ul style="list-style-type: none"> a. Restoration of at least one unit ECCS bus in < 1 hour is <u>not</u> likely. <li style="padding-left: 40px;">OR b. RPV water level <u>cannot</u> be restored and maintained > -166 inches. 	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment, site specific time based on station blackout coping analysis, and site specific indication to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SS1</p> <p>Initiating Condition: SITE AREA EMERGENCY</p> <p>Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Site Area Emergency promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <p>Loss of ALL offsite and ALL onsite AC Power to (site-specific emergency buses) for 15 minutes or longer.</p>	<p style="text-align: right;">MS1</p> <p>Initiating Condition:</p> <p>Loss of all offsite and onsite AC power to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. Loss of ALL offsite AC Power to unit ECCS buses.</p> <p>AND</p> <p>2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to unit ECCS buses.</p> <p>AND</p> <p>3. Failure to restore power to at least one ECCS bus in < 15 minutes from the time of loss of both offsite and onsite AC power.</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <p>1) Listed site specific equipment to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SA1</p> <p>Initiating Condition: ALERT</p> <p>Loss of all but one AC power source to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <p>1. a. AC power capability to (site-specific emergency buses) is reduced to a single power source for 15 minutes or longer.</p> <p>AND</p> <p>b. Any additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS.</p>	<p style="text-align: right;">MA1</p> <p>Initiating Condition:</p> <p>Loss of all but one AC power source to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. AC power capability to unit ECCS buses reduced to only one of the following power sources for ≥ 15 minutes.</p> <ul style="list-style-type: none"> • Reserve auxiliary Transformer TR-12 (TR-22) • Unit Auxiliary Transformer TR-11 (TR-21) • Unit Emergency Diesel Generator • Shared Emergency Diesel Generator • Station Blackout Diesel Generator • Unit crosstie breakers <p>AND</p> <p>2. ANY additional single power source failure will result in a loss of ALL AC power to SAFETY SYSTEMS.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SU1</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Loss of all offsite AC power capability to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <p>Loss of ALL offsite AC power capability to (site-specific emergency buses) for 15 minutes or longer</p>	<p style="text-align: right;">MU1</p> <p>Initiating Condition:</p> <p>Loss of all offsite AC power capability to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>Loss of ALL offsite AC power capability to unit ECCS buses for ≥ 15 minutes.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SG8</p> <p>Initiating Condition: GENERAL EMERGENCY</p> <p>Loss of all AC and Vital DC power sources for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the General Emergency promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <p>1. Loss of ALL offsite and ALL onsite AC power to (site-specific emergency buses) for 15 minutes or longer.</p> <p>AND</p> <p>Indicated voltage is less than (site-specific bus voltage value) on ALL (site-specific vital DC buses) for 15 minutes or longer.</p>	<p style="text-align: right;">MG2</p> <p>Initiating Condition:</p> <p>Loss of all AC and Vital DC power sources for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. Loss of ALL offsite AC power to unit ECCS busses.</p> <p>AND</p> <p>2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO EDG 1(2) emergency diesel generators to supply power to vital busses.</p> <p>AND</p> <p>3. Voltage is < 105 VDC on 125 VDC battery busses #1 and #2.</p> <p>AND</p> <p>4. ALL AC and Vital DC power sources have been lost for <u>≥ 15</u> minutes.</p>	<p> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment to ensure timely classification.</p> <p>2) in EAL #3 removed the word "indicated" this will allow for an indication problem to not cause confusion on the need to declare.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SS8</p> <p>Initiating Condition: SITE AREA EMERGENCY Loss of all Vital DC power for 15 minutes or longer.</p> <p>Operating Mode Applicability: Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Site Area Emergency promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <p>Indicated voltage is less than (site-specific bus voltage value) on ALL Vital DC buses for 15 minutes or longer.</p>	<p style="text-align: right;">MS2</p> <p>Initiating Condition: Loss of all Vital DC power for 15 minutes or longer.</p> <p>Operating Mode Applicability: 1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>Voltage is < 105 VDC on 125 VDC battery buses #1 and #2 for <u>≥15</u> minutes..</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment and value to ensure timely classification. 2) Removed the word "indicated" this will allow for an indication problem to not cause confusion on the need to declare.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SS5</p> <p>Initiating Condition: SITE AREA EMERGENCY</p> <p>Inability to shutdown the reactor causing a challenge to (core cooling [PWR] / RPV water level [BWR]) or RCS heat removal.</p> <p>Operating Mode Applicability:</p> <p>Power Operation</p> <p>Example Emergency Action Levels:</p> <p>1. a. An automatic (trip [PWR] / scram [BWR]) did not shutdown the reactor.</p> <p style="padding-left: 40px;">AND</p> <p>b. All manual actions to shutdown the reactor have been unsuccessful.</p> <p style="padding-left: 40px;">AND</p> <p>c. EITHER of the following conditions exist:</p> <p style="padding-left: 80px;">1. (Site-specific indication of an inability to adequately remove heat from the core)</p> <p style="padding-left: 80px;">OR</p> <p style="padding-left: 80px;">2. (Site-specific indication of an inability to adequately remove heat from the RCS)</p>	<p style="text-align: right;">MS3</p> <p>Initiating Condition:</p> <p>Inability to shutdown the reactor causing a challenge to RPV water level or RCS heat removal.</p> <p>Operating Mode Applicability:</p> <p>1,2</p> <p>Emergency Action Level (EAL):</p> <p>1. Automatic scram did <u>not</u> shutdown the reactor as indicated by Reactor Power > 5%.</p> <p style="padding-left: 40px;">AND</p> <p>2. ALL manual / ARI actions to shutdown the reactor have been unsuccessful as indicated by Reactor Power > 5%.</p> <p style="padding-left: 40px;">AND</p> <p>3. EITHER of the following conditions exist:</p> <ul style="list-style-type: none"> • RPV water level <u>cannot</u> be restored and maintained > -166 inches. <p style="padding-left: 40px;">OR</p> <ul style="list-style-type: none"> • Heat Capacity Limit (QGA 200, Figure M) exceeded. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific indications to ensure timely classification.</p> <p>2) Mode 2 included in operating mode applicability as per developer notes.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SA5</p> <p>Initiating Condition: ALERT</p> <p>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.</p> <p>Operating Mode Applicability:</p> <p>Power Operation</p> <p>Example Emergency Action Levels:</p> <p>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.</p> <p>1. a. An automatic (trip [PWR] / scram [BWR]) did not shutdown the reactor.</p> <p style="text-align: center;">AND</p> <p>b. Manual action taken at the reactor control consoles are not successful in shutting down the reactor.</p>	<p style="text-align: right;">MA3</p> <p>Initiating Condition:</p> <p>Automatic or manual scram fails to shutdown the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor.</p> <p>Operating Mode Applicability:</p> <p>1,2</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> 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. <p>1. Automatic or manual scram did <u>not</u> shutdown the reactor as indicated by Reactor Power > 5%.</p> <p style="text-align: center;">AND</p> <p>2. Manual / ARI actions taken at the Reactor Console are <u>not</u> successful in shutting down the reactor as indicated by Reactor Power > 5%.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific indications to ensure timely classification.</p> <p>2) Mode 2 included in operating mode applicability as per developer notes.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SU5</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Automatic or manual (trip [PWR] / scram [BWR]) fails to shutdown the reactor.</p> <p>Operating Mode Applicability:</p> <p>Power Operation</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>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.</p> <p>1. a. An automatic (trip [PWR] / scram [BWR]) did not shutdown the reactor.</p> <p style="text-align: center;">AND</p> <p>b. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor.</p> <p>2. a. A manual scram ([PWR] / scram [BWR]) did not shutdown the reactor.</p> <p style="text-align: center;">AND</p> <p>b. EITHER of the following:</p> <p>1. A subsequent manual action taken at the reactor control consoles is successful in shutting down the reactor.</p> <p style="text-align: center;">OR</p> <p>2. A subsequent automatic (trip [PWR] / scram [BWR]) is successful in shutting down the reactor.</p>	<p style="text-align: right;">MU3</p> <p>Initiating Condition:</p> <p>Automatic or manual scram fails to shutdown the reactor.</p> <p>Operating Mode Applicability:</p> <p>1,2</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • 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. <p>1. a. Automatic scram did not shutdown the reactor as indicated by Reactor Power > 5%.</p> <p style="text-align: center;">AND</p> <p>b. Subsequent manual / ARI action taken at the Reactor Console is successful in shutting down the reactor.</p> <p style="text-align: center;">OR</p> <p>2. a. Manual scram did not shutdown the reactor as indicated by Reactor Power > 5%.</p> <p style="text-align: center;">AND</p> <p>b. EITHER of the following:</p> <p>1. Subsequent manual / ARI action taken at the Reactor Console is successful in shutting down the reactor.</p> <p style="text-align: center;">OR</p> <p>2. Subsequent automatic scram / ARI is successful in shutting down the reactor.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific indications to ensure timely classification.</p> <p>2) Mode 2 included in operating mode applicability as per developer notes.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification																		
<p style="text-align: right;">SA2</p> <p>Initiating Condition: ALERT</p> <p>UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Alert promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <p>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]</p> <table border="1" data-bbox="121 632 701 964"> <thead> <tr> <th>[BWR parameter list]</th> <th>[PWR parameter list]</th> </tr> </thead> <tbody> <tr> <td>Reactor Power</td> <td>Reactor Power</td> </tr> <tr> <td>RPV Level</td> <td>RCS Level</td> </tr> <tr> <td>RPV Pressure</td> <td>RCS Pressure</td> </tr> <tr> <td>Primary Containment Pressure</td> <td>In Core/Core Exit Temperature</td> </tr> <tr> <td>Suppression Pool Level</td> <td>Levels in at least (site specific number) steam generators</td> </tr> <tr> <td>Suppression Pool Temperature</td> <td>Steam Generator Auxiliary or Emergency Feed Water Flow</td> </tr> </tbody> </table> <p>AND</p> <p>b. Any of the following transient events in progress.</p> <ul style="list-style-type: none"> • Automatic or Manual runback greater than 25% thermal reactor power • Electrical load rejection greater than 25% full electrical load • Reactor Scram [BWR] / trip [PWR] • ECCS (SI) actuation • Thermal power oscillations greater than 10% [BWR] 	[BWR parameter list]	[PWR parameter list]	Reactor Power	Reactor Power	RPV 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	<p style="text-align: right;">MA4</p> <p>Initiating Condition:</p> <p>UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. UNPLANNED event results in the inability to monitor ANY Table M1 parameter from within the Control Room for <u>≥15 minutes</u>.</p> <table border="1" data-bbox="850 695 1260 901"> <thead> <tr> <th>Table M1 Control Room Parameters</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Reactor Power • RPV Water Level • RPV Pressure • Drywell Pressure • Torus Level • Torus Temperature </td> </tr> </tbody> </table> <p>AND</p> <p>2. ANY Table M2 transient in progress.</p> <table border="1" data-bbox="747 974 1360 1202"> <thead> <tr> <th>Table M2 Significant Transients</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Turbine Trip • Reactor Scram • ECCS Activation • Recirc. Runback > 25% Reactor Power Change • Thermal Power oscillations > 10% Reactor Power Change </td> </tr> </tbody> </table>	Table M1 Control Room Parameters	<ul style="list-style-type: none"> • Reactor Power • RPV Water Level • RPV Pressure • Drywell Pressure • Torus Level • Torus Temperature 	Table M2 Significant Transients	<ul style="list-style-type: none"> • Turbine Trip • Reactor Scram • ECCS Activation • Recirc. Runback > 25% Reactor Power Change • Thermal Power oscillations > 10% Reactor Power Change 	<p style="text-align: center;">Justification</p> <p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>
[BWR parameter list]	[PWR parameter list]																			
Reactor Power	Reactor Power																			
RPV 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																			
Table M1 Control Room Parameters																				
<ul style="list-style-type: none"> • Reactor Power • RPV Water Level • RPV Pressure • Drywell Pressure • Torus Level • Torus Temperature 																				
Table M2 Significant Transients																				
<ul style="list-style-type: none"> • Turbine Trip • Reactor Scram • ECCS Activation • Recirc. Runback > 25% Reactor Power Change • Thermal Power oscillations > 10% Reactor Power Change 																				

NEI 99-01 Rev 6	Proposed EAL	Justification																
<p style="text-align: right;">SU2</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>UNPLANNED loss of Control Room indications for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels: Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <p>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]</p> <table border="1" data-bbox="121 612 701 946"> <thead> <tr> <th>[BWR parameter list]</th> <th>[PWR parameter list]</th> </tr> </thead> <tbody> <tr> <td>Reactor Power</td> <td>Reactor Power</td> </tr> <tr> <td>RPV Level</td> <td>RCS Level</td> </tr> <tr> <td>RPV Pressure</td> <td>RCS Pressure</td> </tr> <tr> <td>Primary Containment Pressure</td> <td>In Core/Core Exit Temperature</td> </tr> <tr> <td>Suppression Pool Level</td> <td>Levels in at least (site specific number) steam generators</td> </tr> <tr> <td>Suppression Pool Temperature</td> <td>Steam Generator Auxiliary or Emergency Feed Water Flow</td> </tr> </tbody> </table>	[BWR parameter list]	[PWR parameter list]	Reactor Power	Reactor Power	RPV 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	<p style="text-align: right;">MU4</p> <p>Initiating Condition:</p> <p>UNPLANNED loss of Control Room indications for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>UNPLANNED event results in the inability to monitor ANY Table M1 parameter from within the Control Room for ≥ 15 minutes.</p> <table border="1" data-bbox="800 645 1314 847"> <thead> <tr> <th>Table M1 Control Room Parameters</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Reactor Power RPV Water Level RPV Pressure Drywell Pressure Torus Level Torus Temperature </td> </tr> </tbody> </table>	Table M1 Control Room Parameters	<ul style="list-style-type: none"> Reactor Power RPV Water Level RPV Pressure Drywell Pressure Torus Level Torus Temperature 	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p>
[BWR parameter list]	[PWR parameter list]																	
Reactor Power	Reactor Power																	
RPV 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																	
Table M1 Control Room Parameters																		
<ul style="list-style-type: none"> Reactor Power RPV Water Level RPV Pressure Drywell Pressure Torus Level Torus Temperature 																		

