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ALNRC 00014



Subject: AmerenUE, NRC Docket No. 52-037  
Response to Request for Additional Information for the  
Callaway Plant Unit 2 RAI No. 2 Revision 0,  
Section 13.03, Emergency Planning

Reference: Surinder Arora (NRC) to David E. Shafer (AmerenUE), "RAI No. 2  
(eRAI No. 1902) - Public" email dated 2/12/09

The purpose of this letter is to respond to the Request for Additional Information (RAI) identified in the NRC e-mail correspondence to AmerenUE, dated 2/12/09 (reference). This RAI addresses the Emergency Plan, as submitted in Part 5 of the Callaway Plant Unit 2 Combined License Application (COLA).

Enclosure 1 provides our completed response to NRC RAI No. 2 (eRAI No. 1902) - Public, Revision 0. Enclosures 2 and 3 contain proposed COLA changes as a result of the RAI response contained in Enclosure 1. This response does include a revised license condition to develop the remainder of the EAL scheme at least 180 days prior to initial fuel load. The revised license condition is included in COLA Part 10 appendix A item 8.

This RAI response contains no proprietary information.

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NRC

If there are any questions regarding this transmittal, please contact Scott Bond at (573) 676-8519, [SBond2@ameren.com](mailto:SBond2@ameren.com) or Dave Shafer at (573) 676-4722 [DShafer@ameren.com](mailto:DShafer@ameren.com).

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 12, 2009:



Scott M. Bond  
Manager, Nuclear Generation Development

- Enclosure:
1. Response to NRC Request for Additional Information, RAI No. 2 (eRAI No. 1902) - Public, Revision 0; Question 13.03-1
  2. Proposed changes to COLA Part 5
  3. Proposed changes to COLA Part 10

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Enclosure 1

**Enclosure 1**

Response to NRC Request for Additional Information, RAI No. 2 (eRAI No. 1902) -  
Public, Revision 0; Question 13.03-1

Callaway Unit 2  
AmerenUE  
Docket No. 52-037  
SRP Section: 13.03 – Emergency Planning  
Application Section: Part 5 – Emergency Plan: Part 2 Section D - EALs

Question 13.03-1

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4), Section IV.B of Appendix E to 10 CFR Part 50

**Emergency Action Levels (EALs) are discussed in Part 2, Section D, “Emergency Classification System,” of COL application reference ADAMS Accession No. ML082140630**

The initial EALs, which are required by 10 CFR 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50, must be approved by the NRC. Recent combined license (COL) applications have been submitted that do not fully address certain aspects of the required EAL scheme. This is because various equipment set points and other information cannot be determined until the as-built information is available; e.g., head corrections, radiation shine, final technical specifications, and equipment calculations and tolerances. The NRC has been evaluating possible options to ensure applicants address the regulations and provides the following:

Option 1 – Submit an entire EAL scheme, which contains all site-specific information, including set points. Until this information is finalized, EALs would remain an open item.

Option 2 – Submit emergency plan Section D, “Emergency Classification System,” which addresses the four critical elements of an EAL scheme (listed below). The NRC will determine the acceptability of the EAL scheme.

- *Critical Element 1* – Applicant proposes an overview of its emergency action level scheme including defining the four emergency classification levels, (i.e., Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency), as stated in NEI 99-01, Revision 5, with a general list of licensee actions at each emergency classification level.
- *Critical Element 2* – Applicant proposes to develop the remainder of its EAL scheme by using a specified NRC endorsed guidance document. In the development of its EALs, the proposed EALs should be developed with few or no deviations or differences, other than those attributable to the specific reactor design. NEI 07-01, if endorsed, will be applicable to the AP1000 and ESBWR (passive) reactor designs, and NEI 99-01 is applicable to all (non-passive) reactor designs. If applicable, EALs related to digital instrumentation and control must also be included. The NRC must find in the Safety Evaluation Report that this approach is acceptable for each site.

- *Critical Element 3* – Applicant proposes a License Condition (LC) that the applicant will create a fully developed set of EALs in accordance with the specified guidance document. These fully developed EALs must be submitted to the NRC for confirmation at least 180 days prior to fuel load.
- *Critical Element 4* – The EALs must be kept in a document controlled by 10 CFR 50.54(q), such as the emergency plan; or a lower tier document, such as the Emergency Plan Implementing Procedures.

Please review the two options provided above, identify which option will be chosen, and provide the detailed EAL information in support of the chosen option.

**AmerenUE Response:**

As identified in RAI No. 2 (eRAI No. 1902) Revision 0, certain parameter values for the Callaway Plant Unit 2 EALs required by 10 CFR 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50 can not be determined at this time. Specifically, several EAL thresholds cannot be derived until related as-built plant design information and Technical Specification set points are finalized.

As such, AmerenUE will withdraw the submitted COLA Part 5 EAL related Enclosures A, B and C, and commit to utilize Option 2. Proposal changes to COLA Part 5 are included in Enclosure 2.