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SA9</p> <p>Initiating Condition: ALERT</p> <p>Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels:</p> <p>1. a. The occurrence of ANY of the following hazardous events:</p> <ul style="list-style-type: none"> • 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 <p style="text-align: center;">AND</p> <p>b. EITHER of the following:</p> <p>1. Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current operating mode.</p> <p style="text-align: center;">OR</p> <p>2. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode.</p>	<p style="text-align: right;">MA5</p> <p>Initiating Condition: ALERT</p> <p>Hazardous event affecting a SAFETY SYSTEM required for the current operating mode.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>1. The occurrence of ANY of the following hazardous events:</p> <ul style="list-style-type: none"> • Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • Other events with similar hazard characteristics as determined by the Shift Manager <p style="text-align: center;">AND</p> <p>2. EITHER of the following:</p> <p>a. Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM required by Technical Specifications for the current operating mode.</p> <p style="text-align: center;">OR</p> <p>b. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure required by Technical Specifications for the current operating mode.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) No additional site specific hazard noted</p> <p>2) Changed the word "needed" to "required" in the IC and "required by Technical Specification" in the EAL to be consistent with terminology used by operators and minimize confusion.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">SU4</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>RCS leakage for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 1. RCS unidentified or pressure boundary leakage greater than (site-specific value) for 15 minutes or longer. 2. RCS identified leakage greater than (site-specific value) for 15 minutes or longer 3. Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer 	<p style="text-align: right;">MU6</p> <p>Initiating Condition:</p> <p>RCS leakage for 15 minutes or longer.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. RCS unidentified or pressure boundary leakage in the Drywell > 10 gpm for ≥ 15 minutes. OR 2. RCS identified leakage in the Drywell >25 gpm for ≥ 15 minutes. OR 3. Leakage from the RCS to a location outside the Drywell >25 gpm for ≥ 15 minutes. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific values to ensure timely classification.</p> <p>2) Changed wording from containment to Drywell for clarity to better define the primary containment structure.</p> <p>3) In EAL #1 and 2 added "into the Drywell" to differentiate between EAL #1/2 and #3. Without this wording would have been in EAL #1 or #2 concurrent with #3. With the added wording each EAL can be called separately.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification																																				
<p style="text-align: right;">SU6</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Loss of all onsite or offsite communications capabilities</p> <p>Operating Mode Applicability:</p> <p>Power Operation, Startup, Hot Standby, Hot Shutdown</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <ol style="list-style-type: none"> 1. Loss of ALL of the following onsite communication methods: (site-specific list of communications method) 2. Loss of ALL of the following ORO communications s) methods: (site-specific list of communications methods) 3. Loss of ALL of the following NRC communications methods: (site-specific list of communications methods) 	<p style="text-align: right;">MU7</p> <p>Initiating Condition:</p> <p>Loss of all onsite or offsite communication capabilities.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. Loss of ALL Table M3 Onsite communications capability affecting the ability to perform routine operations. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. Loss of ALL Table M3 Offsite communication capability affecting the ability to perform offsite notifications. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 3. Loss of ALL Table M3 NRC communication capability affecting the ability to perform NRC notifications. <table border="1" data-bbox="764 740 1348 992" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Table M3 Communications Capability</th> </tr> <tr> <th style="text-align: center;">System</th> <th style="text-align: center;">Onsite</th> <th style="text-align: center;">Offsite</th> <th style="text-align: center;">NRC</th> </tr> </thead> <tbody> <tr> <td>Plant Radio</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>Plant Page</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>Sound Powered Phones</td> <td style="text-align: center;">X</td> <td></td> <td></td> </tr> <tr> <td>All telephone Lines (Commercial and microwave)</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>ENS</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>HPN</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td>Satellite Phones</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </tbody> </table>	Table M3 Communications Capability				System	Onsite	Offsite	NRC	Plant Radio	X			Plant Page	X			Sound Powered Phones	X			All telephone Lines (Commercial and microwave)	X	X	X	ENS		X	X	HPN		X	X	Satellite Phones		X	X	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific communication methods to ensure timely classification.</p>
Table M3 Communications Capability																																						
System	Onsite	Offsite	NRC																																			
Plant Radio	X																																					
Plant Page	X																																					
Sound Powered Phones	X																																					
All telephone Lines (Commercial and microwave)	X	X	X																																			
ENS		X	X																																			
HPN		X	X																																			
Satellite Phones		X	X																																			

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CA2</p> <p>Initiating Condition: ALERT Loss of all offsite and all onsite AC power to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling, Defueled</p> <p>Example Emergency Action Levels:</p> <p>Note: The Emergency Director should declare the Alert promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <p>Loss of ALL offsite and ALL onsite AC Power to (site-specific emergency buses) for 15 minutes or longer.</p>	<p style="text-align: right;">CA1</p> <p>Initiating Condition: Loss of all offsite and onsite AC power to emergency buses for 15 minutes or longer.</p> <p>Operating Mode Applicability: 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. Loss of ALL offsite AC power to unit ECCS buses. AND 2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to unit ECCS buses. AND 3. Failure to restore power to at least one unit ECCS bus in < 15 minutes from the time of loss of both offsite and onsite AC power. 	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CU2</p> <p>Initiating Condition: UNUSUAL EVENT Loss of all but one AC power source to emergency buses for 15 minutes or longer. Operating Mode Applicability: Cold Shutdown, Refueling, Defueled Example Emergency Action Levels: Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <p>1. a. AC power capability to (site-specific emergency buses) is reduced to a single power source for 15 minutes or longer.</p> <p>AND</p> <p>b. Any additional single power source failure will result in loss of all AC power to SAFETY SYSTEMS.</p>	<p style="text-align: right;">CU1</p> <p>Initiating Condition: Loss of all but one AC power source to emergency buses for 15 minutes or longer. Operating Mode Applicability: 4, 5, D Emergency Action Level (EAL): Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. AC power capability to unit ECCS buses reduced to only one of the following power sources for ≥ 15 minutes.</p> <ul style="list-style-type: none"> • Reserve auxiliary Transformer TR-12 (TR-22) • Unit auxiliary transformer TR-11 (TR-21) • Unit Emergency Diesel Generator • Shared Emergency Diesel Generator • Station Blackout Diesel Generator • Unit crosstie breakers <p>AND</p> <p>2. ANY additional single power source failure will result in a loss of ALL AC power to SAFETY SYSTEMS.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific equipment to ensure timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CA6</p> <p>Initiating Condition – ALERT Hazardous event affecting SAFETY SYSTEM needed for the current operating mode.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels:</p> <ol style="list-style-type: none"> 1. a. The occurrence of ANY of the following hazardous events: <ul style="list-style-type: none"> ● 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 <p>AND</p> <ol style="list-style-type: none"> b. EITHER of the following: <ol style="list-style-type: none"> 1. Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM needed for the current operating mode. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode. 	<p style="text-align: right;">CA2</p> <p>Initiating Condition: Hazardous event affecting SAFETY SYSTEM required for the current operating mode.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. The occurrence of ANY of the following hazardous events: <ul style="list-style-type: none"> ● Seismic event (earthquake) ● Internal or external flooding event ● High winds or tornado strike ● FIRE ● EXPLOSION ● Other events with similar hazard characteristics as determined by the Shift Manager <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 2. EITHER of the following: <ol style="list-style-type: none"> a. Event damage has caused indications of degraded performance in at least one train of a SAFETY SYSTEM required by Technical Specifications for the current operating mode. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> b. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure required by technical Specifications for the current operating mode. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) No additional site specific hazards noted</p> <p>2) Changed the word "needed" to "required" in the IC and "required by Technical Specification" in the EAL to be consistent with terminology used by operators and minimize confusion.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CU4</p> <p>Initiating Condition: UNUSUAL EVENT Loss of Vital DC power for 15 minutes or longer. Operating Mode Applicability: Cold Shutdown, Refueling Example Emergency Action Levels: Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded. Indicated voltage is less than (site-specific bus voltage value) on required Vital DC buses for 15 minutes or longer.</p>	<p style="text-align: right;">CU3</p> <p>Initiating Condition: Loss of Vital DC power for 15 minutes or longer. Operating Mode Applicability: 4, 5 Emergency Action Level (EAL): Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>Voltage is < 105 VDC on required 125 VDC battery buses #1 and #2 for \geq 15 minutes.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific voltage and equipment to ensure timely classification. 2) Removed the word "indicated" this will allow for an indication problem to not cause confusion on the need to declare.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification																																				
<p style="text-align: right;">CU5</p> <p>Initiating Condition: UNUSUAL EVENT Loss of all onsite or offsite communications capabilities Operating Mode Applicability: Cold Shutdown, Refueling, Defueled Example Emergency Action Levels: (1 or 2 or 3)</p> <ol style="list-style-type: none"> Loss of ALL of the following onsite communication methods: (site-specific list of communications method) Loss of ALL of the following ORO communications s) methods: (site-specific list of communications methods) Loss of ALL of the following NRC communications methods: (site-specific list of communications methods) 	<p style="text-align: right;">CU4</p> <p>Initiating Condition: Loss of all onsite or offsite communication capabilities. Operating Mode Applicability: 4, 5, D Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> Loss of ALL Table C1 Onsite communications capability affecting the ability to perform routine operations. OR Loss of ALL Table C1 Offsite communication capability affecting the ability to perform offsite notifications. OR Loss of ALL Table C1 NRC communication capability affecting the ability to perform NRC notifications. <table border="1" data-bbox="758 640 1356 888"> <thead> <tr> <th colspan="4">Table C1 Communications Capability</th> </tr> <tr> <th>System</th> <th>Onsite</th> <th>Offsite</th> <th>NRC</th> </tr> </thead> <tbody> <tr> <td>Plant Radio</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>Plant Page</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>Sound Powered Phones</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>All telephone Lines (Commercial and microwave)</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>ENS</td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td>HPN</td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td>Satellite Phones</td> <td></td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Table C1 Communications Capability				System	Onsite	Offsite	NRC	Plant Radio	X			Plant Page	X			Sound Powered Phones	X			All telephone Lines (Commercial and microwave)	X	X	X	ENS		X	X	HPN		X	X	Satellite Phones		X	X	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific communications methods to ensure timely classification</p>
Table C1 Communications Capability																																						
System	Onsite	Offsite	NRC																																			
Plant Radio	X																																					
Plant Page	X																																					
Sound Powered Phones	X																																					
All telephone Lines (Commercial and microwave)	X	X	X																																			
ENS		X	X																																			
HPN		X	X																																			
Satellite Phones		X	X																																			

NEI 99-01 Rev 6	Proposed EAL	Justification																												
<p style="text-align: right;">CA3</p> <p>Initiating Condition: ALERT Inability to maintain the plant in cold shutdown.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Note: The Emergency Director should declare the Alert promptly upon determining that the applicable has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 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. UNPLANNED RCS pressure increase greater than (site-specific pressure reading). (This EAL does not apply during water-solid plant conditions. [PWR]) <table border="1" data-bbox="136 619 714 867"> <thead> <tr> <th colspan="3">Table: RCS Heat-up Duration Thresholds</th> </tr> <tr> <th>RCS Status</th> <th>Containment Closure Status</th> <th>Heat-up Duration</th> </tr> </thead> <tbody> <tr> <td>Intact (but not RCS Reduced Inventory [PWR])</td> <td>Not Applicable</td> <td>60 minutes*</td> </tr> <tr> <td rowspan="2">Not Intact (or at reduced inventory [PWR])</td> <td>Established</td> <td>20 minutes*</td> </tr> <tr> <td>Not Established</td> <td>0 minutes</td> </tr> </tbody> </table> <p>* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.</p>	Table: RCS Heat-up Duration Thresholds			RCS Status	Containment Closure Status	Heat-up Duration	Intact (but not RCS Reduced Inventory [PWR])	Not Applicable	60 minutes*	Not Intact (or at reduced inventory [PWR])	Established	20 minutes*	Not Established	0 minutes	<p style="text-align: right;">CA5</p> <p>Initiating Condition: Inability to maintain plant in cold shutdown.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> UNPLANNED rise in RCS temperature > 212°F due to loss of decay heat removal for > Table C2 duration. <table border="1" data-bbox="793 607 1318 872"> <thead> <tr> <th colspan="3">Table C2 RCS Heat-up Duration Thresholds</th> </tr> <tr> <th>RCS Status</th> <th>Containment Closure Status</th> <th>Heat-up Duration</th> </tr> </thead> <tbody> <tr> <td>Intact</td> <td>Not Applicable</td> <td>60 minutes*</td> </tr> <tr> <td rowspan="2">Not Intact</td> <td>Established</td> <td>20 minutes*</td> </tr> <tr> <td>Not Established</td> <td>0 minutes</td> </tr> </tbody> </table> <p>* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, then EAL #1 is not applicable.</p> <p>OR</p> <ol style="list-style-type: none"> UNPLANNED RPV pressure rise > 10 psig as a result of temperature rise due to loss of decay heat removal. 	Table C2 RCS Heat-up Duration Thresholds			RCS Status	Containment Closure Status	Heat-up Duration	Intact	Not Applicable	60 minutes*	Not Intact	Established	20 minutes*	Not Established	0 minutes	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <p>1) Listed site specific Technical Specification cold shutdown temperature limit and site-specific pressure reading to ensure timely classification.</p>
Table: RCS Heat-up Duration Thresholds																														
RCS Status	Containment Closure Status	Heat-up Duration																												
Intact (but not RCS Reduced Inventory [PWR])	Not Applicable	60 minutes*																												
Not Intact (or at reduced inventory [PWR])	Established	20 minutes*																												
	Not Established	0 minutes																												
Table C2 RCS Heat-up Duration Thresholds																														
RCS Status	Containment Closure Status	Heat-up Duration																												
Intact	Not Applicable	60 minutes*																												
Not Intact	Established	20 minutes*																												
	Not Established	0 minutes																												

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CU3</p> <p>Initiating Condition: UNUSUAL EVENT UNPLANNED increase in RCS temperature.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> UNPLANNED increase in RCS temperature to greater than (site-specific Technical Specification cold shutdown temperature limit). Loss of ALL RCS temperature and (reactor vessel/RCS [PWR] or RPV [BWR]) level indication for 15 minutes or longer. 	<p style="text-align: right;">CU5</p> <p>Initiating Condition: UNPLANNED rise in RCS temperature.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> UNPLANNED rise in RCS temperature > 212°F due to loss of decay heat removal. <p>OR</p> <ol style="list-style-type: none"> Loss of the following for <u>≥15</u> minutes. <ul style="list-style-type: none"> ALL RCS temperature indications AND <ul style="list-style-type: none"> ALL RPV water level indications 	<p> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific Technical Specification cold shutdown temperature limit to ensure timely classification.</p> <p>2) Changed the word increase to rise in the initiating condition to be consistent with operations language and training.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification									
<p style="text-align: right;">CG1</p> <p>Initiating Condition: GENERAL EMERGENCY</p> <p>Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory affecting fuel clad integrity with containment challenged.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Note: The Emergency Director should declare the General Emergency promptly upon determining that 30 minutes time has been exceeded, or will likely be exceeded.</p> <p>1. a. (Reactor vessel/RCS [PWR] or RPV [BWR]) vessel level less than (site-specific level) for 30 minutes or longer.</p> <p style="padding-left: 20px;">AND</p> <p>b. ANY indication from the Containment Challenge Table</p> <p>2. a. (Reactor vessel/RCS [PWR] or RPV [BWR]) vessel level cannot be monitored for 30 minutes or longer.</p> <p style="padding-left: 20px;">AND</p> <p>b. Core uncover is indicated by ANY of the following:</p> <ul style="list-style-type: none"> • (Site-specific radiation monitor) reading greater than (site-specific value) • Erratic source range monitor indication [PWR] • UNPLANNED increase in (site-specific sump and/or tank levels) of sufficient magnitude to indicate core uncover • (Other site-specific indications) <p style="padding-left: 20px;">AND</p> <p>c. ANY indication from the Containment Challenge Table).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Table: Containment Challenge Table</td> </tr> <tr> <td style="padding: 2px;"> <ul style="list-style-type: none"> • CONTAINMENT CLOSURE not established* • (Explosive mixture) exists inside containment • UNPLANNED increase in containment pressure • Secondary containment radiation monitor reading above (site-specific value) [BWR] </td> </tr> <tr> <td style="padding: 2px;">* if CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute core uncover time limit, then escalation to a General Emergency is not required.</td> </tr> </table>	Table: Containment Challenge Table	<ul style="list-style-type: none"> • 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 uncover time limit, then escalation to a General Emergency is not required.	<p style="text-align: right;">CG6</p> <p>Initiating Condition:</p> <p>Loss of reactor vessel / RCS inventory affecting fuel clad integrity with containment challenged.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <p>1. a. RPV water level < -142 inches (TAF) for ≥ 30 minutes.</p> <p style="padding-left: 20px;">AND</p> <p>b. Any Containment Challenge Indication (Table C4)</p> <p style="padding-left: 20px;">OR</p> <p>2. a. RPV water level unknown for ≥ 30 minutes.</p> <p style="padding-left: 20px;">AND</p> <p>b. Core uncover is indicated by ANY of the following:</p> <ul style="list-style-type: none"> • Table C3 indications of a sufficient magnitude to indicate core uncover. <li style="padding-left: 20px;">OR • Fuel Handling ARM 1(2)-1705-16A or B >3000 mR/hr. <p style="padding-left: 20px;">AND</p> <p>c. ANY Containment Challenge Indication (Table C4)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">Table C3 Indications of RCS Leakage</td> </tr> <tr> <td style="padding: 2px;"> <ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss </td> </tr> <tr> <td style="text-align: center; padding: 2px;">*Rise in level is attributed to a loss of RPV inventory.</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">Table C4 Containment Challenge Indications</td> </tr> <tr> <td style="padding: 2px;"> <ul style="list-style-type: none"> • Primary Containment Hydrogen Concentration $\geq 6\%$ and Oxygen $\geq 5\%$ • UNPLANNED rise in containment pressure • CONTAINMENT CLOSURE <u>not</u> established* • ANY Secondary Containment radiation monitor > QGA 300, Maximum Safe operating level. </td> </tr> <tr> <td style="padding: 2px;">* if CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute core uncover time limit, then escalation to a General Emergency is not required.</td> </tr> </table>	Table C3 Indications of RCS Leakage	<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 	*Rise in level is attributed to a loss of RPV inventory.	Table C4 Containment Challenge Indications	<ul style="list-style-type: none"> • Primary Containment Hydrogen Concentration $\geq 6\%$ and Oxygen $\geq 5\%$ • UNPLANNED rise in containment pressure • CONTAINMENT CLOSURE <u>not</u> established* • ANY Secondary Containment radiation monitor > QGA 300, Maximum Safe operating level. 	* if CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute core uncover time limit, then escalation to a General Emergency is not required.	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific levels, radiation monitors, and sumps and tanks to ensure timely classification.</p> <p>2) Listed Explosive mixture in the Containment Challenge Table to ensure timely classification.</p> <p>3) Worded "cannot be monitored" as unknown to ensure clarity for instances when the indicator is working but is over/under ranged. This is also in keeping with current EAL wording.</p>
Table: Containment Challenge Table											
<ul style="list-style-type: none"> • 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 uncover time limit, then escalation to a General Emergency is not required.											
Table C3 Indications of RCS Leakage											
<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 											
*Rise in level is attributed to a loss of RPV inventory.											
Table C4 Containment Challenge Indications											
<ul style="list-style-type: none"> • Primary Containment Hydrogen Concentration $\geq 6\%$ and Oxygen $\geq 5\%$ • UNPLANNED rise in containment pressure • CONTAINMENT CLOSURE <u>not</u> established* • ANY Secondary Containment radiation monitor > QGA 300, Maximum Safe operating level. 											
* if CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute core uncover time limit, then escalation to a General Emergency is not required.											

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">CS1</p> <p>Initiating Condition: SITE AREA EMERGENCY Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory affecting core decay heat removal capability.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <p>Note: The Emergency Director should declare the Site Area Emergency promptly upon determining that 30 minutes time has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 1. a. CONTAINMENT CLOSURE not established. <p>AND</p> <ol style="list-style-type: none"> b. (Reactor vessel/RCS [PWR] or RPV [BWR]) level less than (site-specific level). <ol style="list-style-type: none"> 2. a. CONTAINMENT CLOSURE established. <p>AND</p> <ol style="list-style-type: none"> b. (Reactor vessel/RCS [PWR] or RPV [BWR]) level less than (site-specific level). <ol style="list-style-type: none"> 3. a. (Reactor vessel/RCS [PWR] or RPV [BWR]) level cannot be monitored for 30 minutes or longer. <p>AND</p> <ol style="list-style-type: none"> b. Core uncover is indicated by ANY of the following: <ul style="list-style-type: none"> • (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 uncover • (Other site-specific indications) 	<p style="text-align: right;">CS6</p> <p>Initiating Condition: Loss of reactor vessel / RCS inventory affecting core decay heat removal capabilities.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. With CONTAINMENT CLOSURE <u>not</u> established, RPV water level < -65 inches <p>OR</p> <ol style="list-style-type: none"> 2. With CONTAINMENT CLOSURE established, RPV water level < - 142 inches (TAF) <p>OR</p> <ol style="list-style-type: none"> 3. a. RPV water level unknown for \geq 30 minutes <p>AND</p> <ol style="list-style-type: none"> b. Core uncover is indicated by ANY of the following: <ul style="list-style-type: none"> • Table C3 indications of a sufficient magnitude to indicate core uncover. <p>OR</p> <ul style="list-style-type: none"> • Fuel Handling ARM 1(2)-1705-16A or B >3000 mR/hr. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Table C3 Indications of RCS Leakage</p> <ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • .Observation of leakage or inventory loss <p style="text-align: center;">*Rise in level is attributed to a loss of RPV inventory.</p> </div>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific values for level, radiation monitors, and sumps and tanks to ensure timely classification.</p> <p>2) EAL #1 Quad Cities Station does not have a low, low, low RPV water level value stated within their Technical Specifications, all ESF functions come from the low, low value of -55.2inches, NEI 99-01 rev 6 developer notes for CS1 request the developer to use the low, low, low value for declaration of a SAE when Containment Closure is not established, as such an RPV water level -65 inches was selected as the threshold value since it is substantially above TAF RPV water level of -142 inches and substantially below the low, low value of -55.2inches clearly indicating a worsening of the condition and the need to escalate the emergency from an Alert condition.</p> <p>3) Worded "cannot be monitored" as unknown to ensure clarity for instances when the indicator is working but is over/under ranged. This is also in keeping with current EAL wording.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification			
<p style="text-align: right;">CA1</p> <p>Initiating Condition: ALERT Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Note: The Emergency Director should declare the Alert promptly upon determining that 15 minutes time has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 1. Loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory as indicated by level less than (site-specific level). 2. <ol style="list-style-type: none"> a. (Reactor vessel/RCS [PWR] or RPV [BWR]) level cannot be monitored for 15 minutes or longer <p>AND</p> <ol style="list-style-type: none"> b. UNPLANNED increase in (site-specific sump and/or tank) levels due to a loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory. 	<p style="text-align: right;">CA6</p> <p>Initiating Condition: Loss of RPV inventory</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. Loss of RPV inventory as indicated by level < - 59inches. <p>OR</p> <ol style="list-style-type: none"> 2. <ol style="list-style-type: none"> a. RPV water level unknown for \geq 15 minutes. <p>AND</p> <ol style="list-style-type: none"> b. Loss of RPV inventory per Table C3 indications. <table border="1" data-bbox="762 712 1356 954" style="margin-top: 20px;"> <thead> <tr> <th style="text-align: center;">Table C3 Indications of RCS Leakage</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss </td> </tr> <tr> <td style="text-align: center;">*Rise in level is attributed to a loss of RPV inventory.</td> </tr> </tbody> </table>	Table C3 Indications of RCS Leakage	<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 	*Rise in level is attributed to a loss of RPV inventory.	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific levels, and sumps and tanks to ensure timely classification.</p> <p>2) Worded "cannot be monitored" as unknown to ensure clarity for instances when the indicator is working but is over/under ranged. This is also in keeping with current EAL wording.</p>
Table C3 Indications of RCS Leakage					
<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 					
*Rise in level is attributed to a loss of RPV inventory.					

NEI 99-01 Rev 6	Proposed EAL	Justification			
<p style="text-align: right;">CU1</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>UNPLANNED loss of (reactor vessel/RCS [PWR] or RPV [BWR]) inventory for 15 minutes or longer.</p> <p>Operating Mode Applicability: Cold Shutdown, Refueling</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 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. 2. a. (Reactor vessel/RCS [PWR] or RPV [BWR]) level cannot be monitored. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> b. UNPLANNED increase in (site-specific sump and/or tank) levels. 	<p style="text-align: right;">CU6</p> <p>Initiating Condition:</p> <p>UNPLANNED loss of reactor vessel / RCS inventory for 15 minutes or longer.</p> <p>Operating Mode Applicability: 4, 5</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. UNPLANNED loss of reactor coolant results in the inability to restore and maintain RPV water level above the procedurally established lower limit for ≥ 15 minutes. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. a. RPV water level unknown <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> b. Loss of RPV inventory per Table C3 indications. <table border="1" data-bbox="762 751 1356 982" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Table C3 Indications of RCS Leakage</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"> <ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss </td> </tr> <tr> <td style="text-align: center;">*Rise in level is attributed to a loss of RPV inventory.</td> </tr> </tbody> </table>	Table C3 Indications of RCS Leakage	<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 	*Rise in level is attributed to a loss of RPV inventory.	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Described "a required lower limit" as a procedurally established lower limit, and listed site specific sumps and tanks to ensure timely classification.</p> <p>2) Worded "cannot be monitored" as unknown to ensure clarity for instances when the indicator is working but is over/under ranged. This is also in keeping with current EAL wording.</p>
Table C3 Indications of RCS Leakage					
<ul style="list-style-type: none"> • UNPLANNED floor or equipment sump level rise* • UNPLANNED Torus level rise* • UNPLANNED vessel make up rate rise • Observation of leakage or inventory loss 					
*Rise in level is attributed to a loss of RPV inventory.					

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HG1</p> <p>Initiating Condition: GENERAL EMERGENCY</p> <p>HOSTILE ACTION resulting in loss of physical control of the facility.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>1. a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (site-specific security shift supervision).</p> <p style="padding-left: 20px;">AND</p> <p>b. EITHER of the following:</p> <p style="padding-left: 40px;">1. ANY of the following safety functions cannot be controlled or maintained.</p> <ul style="list-style-type: none"> ▪ Reactivity control ▪ Core cooling [PWR] / RPV water level [BWR] ▪ RCS heat removal <p style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">2. Damage to spent fuel has occurred or is IMMINENT</p>	<p style="text-align: right;">HG1</p> <p>Initiating Condition:</p> <p>HOSTILE ACTION resulting in loss of physical control of the facility.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>1. A notification from the Security Force that a HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA.</p> <p style="padding-left: 20px;">AND</p> <p>2. a. ANY Table H1 safety function <u>cannot</u> be controlled or maintained.</p> <p style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">b. Damage to spent fuel has occurred or is IMMINENT</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; margin: 0;">Table H1 Safety Functions</p> <ul style="list-style-type: none"> • Reactivity Control (ability to shut down the reactor and keep it shutdown) • RPV Water Level (ability to cool the core) • RCS Heat Removal (ability to maintain heat sink) </div>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) List site security shift supervision as Security Force.</p> <p>2) Added descriptors to better explain each safety function and allow for a timely classification.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HS1</p> <p>Initiating Condition: SITE AREA EMERGENCY</p> <p>HOSTILE ACTION within the Protected Area.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the (site-security shift supervision).</p>	<p style="text-align: right;">HS1</p> <p>Initiating Condition:</p> <p>HOSTILE ACTION within the Protected Area.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>A notification from the Security Force that a HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA.</p>	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) List site security shift supervision as Security Force.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HA1</p> <p>Initiating Condition: ALERT</p> <p>HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: (1 or 2)</p> <ol style="list-style-type: none"> 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site-specific security shift supervision). 2. A validated notification from NRC of an aircraft attack threat within 30 minutes of the site. 	<p style="text-align: right;">HA1</p> <p>Initiating Condition:</p> <p>HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. A validated notification from NRC of an aircraft attack threat < 30 minutes from the site. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. Notification by the Security Force that a HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA. 	<p> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) List site security shift supervision as Security Force.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HU1</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Confirmed SECURITY CONDITION or threat.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: (1 or 2 or 3)</p> <ol style="list-style-type: none"> 1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the (site-specific security shift supervision). 2. Notification of a credible security threat directed at the site. 3. A validated notification from the NRC providing information of an aircraft threat. 	<p style="text-align: right;">HU1</p> <p>Initiating Condition:</p> <p>Confirmed SECURITY CONDITION or threat.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <ol style="list-style-type: none"> 1. Notification of a credible security threat directed at the site as determined per SY-AA-101-132, Security Assessment and Response to Unusual Activities. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. A validated notification from the NRC providing information of an aircraft threat. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 3. Notification by the Security Force of a SECURITY CONDITION that does <u>not</u> involve a HOSTILE ACTION. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) List site security shift supervision as Security Force.</p> <p>2) Further described credible security threat through listing a site specific procedure.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HS6</p> <p>Initiating Condition: SITE AREA EMERGENCY</p> <p>Inability to control a key safety function from outside the Control Room.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: (1 and 2)</p> <p>Note: The Emergency Director should declare the Site Area Emergency promptly upon determining that (site-specific number of minutes) has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 1. An event has resulted in plant control being transferred from the Control Room to (site-specific remote shutdown panels and local control stations). 2. Control of ANY of the following key safety functions is not reestablished within (site-specific number of minutes). <ul style="list-style-type: none"> ▪ Reactivity control ▪ Core cooling [PWR] / RPV water level [BWR] ▪ RCS heat removal 	<p style="text-align: right;">HS2</p> <p>Initiating Condition:</p> <p>Inability to control a key safety function from outside the Control Room.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1 A Control Room evacuation has resulted in plant control being transferred from the Control Room to alternate locations per <ul style="list-style-type: none"> • QCARP 0050-01, SB-1-1 Injection with SSMP and Bringing the Unit to Cold Shutdown OR • QCARP 0050-02, SB-1-1 Injection with RCIC and Bringing the Unit to Cold Shutdown OR • QOA 0010-05, Plant Operation with the Control Room Inaccessible <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> 2. Control of ANY Table H1 key safety function is not reestablished in < 15 minutes. <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Table H1 Safety Functions</p> <ul style="list-style-type: none"> • Reactivity Control (ability to shut down the reactor and keep it shutdown) • RPV Water Level (ability to cool the core) • RCS Heat Removal (ability to maintain heat sink) </div>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) EAL uses the site specific Control Room evacuation procedure to effectively list all of the alternate locations, panels, and stations requested by the developer notes. This would be the procedure the Control Room would enter should such an event occur, this allows for greater clarity as to when this EAL would apply than if each panel and station used in alternate shutdown were to be listed,</p> <p>2) Added descriptors to better explain each safety function and allow for a timely classification.</p> <p>3) Changed "An event" to "A Control Room evacuation" to remove confusion if partial plant control was transferred to outside the control room with the control room still manned, due to testing or equipment failure.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HA6</p> <p>Initiating Condition: ALERT</p> <p>Control Room evacuation resulting in transfer of plant control to alternate locations.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>An event has resulted in plant control being transferred from the Control Room to (site-specific remote shutdown panels and local control stations).</p>	<p style="text-align: right;">HA2</p> <p>Initiating Condition:</p> <p>Control Room evacuation resulting in transfer of plant control to alternate locations.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>A Control Room evacuation has resulted in plant control being transferred from the Control Room to alternate locations per:</p> <ul style="list-style-type: none"> • QCARP 0050-01, SB-1-1 Injection with SSMP and Bringing the Unit to Cold Shutdown OR • QCARP 0050-02, SB-1-1 Injection with RCIC and Bringing the Unit to Cold Shutdown OR • QOA 0010-05, Plant Operation with the Control Room Inaccessible 	<p> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) EAL uses the site specific Control Room evacuation procedure to effectively list all of the alternate locations, panels, and stations requested by the developer notes. This would be the procedure the Control Room would enter should such an event occur, this allows for greater clarity as to when this EAL would apply than if each panel and station used in alternate shutdown were to be listed.</p> <p>2) Changed "An event" to "A Control Room evacuation" to remove confusion if partial plant control was transferred to outside the control room with the control room still manned, due to testing or equipment failure.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification		
<p style="text-align: right;">HU4</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>FIRE potentially degrading the level of safety of the plant.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4)</p> <p>Note: The Emergency Director should declare the Unusual Event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</p> <ol style="list-style-type: none"> 1. a. A FIRE is NOT extinguished within 15-minutes of ANY of the following FIRE detection indications: <ul style="list-style-type: none"> • 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 <p style="text-align: center;">AND</p> b. The FIRE is located within ANY of the following plant rooms or areas: (site-specific list of plant rooms or areas) <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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. 	<p style="text-align: right;">HU3</p> <p>Initiating Condition:</p> <p>FIRE potentially degrading the level of safety of the plant.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. <ol style="list-style-type: none"> 1. A FIRE in ANY Table H2 area is <u>not</u> extinguished in < 15-minutes of ANY of the following FIRE detection indications: <ul style="list-style-type: none"> • 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 <table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: center;">Table H2 Vital Areas</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Reactor Building (when inerted the Drywell is exempt) • Main Control Room Envelope • Unit and Shared Emergency Diesel Generator Rooms • 4KV Switchgear Area • Battery Rooms • RHR Service Water Vaults • Turbine Building Cable Tunnel • Cribhouse </td> </tr> </tbody> </table> <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. a. Receipt of a single fire alarm in ANY Table H2 area (i.e., no other indications of a FIRE). AND b. The existence of a FIRE is <u>not</u> verified in < 30 minutes of alarm receipt. OR <ol style="list-style-type: none"> 3. A FIRE within the plant or ISFSI PROTECTED AREA <u>not</u> extinguished in < 60-minutes of the initial report, alarm or indication. OR 4. A FIRE within the plant or ISFSI PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish. 	Table H2 Vital Areas	<ul style="list-style-type: none"> • Reactor Building (when inerted the Drywell is exempt) • Main Control Room Envelope • Unit and Shared Emergency Diesel Generator Rooms • 4KV Switchgear Area • Battery Rooms • RHR Service Water Vaults • Turbine Building Cable Tunnel • Cribhouse 	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed site specific list of plant rooms or areas that contain SAFETY SYSTEM equipment to ensure timely classification.</p>
Table H2 Vital Areas				
<ul style="list-style-type: none"> • Reactor Building (when inerted the Drywell is exempt) • Main Control Room Envelope • Unit and Shared Emergency Diesel Generator Rooms • 4KV Switchgear Area • Battery Rooms • RHR Service Water Vaults • Turbine Building Cable Tunnel • Cribhouse 				

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HU2</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Seismic event greater than OBE levels.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>Seismic event greater than Operating Basis Earthquake (OBE) as indicated by:</p> <p>a. (site-specific indication that a seismic event met or exceeded OBE limits)</p>	<p style="text-align: right;">HU4</p> <p>Initiating Condition:</p> <p>Seismic event greater than OBE levels.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>1. Control Room personnel feel an actual or potential seismic event.</p> <p>AND</p> <p>2. The occurrence of a seismic event is confirmed in a manner deemed appropriate by the Shift Manager or Emergency Director.</p>	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Used Alternate developer notes allowed wording since specific Control Room indication of a seismic event > OBE is not available.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification										
<p style="text-align: right;">HA5</p> <p>Initiating Condition: ALERT</p> <p>Gaseous release impeding access to equipment necessary for normal plant operations. cooldown or shutdown.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>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.</p> <p>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)</p> <p>AND</p> <p>b. Entry into the room or area is prohibited or impeded.</p>	<p style="text-align: right;">HA5</p> <p>Initiating Condition:</p> <p>Gaseous release impeding access to equipment necessary for normal plant operations, cooldown or shutdown.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> 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. <p>1. Release of a toxic, corrosive, asphyxiant or flammable gas in a Table H3 area.</p> <table border="1" data-bbox="787 685 1325 897"> <thead> <tr> <th colspan="2" style="text-align: center;">Table H3 Areas with Entry Related Mode Applicability</th> </tr> <tr> <th style="text-align: center;">Area</th> <th style="text-align: center;">Entry Related Mode Applicability</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Reactor Building*</td> <td style="text-align: center;">Mode 3 and 4</td> </tr> <tr> <td style="text-align: center;">Turbine Building*</td> <td style="text-align: center;">Mode 3</td> </tr> <tr> <td colspan="2" style="text-align: center;">*Areas required to establish shutdown cooling</td> </tr> </tbody> </table> <p>AND</p> <p>2. Entry into the room or area is prohibited or impeded.</p>	Table H3 Areas with Entry Related Mode Applicability		Area	Entry Related Mode Applicability	Reactor Building*	Mode 3 and 4	Turbine Building*	Mode 3	*Areas required to establish shutdown cooling		<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed plant specific rooms and areas with entry related mode applicability to ensure timely classification.</p>
Table H3 Areas with Entry Related Mode Applicability												
Area	Entry Related Mode Applicability											
Reactor Building*	Mode 3 and 4											
Turbine Building*	Mode 3											
*Areas required to establish shutdown cooling												

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HU3</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Hazardous Event</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4)</p> <p>Note: EAL #3 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.</p> <ol style="list-style-type: none"> 1. A tornado strike within the PROTECTED AREA. 2. Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode. 3. Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release). 4. A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles. 5. (Site-specific list of natural or technological hazard events) 	<p style="text-align: right;">HU6</p> <p>Initiating Condition:</p> <p>Hazardous Event</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Note:</p> <ul style="list-style-type: none"> • EAL #4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents. <ol style="list-style-type: none"> 1. Tornado strike within the PROTECTED AREA. OR 2. Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component required by Technical Specifications for the current operating mode. OR 3. Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release). OR 4. A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles. OR 5. Abnormal River level, as indicated by EITHER: <ol style="list-style-type: none"> a. High river level > 594 ft. OR b. Report of substantial reduction in river level by site personnel and confirmation by the Corp. of Engineers that Dam #14 has failed. 	<p style="text-align: center;"> <input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Included River water level as part of the site specific list of natural or technological hazard events. The EAL values selected are the current approved EAL UE values.</p> <p>2) Changed the word "needed" to "required by Technical Specifications" in the EAL to be consistent with terminology used by operators and minimize confusion.</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HG7</p> <p>Initiating Condition: GENERAL EMERGENCY</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels: Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMEDIATE substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.</p>	<p style="text-align: right;">HG7</p> <p>Initiating Condition:</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL): Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMEDIATE substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area..</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HS7</p> <p>Initiating Condition: SITE AREA EMERGENCY</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>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.</p>	<p style="text-align: right;">HS7</p> <p>Initiating Condition:</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>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.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HA7</p> <p>Initiating Condition: ALERT</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>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.</p>	<p style="text-align: right;">HA7</p> <p>Initiating Condition:</p> <p>Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>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.</p>	<p><input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">HU7</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Other conditions existing which in the judgment of the Emergency director warrant declaration of an UNUSUAL EVENT.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>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.</p>	<p style="text-align: right;">HU7</p> <p>Initiating Condition:</p> <p>Other conditions existing which in the judgment of the Emergency director warrant declaration of an UNUSUAL EVENT.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>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.</p>	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p>

NEI 99-01 Rev 6	Proposed EAL	Justification
<p style="text-align: right;">E-HU1</p> <p>Initiating Condition: UNUSUAL EVENT</p> <p>Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p>Operating Mode Applicability:</p> <p>All</p> <p>Example Emergency Action Levels:</p> <p>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.</p>	<p style="text-align: right;">E-HU1</p> <p>Initiating Condition:</p> <p>Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p>Operating Mode Applicability:</p> <p>1, 2, 3, 4, 5, D</p> <p>Emergency Action Level (EAL):</p> <p>Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading:</p> <ul style="list-style-type: none"> • > 40 mr/hr (gamma + neutron) on the top of the spent fuel cask <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • > 220 mr/hr (gamma + neutron) on the side of the spent fuel cask, excluding inlet and outlet ducts. 	<p style="text-align: center;"> <input checked="" type="checkbox"/> No Change <input type="checkbox"/> Difference <input type="checkbox"/> Deviation </p> <p>1) Listed 2x the site specific cask specific allowable radiation level as per Certificate of Compliance No. 1014 Appendix A Section 5.7.</p>

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

ARG1**Initiating Condition:**

Release of gaseous radioactivity resulting in offsite dose greater than 1000 mR~~f~~em TEDE or 5000 mR~~f~~em thyroid CDE.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):**Notes:**

- The Emergency Director should declare the **General Emergency event** 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.
- **Classification based on effluent monitor readings assumes that a release path to the environment is established.** 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.

(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)~~

1. ~~The sum of readings on the Rx Bldg and Chimney SPINGs > 3.84 E+09 uCi/sec for ≥ 15 minutes (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate).~~

OR

2. ~~Dose assessment using actual meteorology indicates doses at or beyond (site specific dose receptor point) the site boundary of EITHER:~~

a. **> 1000 mRem TEDE**

OR

b. **> 5000 mRem CDE Thyroid**

OR

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

~~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.~~

3. Field survey results at or beyond the site boundary indicate **EITHER**:

a. Gamma (closed window) dose rates **>1000 mR/hr** are expected to continue for **≥ 60 minutes**.

OR

b. Analyses of field survey samples indicate **> 5000 mRem CDE Thyroid** for **60 minutes** of inhalation.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude will require implementation of protective actions for the public.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at the EPA PAG of 1000 mRem while the 5000 mRem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

~~Classification based on effluent monitor readings assumes that a release path to the environment is established. 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.~~

Basis Reference(s):

1. NEI 99-01 Rev 6, AG1
2. EP-EAL-0606 Revision 1, Criteria for Choosing Radiological Gaseous Effluent EAL Threshold Values Quad Cities Station

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

ARS1**Initiating Condition:**

Release of gaseous radioactivity resulting in offsite dose greater than 100 mRrem TEDE or 500 mRrem thyroid CDE.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):**Notes:**

- The Emergency Director should declare the **Site Area Emergency event** 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.
- **Classification based on effluent monitor readings assumes that a release path to the environment is established.** 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.

~~(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)~~

~~(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):~~

~~(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.~~

3. 1. The sum of readings on the Rx Bldg and Chimney SPINGs > **3.84 E+08 uCi/sec** for **≥ 15 minutes** (as determined by Control Room Panels or PPDS – Total Noble Gas Release Rate).

OR

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of **EITHER**:

a. **> 100 mRem TEDE**

OR

b. **> 500 mRem CDE Thyroid**

OR

3. Field survey results at or beyond the site boundary indicate **EITHER**:

a. Gamma (closed window) dose rates **>100 mR/hr** are expected to continue for **≥ 60 minutes**.

OR

b. Analyses of field survey samples indicate **> 500 mRem CDE Thyroid for 60 minutes** of inhalation.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to 10% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 10% of the EPA PAG of 1000 mRrem while the 500 mRrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

~~Classification based on effluent monitor readings assumes that a release path to the environment is established. 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.~~

Escalation of the emergency classification level would be via IC RAG1.

Basis Reference(s):

1. NEI 99-01 Rev 6, AS1

RECOGNITION CATEGORY

ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

2. EP-EAL-0606 Revision 1, Criteria for Choosing Radiological Gaseous Effluent EAL Threshold Values Quad Cities Station

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

ARA1**Initiating Condition:**

Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRrem TEDE or 50 mRrem thyroid CDE.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):**Notes:**

- The Emergency Director should declare the **Alert event** 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.
 - **Classification based on effluent monitor readings assumes that a release path to the environment is established.** 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.
- (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)~~
- (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).~~
- (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.~~
- (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.~~

RECOGNITION CATEGORY

ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

1. The sum of readings on the Rx Bldg and Chimney SPINGs **> 3.84 E+07 uCi/sec** for **≥ 15 minutes** (as determined by DOP 1700-10 or PPDS – Total Noble Gas Release Rate).

OR

2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of **EITHER**:

- a. **> 10 mRem TEDE**

OR

- b. **> 50 mRem CDE Thyroid**

OR

3. Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than **EITHER** of the following at or beyond the site boundary

- a. **10 mRem TEDE for 60 minutes** of exposure

OR

- b. **50 mRem CDE Thyroid for 60 minutes** of exposure

OR

4. Field survey results at or beyond the site boundary indicate **EITHER**:

- a. Gamma (closed window) dose rates **> 10 mR/hr** are expected to continue for **≥ 60 minutes**.

OR

- b. Analyses of field survey samples indicate **> 50 mRem CDE Thyroid** for **60 minutes** of inhalation.

Basis:

This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of safety of

RECOGNITION CATEGORY**ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS**

the plant as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 1% of the EPA PAG of 1000 mRrem while the 50 mRrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

~~Classification based on effluent monitor readings assumes that a release path to the environment is established. 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.~~

Escalation of the emergency classification level would be via IC RAS1.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA1
2. EP-EAL-0606 Revision 1, Criteria for Choosing Radiological Gaseous Effluent EAL Threshold Values Quad Cities Station

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

ARU1**Initiating Condition:**

Release of gaseous or liquid radioactivity greater than 2 times the ~~ODCM (site-specific effluent release controlling document)~~ limits for 60 minutes or longer.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):**Notes:**

- The Emergency Director should declare the ~~Unusual Event event~~ promptly upon determining that ~~60 minutes~~ **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 60 minutes.
- **Classification based on effluent monitor readings assumes that a release path to the environment is established.** 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.

~~(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)~~

~~(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.~~

~~(3) — 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.~~

1. Reading on any of the following effluent monitors **> 2 times alarm setpoint** established by a current radioactive release discharge permit for **≥ 60 minutes**.

- Radwaste Effluent Monitor 1/2-1799-01

OR

- Discharge Permit specified monitor

OR

2. The sum of readings on the Rx Bldg and Chimney SPINGs **> 4.38 E+05 uCi/sec** for **≥ 60 minutes** (as determined Control Room Panels or PPDS – Total Noble Gas Release Rate).

RECOGNITION CATEGORY

ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

~~HVAC and SGTS Radiation Monitors 1.1706 (1.17) 60 found on Control room Panels or OR~~

3. Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates > 2 times ODCM Limit with a release duration of \geq 60 minutes.

Basis:

This IC addresses a potential decrease in the level of safety of the plant as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.

Nuclear power plants incorporate design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

~~Classification based on effluent monitor readings assumes that a release path to the environment is established. 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.~~

Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.

EAL #1 Basis

~~EAL #2~~— This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas).

The effluent monitors listed are those normally used for planned discharges. If a discharge is performed using a different flowpath or effluent monitor other than those listed (e.g., a portable or temporary effluent monitor), then the declaration criteria will be based on the monitor specified in the Discharge Permit.

EAL #2 Basis

~~EAL #1~~— This EAL addresses normally occurring continuous radioactivity releases from monitored gaseous ~~or liquid~~ effluent pathways.

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

EAL #3 Basis

~~EAL #3~~—This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).

Escalation of the emergency classification level would be via IC **RAA1**.

Basis Reference(s):

1. NEI 99-01 Rev 6, AU1
2. EP-EAL-0606 Revision 1, Criteria for Choosing Radiological Gaseous Effluent EAL Threshold Values Quad Cities Station

**RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS**

ARA2

Initiating Condition:

Significant lowering of water level above, or damage to, irradiated fuel.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

- ~~(1) — Uncovery of irradiated fuel in the REFUELING PATHWAY.~~
- ~~(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)~~~~
- ~~(3) — Lowering of spent fuel pool level to (site specific Level 2 value). [See Developer Notes]~~

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr**

Table R1 Fuel Handling Incident Radiation Monitors
<ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Monitor • 1(2) 1705-16B Fuel Pool Rad Monitor

Basis:

REFUELING PATHWAY: all the cavities, tubes, canals and pools through which irradiated fuel may be moved or stored, but not including the reactor vessel below the flange.

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

CONFINEMENT BOUNDARY: The irradiated fuel dry storage cask barrier(s) between areas containing radioactive substances and the environment.

RECOGNITION CATEGORY**ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS**

This IC addresses events that have caused IMMEDIATE or actual damage to an irradiated fuel assembly, ~~or a significant lowering of water level within the spent fuel pool (see Developer Notes).~~ These events present radiological safety challenges to plant personnel and are precursors to a release of radioactivity to the environment. As such, they represent an actual or potential substantial degradation of the level of safety of the plant.

This IC applies to irradiated fuel that is licensed for dry storage up to the point that the loaded storage cask is sealed. Once sealed, damage to a loaded cask causing loss of the CONFINEMENT BOUNDARY is classified in accordance with IC E-HU1.

Escalation of the emergency would be based on either Recognition Category A or C ICs.

EAL #1 Basis**EAL #1**

This EAL escalates from RAU2 in that the loss of level, in the affected portion of the REFUELING PATHWAY, is of sufficient magnitude to have resulted in uncovering of irradiated fuel. Indications of irradiated fuel uncovering may include direct or indirect visual observation (e.g., reports from personnel or camera images), as well as significant changes in water and radiation levels, or other plant parameters. Computational aids may also be used (e.g., a boil-off curve). Classification of an event using this EAL should be based on the totality of available indications, reports and observations.

While an area radiation monitor could detect an increase in a dose rate due to a lowering of water level in some portion of the REFUELING PATHWAY, the reading may not be a reliable indication of whether or not the fuel is actually uncovered. To the degree possible, readings should be considered in combination with other available indications of inventory loss.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

EAL #2 Basis**EAL #2**

This EAL addresses a release of radioactive material caused by 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. A rise in readings on radiation monitors should be considered in conjunction with in-plant reports or observations of a potential fuel damaging event (e.g., a fuel handling accident).

Escalation of the emergency would be based on either Recognition Category RA or C ICs.

EAL #3

RECOGNITION CATEGORY

ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

~~Spent fuel pool water level at this value is within the lower end of the level range necessary to prevent significant dose consequences from direct gamma radiation to personnel performing operations in the vicinity of the spent fuel pool. This condition reflects a significant loss of spent fuel pool water inventory and thus it is also a precursor to a loss of the ability to adequately cool the irradiated fuel assemblies stored in the pool.~~

~~Escalation of the emergency classification level would be via ICs AS1 or AS2 (see AS2 Developer Notes).~~

Basis Reference(s):

1. NEI 99-01 Rev 6, AA2

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

ARU2

Initiating Condition:

UNPLANNED loss of water level above irradiated fuel.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

~~(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)~~

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

- Refueling Cavity water level < **282 in.** (Upper Wide Range simulated signal).

OR

- Spent Fuel Pool water level < **19 ft.** above the fuel (< - **4 ft** indicated level).

OR

- Indication or report of a drop in water level in the REFUELING PATHWAY.

AND

b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitors in Table R1.

Table R1 Fuel Handling Incident Radiation Monitors
<ul style="list-style-type: none"> • 1(2) 1705-16A Fuel Pool Rad Mon • 1(2) 1705-16B Fuel Pool Rad Mon

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

REFUELING PATHWAY: all the cavities, tubes, canals and pools through which irradiated fuel may be moved or stored, but not including the reactor vessel below the flange.

This IC addresses a **decrease-loss** in water level above irradiated fuel sufficient to cause elevated radiation levels. This condition could be a precursor to a more serious event and is also indicative of a minor loss in the ability to control radiation levels within the plant. It is therefore a potential degradation in the level of safety of the plant.

A water level **decrease-loss** will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from plant personnel (e.g., from a refueling crew) or video camera observations (if available) **or from any other temporarily installed monitoring instrumentation**. A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.

The effects of planned evolutions should be considered. For example, a refueling bridge area radiation monitor reading may increase due to planned evolutions such as lifting of the reactor vessel head or movement of a fuel assembly. Note that this EAL is applicable only in cases where the elevated reading is due to an UNPLANNED loss of water level.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

Escalation of the emergency classification level would be via IC **RAA2**.

Basis Reference(s):

1. NEI 99-01 Rev 6, AU2
2. Technical Specification 3.7.8
3. Technical Specification 3.9.6

**RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS**

ARA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

If the equipment in the ~~listed~~ room or area ~~listed in Table R3~~ was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted
 (1) — ~~Dose rate greater than 15 mR/hr in ANY of the following areas:~~

- ~~• Control Room~~
- ~~• Central Alarm Station~~
- ~~• (other site specific areas/rooms)~~

(2) — ~~An UNPLANNED event results in radiation levels that prohibit or 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)~~

1. ~~Dose rate greater than~~ **> 15 mR/hr** in **ANY** of the areas contained in Table R2:

Table R2 Areas Requiring Continuous Occupancy
<ul style="list-style-type: none"> • Main Control Room (Unit 1 ARM Station #22) • Central Alarm Station – (by survey)

OR

2. **UNPLANNED** event results in radiation levels that prohibit or significantly impede access to any of the areas contained in Table R3:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

Table R3	
Areas with Entry Related Mode Applicability	
Area	Entry Related Mode Applicability
Reactor Building*	Mode 3 and 4
Turbine Building*	Mode 3
*Areas required to establish shutdown cooling	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to **transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures**~~maintain normal plant operation, or to perform a normal plant cooldown and shutdown~~. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect **and the elevated radiation levels preclude the ability to place shutdown cooling in service at the time of the elevated radiation levels**. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding **beyond that required by procedures**, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

RECOGNITION CATEGORY**ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS**

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

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation increase occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category **RA**, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. FSAR Section 3.2

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

SRU3**Initiating Condition:**

Reactor coolant activity greater than Technical Specification allowable limits.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

~~(1) (Site specific radiation monitor) reading greater than (site specific value).~~

~~(2) Sample analysis indicates that a reactor coolant activity value is greater than an allowable limit specified in Technical Specifications.~~

1. Offgas system radiation monitor **HI-HI** alarm.

OR

2. Specific coolant activity > **4.0 uCi/gm** Dose equivalent I-131.

Basis:

This IC addresses a reactor coolant activity value that exceeds an allowable limit specified in Technical Specifications. This condition is a precursor to a more significant event and represents a potential degradation of the level of safety of the plant.

Conditions that cause the specified monitor to alarm that are not related to fuel clad degradation should not result in the declaration of an Unusual Event.

This EAL addresses site-specific radiation monitor readings that provide indication of a degradation of fuel clad integrity.

An Unusual Event is only warranted when actual fuel clad damage is the cause of the elevated coolant sample activity (as determined by laboratory confirmation). Fuel clad damage should be assumed to be the cause of elevated Reactor Coolant activity unless another cause is known.

Escalation of the emergency classification level would be via ICs FA1 or the Recognition Category **RA** ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, SU3
2. Technical Specifications 3.4.6
3. Technical Specifications 3.7.6

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION****FG1****Initiating Condition:**

Loss of ANY Two Barriers AND Loss or Potential Loss of the third barrier.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Refer to Fission Product Barrier Loss and Potential Loss threshold values to determine barrier status.

Basis:

Fuel Cladding, RCS and Containment comprise the fission product barriers.

At the General Emergency classification level each barrier is weighted equally.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION****FS1****Initiating Condition:**

Loss or Potential Loss of ANY two barriers.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Refer to Fission Product Barrier Loss and Potential Loss threshold values to determine barrier status.

Basis:

Fuel Cladding, RCS and Containment comprise the fission product barriers.

At the Site Area Emergency classification level, each barrier is weighted equally.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

FA1**Initiating Condition:**

ANY Loss or ANY Potential Loss of either Fuel Clad or RCS.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Refer to Fission Product Barrier Loss and Potential Loss threshold values to determine barrier status.

Basis:

Fuel Cladding, RCS and Containment comprise the fission product barriers.

At the Alert classification level, Fuel Cladding and RCS barriers are weighted more heavily than the Containment barrier. Unlike the Containment barrier, loss or potential loss of either the Fuel Cladding or RCS barrier may result in the relocation of radioactive materials or degradation of core cooling capability. Note that the loss or potential loss of Containment barrier in combination with loss or potential loss of either Fuel Cladding or RCS barrier results in declaration of a Site Area Emergency under EAL FS1.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

FC1

Initiating Condition:

RCS Activity

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

~~A. (Site-Specific indications that reactor coolant activity is greater than 300uCi/gm dose equivalent I-131)~~Coolant activity > 300 uCi/gm Dose Equivalent I-131.

Basis:

This threshold indicates that RCS radioactivity concentration is greater than 300 $\mu\text{Ci/gm}$ dose equivalent I-131. Reactor coolant activity above this level is greater than that expected for iodine spikes and corresponds to an approximate range of 2% to 5% fuel clad damage. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier.

It is recognized that sample collection and analysis of reactor coolant with highly elevated activity levels could require several hours to complete. Nonetheless, a sample-related threshold is included as a backup to other indications.

There is no Potential Loss threshold associated with RCS Activity.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

FC2

Initiating Condition:

RPV Water Level

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

~~A.1. Plant conditions indicate~~ Primary ~~Ce~~ontainment flooding is required.

POTENTIAL LOSS

~~A.2. RPV water level cannot~~ be restored and maintained ~~above (site-specific RPV water level corresponding to the top of active fuel)~~ **> -142 inches (TAF)**

or **OR**

3. RPV water level **cannot** be determined.

Basis:

RPV values are actual levels, not indicated levels. Therefore, they may need level compensation depending on conditions.

Loss ~~2.A~~Threshold #1 Basis

The Loss threshold represents the EOP requirement for primary containment flooding. This is identified in the BWROG ~~EPGsEOPs/SAGsSAMGs~~ when the phrase, "Primary Containment Flooding Is Required," appears. Since a site-specific RPV water level is not specified here, the Loss threshold phrase, "Primary containment flooding required," also accommodates the EOP need to flood the primary containment when RPV water level cannot be determined and core damage due to inadequate core cooling is believed to be occurring.

Potential Loss ~~2.A~~Threshold #2 and #3 Basis

This water level corresponds to the top of the active fuel and is used in the EOPs to indicate a challenge to core cooling.

The RPV water level threshold is the same as RCS ~~barrier-Barrier~~ Loss threshold ~~2.A~~. Thus, this threshold indicates a Potential Loss of the Fuel Clad barrier and a Loss of the RCS barrier that appropriately escalates the emergency classification level to a Site Area Emergency.

This threshold is considered to be exceeded when, as specified in the site-specific EOPs, ~~RPV water~~RPV water level cannot be restored and maintained above the specified level following depressurization of the RPV (either manually, automatically or by failure of the RCS barrier) or when procedural guidance or a lack of low pressure RPV injection sources preclude Emergency RPV depressurization. EOPs allow the

RECOGNITION CATEGORY FISSION PRODUCT BARRIER DEGRADATION

operator a wide choice of RPV injection sources to consider when restoring RPV water level to within prescribed limits. EOPs also specify depressurization of the RPV in order to facilitate RPV water level control with low-pressure injection sources. In some events, elevated RPV pressure may prevent restoration of RPV water level until pressure drops below the shutoff heads of available injection sources. Therefore, this Fuel Clad barrier Potential Loss is met only after either: 1) the RPV has been depressurized, or required emergency RPV depressurization has been attempted, giving the operator an opportunity to assess the capability of low-pressure injection sources to restore RPV water level or 2) no low pressure RPV injection systems are available, precluding RPV depressurization in an attempt to minimize loss of RPV inventory.

The term "cannot be restored and maintained above" means the value of RPV water level is not able to be brought above the specified limit (top of active fuel). The determination requires an evaluation of system performance and availability in relation to the RPV water level value and trend. A threshold prescribing declaration when a threshold value *cannot* be restored and maintained above a specified limit does not require immediate action simply because the current value is below the top of active fuel, but does not permit extended operation below the limit; the threshold must be considered reached as soon as it is apparent that the top of active fuel cannot be attained.

Entry into the "Steam Cooling" leg of the EOP's would be an example of an inability to "restore and maintain" level above TAF resulting in this threshold being met.

In high-power ATWS/failure to scram events, EOPs may direct the operator to deliberately lower RPV water level ~~to the top of active fuel~~ in order to reduce reactor power. ~~RPV water level is then controlled between the top of active fuel and the Minimum Steam Cooling RPV Water Level (MSCRWL).~~ Although such action is a challenge to core cooling and the Fuel Clad barrier, the immediate need to reduce reactor power is the higher priority. For such events, ICs SA5-MA3 or SS5-MS3 will dictate the need for emergency classification.

Since the loss of ability to determine if adequate core cooling is being provided presents a significant challenge to the fuel clad barrier, a potential loss of the fuel clad barrier is specified.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

FC5

Initiating Condition:

Primary Containment Radiation

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS~~A. Primary containment radiation monitor reading greater than (site-specific value)~~

Drywell radiation monitor reading > 6.65 E+02 R/hr.

Basis:~~Loss 4.A~~

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the primary containment, assuming that reactor coolant activity equals 300 $\mu\text{Ci/gm}$ dose equivalent I-131. Reactor coolant activity above this level is greater than that expected for iodine spikes and corresponds to an approximate range of 2% to 5% fuel clad damage. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier.

The radiation monitor reading in this threshold is higher than that specified for RCS Barrier ~~RC5~~ Loss ~~T~~ threshold ~~4.A~~ since it indicates a loss of both the Fuel Clad Barrier and the RCS Barrier. Note that a combination of the two monitor readings appropriately escalates the emergency classification level to a Site Area Emergency.

There is no Potential Loss threshold associated with Primary Containment Radiation.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2
2. Core Damage Assessment Methodology

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

FC7

Initiating Condition:

Emergency Director Judgment.

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

1A. Any condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.

POTENTIAL LOSS

2A. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.

Basis:**Loss Threshold #1 Basis**Loss 6.A

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad Barrier is lost.

Potential Loss Threshold #2 BasisPotential Loss 6.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Fuel Clad Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

RC2

Initiating Condition:

RPV Water Level

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

1. RPV water level **cannot** be restored and maintained ~~above (site-specific RPV water level corresponding to the top of active fuel)~~ **> -142 inches (TAF)**

~~or~~ **OR**

2. RPV water level **cannot** be determined.

Basis:Loss 2.A

RPV values are actual levels, not indicated levels. Therefore, they may need level compensation depending on conditions.

This water level corresponds to the top of active fuel and is used in the EOPs to indicate challenge to core cooling.

The RPV water level threshold is the same as Fuel Clad ~~barrier~~ **Barrier FC2** Potential Loss threshold ~~2.A~~. Thus, this threshold indicates a Loss of the RCS barrier and Potential Loss of the Fuel Clad barrier and that appropriately escalates the emergency classification level to a Site Area Emergency.

This threshold is considered to be exceeded when, as specified in the site-specific EOPs, ~~RPV water~~ **RPV water level** cannot be restored and maintained above the specified level following depressurization of the RPV (either manually, automatically or by failure of the RCS barrier) or when procedural guidance or a lack of low pressure RPV injection sources preclude Emergency RPV depressurization. EOPs allow the operator a wide choice of RPV injection sources to consider when restoring RPV water level to within prescribed limits. EOPs also specify depressurization of the RPV in order to facilitate RPV water level control with low-pressure injection sources. In some events, elevated RPV pressure may prevent restoration of RPV water level until pressure drops below the shutoff heads of available injection sources. Therefore, this RCS barrier Loss is met only after either: 1) the RPV has been depressurized, or required emergency RPV depressurization has been attempted, giving the operator an opportunity to assess the capability of low-pressure injection sources to restore RPV water level or 2) no low pressure RPV injection systems are available, precluding RPV depressurization in an attempt to minimize loss of RPV inventory.

The term, "cannot be restored and maintained above," means the value of RPV water level is not able to be brought above the specified limit (top of active fuel). The

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

determination requires an evaluation of system performance and availability in relation to the RPV water level value and trend. A threshold prescribing declaration when a threshold value *cannot* be restored and maintained above a specified limit does not require immediate action simply because the current value is below the top of active fuel, but does not permit extended operation beyond the limit; the threshold must be considered reached as soon as it is apparent that the top of active fuel cannot be attained.

Entry into the "Steam Cooling" leg of the EOP's would be an example of an inability to "restore and maintain" level above TAF resulting in this threshold being met.

In high-power ATWS/failure to scram events, EOPs may direct the operator to deliberately lower RPV water level ~~to the top of active fuel~~ in order to reduce reactor power. ~~RPV water level is then controlled between the top of active fuel and the Minimum Steam Cooling RPV Water Level (MSCRWL).~~ Although such action is a challenge to core cooling and the Fuel Clad barrier, the immediate need to reduce reactor power is the higher priority. For such events, ICs SA5-MA3 or SS5-MS3 will dictate the need for emergency classification.

There is no RCS Potential Loss threshold associated with RPV Water Level.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

RC3

Initiating Condition:

Primary Containment Pressure

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

~~A. Primary containment pressure greater than (site specific value) due to RCS leakage.~~

1. Drywell pressure **>2.5 psig.**

AND

2. Drywell pressure rise is due to RCS leakage

Basis:Loss 1.A

The ~~(site specific value)~~ **> 2.5 psig** primary containment pressure is the ~~drywell~~ **Drywell** high pressure setpoint which indicates a LOCA by automatically initiating ~~the ECCS or equivalent makeup system.~~

The second threshold focuses the fission product barrier loss threshold on a failure of the RCS instead of the non-LOCA malfunctions that may adversely affect primary containment pressure. Pressures of this magnitude can be caused by non-LOCA events such as a loss of Drywell cooling or inability to control primary containment vent/purge.

The release of mass from the RCS due to the as-designed/expected operation of any relief valve does not warrant an emergency classification.

A stuck-open Safety Relief Valve (SRV) or SRV leakage is not considered either identified or unidentified leakage by Technical Specifications and, therefore, is not applicable to this EAL.

There is no Potential Loss threshold associated with Primary Containment Pressure.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ **Table 9-F-2**

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

RC4

Initiating Condition:

RCS Leak Rate

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

~~A1. UNISOLABLE Main Steam Line (MSL), HPCI, Feedwater, RWCU or RCIC line break. in ANY of the following: (site specific systems with potential for high energy line breaks)~~

OR

~~B2. Emergency RPV Depressurization is required.~~

POTENTIAL LOSS

~~3A. UNISOLABLE primary system leakage that results in EITHER of the following:~~

~~a4. Secondary Containment area temperature > QGA 300 MaximumMax Normal Operating Temperaturelevels.~~

OR

~~b2. Secondary Containment area radiation level > QGA 300 Maximum Max-Normal Operating Area Radiation Level.~~

Basis:

UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

Classification of a system break over system leakage is based on information available to the Control Room from the event. Indications that should be considered are:

- Reports describing magnitude of steam or water release.
- Use of system high flow alarms / indications, if available,
- Significant changes in makeup requirements,
- Abnormal reactor water level changes in response to the event.

The use of the above indications provides the Control Room the bases to determine that the on going event is more significant than the indications that would be expected from system leakage and therefore should be considered a system break.

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

Loss Threshold #1 Basis-3.A

Large high-energy lines that rupture outside primary containment can discharge significant amounts of inventory and jeopardize the pressure-retaining capability of the RCS until they are isolated. If it is determined that the ruptured line cannot be promptly isolated ~~from the Control Room~~, the RCS barrier Loss threshold is met.

Loss Threshold #2 Basis-3.B

Emergency RPV Depressurization in accordance with the EOPs is indicative of a loss of the RCS barrier. If Emergency RPV Depressurization is performed, the plant operators are directed to open safety relief valves (SRVs) and keep them open. Even though the RCS is being vented into the Torus, a Loss of the RCS barrier exists due to the diminished effectiveness of the RCS to retain fission products within its boundary.

Potential Loss Threshold- #3 Basis 3.A

Potential loss of RCS based on primary system leakage outside the primary containment is determined from EOP temperature or radiation Max Normal Operating values in areas such as main steam line tunnel, RCIC, HPCI, etc., which indicate a direct path from the RCS to areas outside primary containment.

A Max Normal Operating value is the highest value of the identified parameter expected to occur during normal plant operating conditions with all directly associated support and control systems functioning properly.

The indicators reaching the threshold barriers and confirmed to be caused by RCS leakage from a primary system warrant an Alert classification. A primary system is defined to be the pipes, valves, and other equipment which connect directly to the RPV such that a reduction in RPV pressure will effect a decrease in the steam or water being discharged through an unisolated break in the system.

In general, multiple indications should be used to determine if a primary system is discharging outside Primary Containment. For example, a high area radiation condition does not necessarily indicate that a primary system is discharging into the Reactor Building since this may be caused by radiation shine from nearby steam lines or the movement of radioactive materials. Conversely, a high area radiation condition in conjunction with other indications (e.g. room flooding, high area temperatures, reports of steam in the Reactor Building, an unexpected rise in Feedwater flowrate, or unexpected Main Turbine Control Valve closure) may indicate that a primary system is discharging into the Reactor Building.

An UNISOLABLE leak which is indicated by Max Normal Operating values escalates to a Site Area Emergency when combined with Containment Barrier **CT6 Loss T**hreshold **#13.A** (after a containment isolation) and a General Emergency when the Fuel Clad Barrier criteria is also exceeded.

Basis Reference(s):

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

1. NEI 99-01 Rev 6, **Table 9-F-3** **Table 9-F-2**

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

RC5

Initiating Condition:

Primary Containment radiation

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

1. Drywell radiation monitor reading > 100R/hr.

~~A. Primary containment radiation reading greater than (site specific value).~~**Basis:**Loss 4.A

The radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the primary containment, assuming that reactor coolant activity equals Technical Specification allowable limits. This value is lower than that specified for Fuel Clad Barrier FC5 Loss ~~Threshold 4.A~~ since it indicates a loss of the RCS Barrier only.

There is no Potential Loss threshold associated with Primary Containment Radiation.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2
2. Calc. EP-EAL-0611

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

RC7

Initiating Condition:

Emergency Director Judgment.

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

A1. Any condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.

POTENTIAL LOSS

A2. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.

Basis:**Loss 6.A Threshold #1 Basis**

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the RCS Barrier is lost.

Potential Loss 6.A Threshold #2 Basis

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the RCS Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

CT2

Initiating Condition:

RPV Water Level

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:POTENTIAL LOSS

A. Primary containment flooding is required.

Basis:Potential Loss 2.A

The Potential Loss threshold is identical to the Fuel Clad **Barrier FC2 Loss threshold** ~~RPV Water Level—threshold—2.A~~. The Potential Loss requirement for Primary Containment Flooding indicates adequate core cooling cannot be restored and maintained and that core damage is possible. BWR **EPGsEOPs/SAGsSAMGs** specify the conditions that require primary containment flooding. When primary containment flooding is required, the **EPGsEOPs** are exited and **SAGsSAMGs** are entered. Entry into **SAGsSAMGs** is a logical escalation in response to the inability to restore and maintain adequate core cooling.

PRA studies indicate that the condition of this Potential Loss threshold could be a core melt sequence which, if not corrected, could lead to RPV failure and increased potential for primary containment failure. In conjunction with the RPV water level Loss thresholds in the Fuel Clad and RCS barrier columns, this threshold results in the declaration of a General Emergency.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ **Table 9-F-2**

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

CT3

Initiating Condition:

Primary Containment Conditions

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

A1. UNPLANNED rapid drop in ~~primary containment~~Drywell pressure following ~~primary containment~~Drywell pressure rise.

OR

B2. ~~Primary containment~~Drywell pressure response not consistent with LOCA conditions.

POTENTIAL LOSS

A3. ~~Primary containment~~Drywell pressure ~~greater than (site-specific value)~~ > 56 psig and rising.

OR

B4. ~~(site-specific explosive mixture) exists inside primary containment~~ a. Drywell or torus hydrogen concentration $\geq 6\%$.

AND

b. Drywell or torus oxygen concentration $\geq 5\%$.

OR

C5. ~~HTLC~~ Heat Capacity Limit (QGA 200, Figure M) exceeded.

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Loss 1.A and 1.B Threshold #1 and #2 Basis

Rapid UNPLANNED loss of primary containment pressure (i.e., not attributable to ~~drywell~~Drywell spray or condensation effects) following an initial pressure increase indicates a loss of primary containment integrity. Primary containment pressure should increase as a result of mass and energy release into the primary containment from a LOCA. Thus, primary containment pressure not increasing under these conditions indicates a loss of primary containment integrity.

These thresholds rely on operator recognition of an unexpected response for the condition and therefore a specific value is not assigned. The unexpected (UNPLANNED) response is important because it is the indicator for a containment

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

bypass condition. A pressure suppression bypass path would not be an indication of a containment breach.

Potential Loss 1.A Threshold #3 Basis

The threshold pressure is the primary containment internal design pressure. Structural acceptance testing demonstrates the capability of the primary containment to resist pressures greater than the internal design pressure. A pressure of this magnitude is greater than those expected to result from any design basis accident and, thus, represent a Potential Loss of the Containment barrier.

Potential Loss 1.B Threshold #4 Basis

If hydrogen concentration reaches or exceeds the lower flammability limit, as defined in plant EOPs, in an oxygen rich environment, a potentially explosive mixture exists. If the combustible mixture ignites inside the primary containment, loss of the Containment barrier could occur.

Potential Loss 1.C Threshold #5 Basis

~~The Heat Capacity Temperature Limit (HCTL) is the highest Torus temperature from which Emergency RPV Depressurization will not raise:~~

- ~~• Torus temperature above the maximum temperature capability of the Torus and equipment within the Torus which may be required to operate when the RPV is pressurized,~~

OR

- ~~• Torus pressure above Primary Containment Pressure Limit A, while the rate of energy transfer from the RPV to the containment is greater than the capacity of the containment vent.~~

The HCTL is a function of RPV pressure, Torus temperature and Torus water level. It is utilized to preclude failure of the containment and equipment in the containment necessary for the safe shutdown of the plant and therefore, the inability to maintain plant parameters below the limit constitutes a potential loss of containment.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

CT5

Initiating Condition:

Primary Containment Radiation

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:POTENTIAL LOSS~~A. Primary containment radiation monitor reading greater than (site specific value)~~

1. Drywell radiation monitor reading > 1.55 E+03 R/hr.

Basis:

There is no Loss threshold associated with Primary Containment Radiation.

Potential Loss 4.A

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

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

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2
2. Core Damage Assessment Methodology

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

CT6

Initiating Condition:

Primary Containment Isolation Failure

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:

LOSS

A1. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal.

OR

B2. Intentional **P**primary **C**ontainment venting/**p**urging per EOP's or SAMGs due to accident conditions.

OR

C. UNISOLABLE primary system leakage that results in **EITHER** of the following:

1. **Secondary Containment area temperature > QGA 300, MaximumMax Safe Operating Temperaturelevels.**

OR

2. **Secondary Containment area radiation level > QGA 300, MaximumMax Safe Operating Radiation Levels.**

Basis:

UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

These thresholds address incomplete containment isolation that allows an UNISOLABLE direct release to the environment.

Loss 3.A Threshold #1 Basis

The use of the modifier "direct" in defining the release path discriminates against release paths through interfacing liquid systems or minor release pathways, such as instrument lines, not protected by the Primary Containment Isolation System (PCIS). **Leakage into a closed system is to be considered only if the closed system is breached and thereby creates a significant pathway to the environment. Examples include unisolable Main Steamline, HPCI or RCIC steamline breaks, unisolable RWCU system breaks, and unisolable containment atmosphere vent paths.**

Examples of "downstream pathway to the environment" could be through the Turbine/Condenser, or direct release to the Turbine or Reactor Building.

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

RECOGNITION CATEGORY FISSION PRODUCT BARRIER DEGRADATION

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

Loss 3.B Threshold #2 Basis

EOPs may direct primary containment isolation valve logic(s) to be intentionally bypassed, even if offsite radioactivity release rate limits will be exceeded. Under these conditions with a valid primary containment isolation signal, the containment should also be considered lost if primary containment venting is actually performed.

Intentional venting of primary containment for primary containment pressure or combustible gas control to the secondary containment and/or the environment is a Loss of the Containment. Venting for primary containment pressure control when not in an accident situation (e.g., to control pressure below the ~~drywell~~**Drywell** high pressure scram setpoint) does not meet the threshold condition.

Loss 3.C Threshold #3 Basis

The Max Safe Operating Temperature and the Max Safe Operating Radiation Level are each the highest value of these parameters at which neither: (1) equipment necessary for the safe shutdown of the plant will fail, nor (2) personnel access necessary for the safe shutdown of the plant will be precluded. EOPs utilize these temperatures and radiation levels to establish conditions under which RPV depressurization is required.

The temperatures and radiation levels should be confirmed to be caused by RCS leakage from a primary system. A primary system is defined to be the pipes, valves, and other equipment which connect directly to the RPV such that a reduction in RPV pressure will effect a decrease in the steam or water being discharged through an unisolated break in the system.

In general, multiple indications should be used to determine if a primary system is discharging outside Primary Containment. For example, a high area radiation condition does not necessarily indicate that a primary system is discharging into the Reactor Building since this may be caused by radiation shine from nearby steam lines or the movement of radioactive materials. Conversely, a high area radiation condition in conjunction with other indications (e.g. room flooding, high area temperatures, reports of steam in the Reactor Building, an unexpected rise in Feedwater flowrate, or unexpected Main Turbine Control Valve closure) may indicate that a primary system is discharging into the Reactor Building.

In combination with RCS **Barrier RC4 p**Potential **L**Loss 3.A Threshold #3 this threshold would result in a Site Area Emergency.

There is no Potential Loss threshold associated with Primary Containment Isolation Failure.

Basis Reference(s):

**RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION**

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~Table 9-F-2

RECOGNITION CATEGORY
FISSION PRODUCT BARRIER DEGRADATION

CT7

Initiating Condition:

Emergency Director Judgment.

Operating Mode Applicability:

1, 2, 3

Fission Product Barrier (FPB) Threshold:LOSS

A1. Any condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.

POTENTIAL LOSS

A2. Any condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.

Basis:**Loss 6.A Threshold #1 Basis**

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Containment Barrier is lost.

Potential Loss 6.A Threshold #2 Basis

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Containment Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

Basis Reference(s):

1. NEI 99-01 Rev 6, ~~Table 9-F-3~~ Table 9-F-2

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSG1**Initiating Condition:**

Prolonged loss of all Off-site and all On-Site AC power to emergency busses.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the **General Emergency event** promptly upon determining that ~~(site-specific hours)~~ the applicable time has been exceeded, or will likely be exceeded.

1-a. Loss of **ALL** offsite ~~and ALL onsite~~ AC power to ~~(site-specific emergency busses)~~ unit ECCS busses.

AND

2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to unit ECCS busses.

AND

3b. **EITHER** of the following:

a. Restoration of at least one ~~emergency~~-unit ECCS bus in **< 1 hour is not less than ~~(site-specific hours)~~ is not** likely.

OR

b. RPV water level **cannot** be restored and maintained **> -166 inches**.
 • ~~(Site-specific indication of an inability to adequately remove heat from the core)~~

Basis:

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

RPV values are actual levels, not indicated levels. Therefore, they may need level compensation depending on conditions. Compensated values may be used in accordance with the SAMG program.

This IC addresses a prolonged loss of all power sources to AC emergency busses. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat

RECOGNITION CATEGORY**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

removal/pressure control, spent fuel heat removal and the ultimate heat sink. A prolonged loss of these buses will lead to a loss of ~~one or more~~ any fission product barriers. In addition, fission product barrier monitoring capabilities may be degraded under these conditions.

The EAL should require declaration of a General Emergency prior to meeting the thresholds for IC FG1. This will allow additional time for implementation of offsite protective actions.

Escalation of the emergency classification from Site Area Emergency will occur if it is projected that power cannot be restored to at least one AC emergency bus by the end of the analyzed station blackout coping period. Beyond this time, plant responses and event trajectory are subject to greater uncertainty, and there is an increased likelihood of challenges to multiple fission product barriers.

The estimate for restoring at least one emergency bus should be based on a realistic appraisal of the situation. Mitigation actions with a low probability of success should not be used as a basis for delaying a classification upgrade. The goal is to maximize the time available to prepare for, and implement, protective actions for the public.

The EAL will also require a General Emergency declaration if the loss of AC power results in parameters that indicate an inability to adequately remove decay heat from the core.

Basis Reference(s):

1. NEI 99-01 Rev 6, SG1
2. UFSAR 8.3

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSS1**Initiating Condition:**

Loss of all offsite and all onsite AC power to emergency busses for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the ~~Site Area Emergency event~~ promptly upon determining that ~~the applicable time 15 minutes~~ has been exceeded, or will likely be exceeded.

1. Loss of **ALL** offsite ~~and ALL onsite~~ AC Power to ~~(site specific emergency busses) unit ECCS busses for 15 minutes or longer.~~

AND

2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to unit ECCS busses.

AND

3. Failure to restore power to at least one ECCS bus in **< 15 minutes** from the time of loss of both offsite and onsite AC power

Basis:

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

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. In addition, fission product barrier monitoring capabilities may be degraded under these conditions. This IC represents a condition that involves actual or likely major failures of plant functions needed for the protection of the public.

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

Escalation of the emergency classification level would be via ICs **RAG1**, **FG1** or **MSG1**.

RECOGNITION CATEGORY

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

Basis Reference(s):

1. NEI 99-01 Rev 6, SS1
2. UFSAR 8.3

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSA1**Initiating Condition:**

Loss of all but one AC power source to emergency buses for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the **eventAlert** promptly upon determining that **the applicable time 15 minutes** has been exceeded, or will likely be exceeded.

1. **AC power capability to unit ECCS busses reduced to only one of the following power sources for ≥ 15 minutes.**
 - Reserve auxiliary Transformer TR-12 (TR-22)
 - Unit Auxiliary Transformer TR-11 (TR-21)
 - Unit Emergency Diesel Generator
 - Shared Emergency Diesel Generator
 - Station Blackout Diesel Generator
 - Unit crosstie breakers

a. ~~AC power capability to (site specific emergency buses) is reduced to a single power source for 15 minutes or longer.~~

AND

- 2b. Any additional single power source failure will result in a loss of all AC power to SAFETY SYSTEMS.

Basis:

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

This IC describes a significant degradation of offsite and onsite AC power sources such that any additional single failure would result in a loss of all AC power to SAFETY SYSTEMS. In this condition, the sole AC power source may be powering one, or more than one, train of safety-related equipment. This IC provides an escalation path from IC **MSU1**.

An "AC power source" is a source recognized in AOPs and EOPs, and capable of supplying required power to an emergency bus. Some examples of this condition are presented below.

RECOGNITION CATEGORY

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

- A loss of all offsite power with a concurrent failure of all but one emergency power source (e.g., an onsite diesel generator).
- ~~A loss of all offsite power and loss of all emergency power sources (e.g., onsite diesel generators) with a single train of emergency buses being back fed from the unit main generator.~~
- A loss of emergency power sources (e.g., onsite diesel generators) with a single train of emergency buses being **back**-fed from an offsite power source.

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

Escalation of the emergency classification level would be via IC **MSS1**.

Basis Reference(s):

1. NEI 99-01 Rev 6, SA1
2. UFSAR 8.3

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSU1**Initiating Condition:**

Loss of all offsite AC power capability to emergency buses for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the ~~Unusual Event~~ promptly upon determining that ~~the applicable time 15 minutes~~ has been exceeded, or will likely be exceeded.

~~1-~~ Loss of **ALL** offsite AC power capability to **unit ECCS busses (site-specific emergency buses)** for \geq 15 minutes ~~or longer~~.

Basis:

This IC addresses a prolonged loss of offsite power. The loss of offsite power sources renders the plant more vulnerable to a complete loss of power to AC emergency buses. This condition represents a potential reduction in the level of safety of the plant.

For emergency classification purposes, "capability" means that an offsite AC power source(s) is available to the emergency buses, whether or not the buses are powered from it. (e.g. **unit cross-tie breakers**)

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

Escalation of the emergency classification level would be via IC **MSA1**.

Basis Reference(s):

1. NEI 99-01 Rev 6, SU1
2. UFSAR 8.3.1

RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**MSG28****Initiating Condition:**

Loss of all AC and Vital DC power sources for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the ~~General Emergency event~~ promptly upon determining that ~~the applicable time 15 minutes~~ has been exceeded, or will likely be exceeded.

1. Loss of **ALL** offsite AC power to unit ECCS busses.

AND

2. Failure of Unit EDG 1(2), shared EDG 1/2 and SBO DG 1(2) emergency diesel generators to supply power to vital busses.

AND

3. Voltage is **< 105 VDC** on 125 VDC battery busses #1 and #2.

AND

4. All AC and Vital DC power sources have been lost for **≥ 15 minutes**.

~~1. a. Loss of **ALL** offsite and **ALL** onsite AC power to (site-specific emergency busses) for 15 minutes or longer.~~

AND

~~b. Indicated voltage is less than (site-specific bus voltage value) on **ALL** (site-specific Vital DC busses) for 15 minutes or longer.~~

Basis:

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

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

This IC addresses a concurrent and prolonged loss of both AC and Vital DC power. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. A loss of Vital DC power compromises the ability to monitor and control SAFETY SYSTEMS. A sustained loss of both AC and DC power will lead to multiple challenges to fission product barriers.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. The 15-minute emergency declaration clock begins at the point when **both-all** EALs ~~thresholds~~ are met.

Basis Reference(s):

1. NEI 99-01 Rev 6, SG8
2. UFSAR 8.3.2
3. Technical Specifications B.3.8.4

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSS28**Initiating Condition:**

Loss of all vital DC power for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the ~~Site Area Emergency event~~ promptly upon determining that ~~the applicable time 15 minutes~~ has been exceeded, or will likely be exceeded.

~~Indicated voltage is < 105 VDC less than (site-specific bus voltage value) on 125 VDC battery busses #1 and #2 ALL (site-specific Vital DC busses) for \geq 15 minutes or longer.~~

Basis:

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

This IC addresses a loss of Vital DC power which compromises the ability to monitor and control SAFETY SYSTEMS. In modes above Cold Shutdown, this condition involves a major failure of plant functions needed for the protection of the public.

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

Escalation of the emergency classification level would be via ICs RAG1, FG1 or MSG28.

Basis Reference(s):

1. NEI 99-01 Rev 6, SS8
2. UFSAR 8.3.2.1.1
3. Technical Specifications B3.8.4

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSS35**Initiating Condition:**

Inability to shutdown the reactor causing a challenge to RPV water level or RCS heat removal.

Operating Mode Applicability:

1, 2

Emergency Action Level (EAL):

1. Automatic scram did not shutdown the reactor **as indicated by Reactor Power > 5%**.

AND

2. All manual / **ARI** actions to shutdown the reactor have been unsuccessful **as indicated by Reactor Power > 5%**.

AND

3. EITHER of the following conditions exist:

- RPV water level **cannot** be restored and maintained **> -166 inches**
- OR**
- Heat Capacity Limit (QGA 200, Figure M) exceeded.

~~(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)~~

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, all subsequent operator **manual actions, both inside and outside the Control Room including driving in control rods and boron injection, 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 will lead to fuel damage if additional mitigation actions are unsuccessful and thus warrants the declaration of a Site Area Emergency.

In some instances, the emergency classification resulting from this IC/EAL may be higher than that resulting from an assessment of the plant responses and symptoms against the Recognition Category F ICs/EALs. This is appropriate in that the Recognition Category F ICs/EALs do not address the additional threat posed by a failure to shutdown the reactor. The inclusion of this IC and EAL ensures the timely declaration of a Site Area Emergency in response to prolonged failure to shutdown the reactor.

RECOGNITION CATEGORY

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

RPV values are actual levels, not indicated levels. Therefore, they may need level compensation depending on conditions.

Escalation of the emergency classification level would be via IC RAG1 or FG1.

Basis Reference(s):

1. NEI 99-01 Rev 6, SS5

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSA35**Initiating Condition:**

Automatic or manual scram fails to shutdown the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor.

Operating Mode Applicability:

1, 2

Emergency Action Level (EAL):

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.

1. ~~An~~ Automatic or manual scram did **not** shutdown the reactor **as indicated by Reactor Power > 5%**.

AND

2. Manual / ~~ARI~~ actions taken at the ~~reactor control consoles~~ **Reactor Console** are **not** successful in shutting down the reactor **as indicated by Reactor Power > 5%**.

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, and subsequent operator manual actions taken at the reactor control consoles to shutdown the reactor are also unsuccessful. This condition represents an actual or potential substantial degradation of the level of safety of the plant. An emergency declaration is required even if the reactor is subsequently shutdown by an action taken away from the reactor control consoles since this event entails a significant failure of the RPS.

A manual action at the reactor control consoles is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor scram. This action does not include manually driving in control rods or implementation of boron injection strategies. If this action(s) is unsuccessful, operators would immediately pursue additional manual actions at locations away from the reactor control consoles (e.g., locally opening breakers). Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be "at the reactor control consoles".

Taking the Reactor Mode Switch to **SHUTDOWN** is considered to be a manual scram action.

The plant response to the failure of an automatic or manual reactor scram 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

RECOGNITION CATEGORY**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

enough to cause a challenge to the RPV water level or RCS heat removal safety functions, the emergency classification level will escalate to a Site Area Emergency via IC **MSS35**. Depending upon plant responses and symptoms, escalation is also possible via IC FS1. Absent the plant conditions needed to meet either IC **MSS35** or FS1, an Alert declaration is appropriate for this event.

It is recognized that plant responses or symptoms may also require an Alert declaration in accordance with the Recognition Category F ICs; however, this IC and EAL are included to ensure a timely emergency declaration.

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

Basis Reference(s):

1. NEI 99-01 Rev 6, SA5

RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**MSU35****Initiating Condition:**

Automatic or manual scram fails to shutdown the reactor.

Operating Mode Applicability:

1, 2

Emergency Action Level (EAL):

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.

1. a. ~~A-n~~Automatic scram -did not shutdown the reactor as indicated by Reactor Power > 5%.
.AND
b. ~~A-s~~Subsequent manual action taken at the ~~reactor-control-consoles~~Reactor Console is successful in shutting down the reactor.
OR
2. a. ~~A-m~~Manual scram / ARI did not shutdown the reactor as indicated by Reactor Power > 5%.
AND
b. **EITHER** of the following:
 1. ~~A-s~~Subsequent manual / ARI action taken at the ~~reactor-control-consoles~~Reactor Console is successful in shutting down the reactor.
OR
 2. ~~A-s~~Subsequent automatic scram / ARI -is successful in shutting down the reactor.

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, and either a subsequent operator manual action taken at the reactor control consoles or an automatic scram is successful in shutting down the reactor. This event is a precursor to a more significant condition and thus represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Following the failure on an automatic reactor scram, operators will promptly initiate manual actions at the reactor control consoles to shutdown the reactor (e.g., initiate a manual reactor scram). 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.

RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

EAL #2 Basis

If an initial manual reactor trip 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 scram / ARI using a different switch). Depending upon several factors, the initial or subsequent effort to manually scram the reactor, or a concurrent plant condition, may lead to the generation of an automatic reactor scram signal. If a subsequent manual or automatic scram / ARI 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.

A manual action at the reactor control consoles is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor scram). This action does not include manually driving in control rods or implementation of boron injection strategies. Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be "at the reactor control consoles".

Taking the Reactor Mode Switch to Shutdown is considered to be a manual scram action.

The plant response to the failure of an automatic or manual reactor scram 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 MSA35. Depending upon the plant response, escalation is also possible via IC FA1. Absent the plant conditions needed to meet either IC MSA35 or FA1, an Unusual Event declaration is appropriate for this event.

A reactor shutdown is determined in accordance with applicable Emergency Operating Procedure criteria.

Should a reactor scram signal be generated as a result of plant work (e.g., RPS setpoint testing), the following classification guidance should be applied.

- If the signal **generated as a result of plant work** causes a plant transient that **created a real condition that** should have included an automatic reactor scram and the RPS fails to automatically shutdown the reactor, then this IC and the EALs are applicable, and should be evaluated.
- If the signal **generated as a result of plant work** does not cause a plant transient **but should have generated an RPS scram signal** and the scram failure is determined through other means (e.g., assessment of test results), then this IC and the EALs are not applicable and no classification is warranted.

RECOGNITION CATEGORY

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

Basis Reference(s):

1. NEI 99-01 Rev 6, SU5

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSA42

Initiating Condition:

UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the **eventAlert** promptly upon determining that **the applicable time 15 minutes** has been exceeded, or will likely be exceeded.

1. a. ~~An~~ UNPLANNED event results in the inability to monitor ~~one or more~~ **ANY Table M1 of the following** parameters from within the Control Room for **≥ 15 minutes or longer**.

[see table below]

{BWR parameter list}
Reactor Power
RPV Water Level
RPV Pressure
Primary Containment Pressure
Suppression Pool Level
Suppression Pool Temperature

Table M1 Control Room Parameters
<ul style="list-style-type: none"> • Reactor Power • RPV Water Level • RPV Pressure • Drywell Pressure • Torus Level • Torus Temperature

AND

- b. Any **Table M2 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 trip~~
- ~~• ECCS (SI) actuation~~

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

Table M2 Significant Transients

- Turbine Trip
- Reactor Scram
- ECCS Activation
- Recirc. Runback > 25% Reactor Power Change
- Thermal Power oscillations > 10% Reactor Power Change

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

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

This IC addresses 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. During this condition, the margin to a potential fission product barrier challenge is reduced. It thus represents a potential substantial degradation in the level of safety of the plant.

As used in this EAL, an "inability to monitor" means that values for ~~one or more~~any of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, ~~computer point~~, digital and recorder source within the Control Room.

An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, ~~RPV level~~RPV water level and RCS heat removal.

RECOGNITION CATEGORY**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

The loss of the ability to determine ~~one or more~~ any of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for ~~one or more~~ any of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for RPV water level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

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

Escalation of the emergency classification level would be via ICs FS1 or IC RAS1.

Basis Reference(s):

1. NEI 99-01 Rev 6, SA2

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

MSU42

Initiating Condition:

UNPLANNED loss of Control Room indications for 15 minutes or longer.

Operating Mode Applicability:

1, 2, 3

Emergency Action Level (EAL):

Note: The Emergency Director should declare the ~~Unusual Event~~ promptly upon determining that ~~the applicable time 15 minutes~~ has been exceeded, or will likely be exceeded.

a. ~~An UNPLANNED event results in the inability to monitor one or more~~ **ANY Table M1 parameters from within the Control Room for ≥ 15 minutes.**

Table M1 Control Room Parameters
<ul style="list-style-type: none"> • Reactor Power • RPV Water Level • RPV Pressure • Drywell Pressure • Torus Level • Torus Temperature

~~1. of the following parameters from within the Control Room for 15 minutes or longer.~~

2. {BWR parameter list}	3. {PWR parameter list}
4. Reactor Power	6. Reactor Power
5.	7.
8. RPV Water Level	9. RCS Level
10. RPV Pressure	11. RCS Pressure
12. Primary Containment Pressure	13. In-Core/Core Exit Temperature
14. Suppression Pool Level	15. Levels in at least (site-specific number) steam generators
16. Suppression Pool Temperature	17. Steam Generator Auxiliary or Emergency Feed Water Flow

**RECOGNITION CATEGORY
HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

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

This IC addresses the difficulty associated with monitoring normal plant conditions without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. This condition is a precursor to a more significant event and represents a potential degradation in the level of safety of the plant.

As used in this EAL, an "inability to monitor" means that values for ~~one or more~~any of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, digital and recorder source within the Control Room.

An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, core cooling and RCS heat removal. The loss of the ability to determine ~~one or more~~any of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for ~~one or more~~any of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for reactor vessel level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

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

Escalation of the emergency classification level would be via IC **MSA42**.

RECOGNITION CATEGORY

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

Basis Reference(s):

1. NEI 99-01 Rev 6, SU2