AmerenUE's approach to each of the Critical Elements discussed in NRC's Request for Additional Information is described below:

Critical Element 1 – Section D, Criterion 1, Emergency Classification System, of the submitted Callaway Plant Unit 2 Emergency Response Plan contains the following information that meets the requirements of critical element 1:

- a. Unusual Event - Event(s) are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate that a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

This is the least severe of the four (4) levels. The purpose of this classification is to bring response personnel and offsite agencies to a state of readiness in the event the situation degrades and to provide systematic handling of information and decision-making. The Shift Manager, as Emergency Coordinator will classify an Unusual Event.

Required actions at this classification include:

- Notifications to site management.
- Notification, within 15 minutes, of the state and local communities.

- At the discretion of the Recovery Manager, Emergency Coordinator, or site management, full or selective staffing of the TSC and EOF may be initiated.
  - Notification of the Nuclear Regulatory Commission (NRC) as soon as possible but within 60 minutes of classification.
  - Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.
  - When the event is terminated, closeout is performed over communication links to offsite authorities participating in the response (i.e., NRC, state, local), followed by formal transmission of a State/Local notification form within 24 hours.
- b. Alert - Event(s) are in progress or have occurred which indicate 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 EPA Protective Action Guideline exposure levels.

The purpose of this classification is to ensure that emergency response personnel are readily available and to provide offsite authorities with current status information. An Alert will be classified as the initiating event or as escalation from an Unusual Event. In either case, the classification will most likely be made by the Shift Manager as Emergency Coordinator prior to the transfer of Command and Control.

Required actions at this classification include:

- Notifications to station management.
- Notification, within 15 minutes, of the state and local communities. The EOF will assume state update responsibilities.
- Activation of the TSC and the EOF. The JPIC organization may be activated at the Alert level.
- Transfer of Command and Control.
- Notification of the NRC as soon as possible but within 60 minutes of classification.
- Notification of INPO and ANI.
- Assessment of the situation and response as necessary, which may include escalating to a higher classification if conditions warrant.
- On-site and off-site Monitoring Teams are sent to staging areas or dispatched to monitor for releases of radiation to the environment.

- Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological and radiological data.
  - When the event is terminated, notification is performed over communication links followed by an Initial Incident Report to offsite authorities participating in the response (i.e., NRC, state, local) within 8 hours.
- c. Site Area Emergency - Event(s) are in progress which involves 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 protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline (PAG) exposure levels except near the site boundary.

The purpose of this classification, in addition to those of the Alert level, is to ensure that all emergency response centers are manned and provisions are made for information updates to the public through offsite authorities and the news media. The classification will most likely be made by the Emergency Coordinator following activation of the TSC.

Required actions at this classification, in addition to those listed under the Alert level, include:

- Activation of the JPIC.
  - If not previously performed, Assembly/Accountability shall be performed and Site Evacuation of non-essential personnel shall be initiated.
  - Keeping offsite authorities informed of plant status by providing periodic updates to include meteorological data and projected or actual doses for any releases that have occurred.
- d. General Emergency - Event(s) are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

The purpose of this classification, in addition to those of the Site Area Emergency level, is to initiate predetermined protective actions for the public and provide continuous assessment of information from monitoring groups. The classification will most likely be made by the Emergency Coordinator following activation of the TSC.

Required actions at this classification, in addition to those listed under the Alert and Site Area Emergency, include:

- The plant will recommend evacuation for the public within a two-mile radius and five miles downwind, as a minimum. Sheltering should only be considered for the following situations:
  1. Travel conditions that would present an extreme hazard, or
  2. For controlled releases from containment if there is assurance that the release is short term and the area near the plant cannot be evacuated before plume arrival.
- Assessment of the situation and response as necessary.

Critical Element 2 – AmerenUE will develop the remainder of its EAL scheme by utilizing NEI 99-01 Revision 5, or the most current NRC endorsed version available at the time of EAL submittal. The submitted EALs will be written with no deviations pending resolution of two U.S. EPR design specific FAQs concerning; (1) digital I&C and (2) automatic containment depressurization setpoint issued to NEI on 03/10/09.

The U.S. EPR design specific EALs contained in the two FAQs issued to NEI on 03/10/09 are provided in Attachment 1 at the end of this enclosure.

Critical Element 3 – Part 10 of the current Callaway Plant Unit 2 application states:

8. *EMERGENCY ACTION LEVELS:*

*The {Callaway Plant Unit 2} Emergency Action Levels (EALs) and the associated Technical Bases Manual contains bracketed values requiring plant specific values to be provided that can not be determined until after the COL is issued. These bracketed values are associated with certain site specific values and detailed design information, such as setpoints and instrument numbers. In most cases, this information is necessary to determine EAL thresholds.*

*PROPOSED LICENSE CONDITION:*

*{AmerenUE} shall submit the plant specific values to the NRC for approval in order to address the remaining bracketed values in the {Callaway Plant Unit 2} EALs and associated Technical Bases Manual as identified below. These plant specific values shall be submitted to the NRC within 2 years of scheduled date for initial fuel load.*

The above proposed License Condition will be revised as follows. Enclosure 3 contains the proposed changes to COLA Part 10, Appendix A, Item 8.

*{AmerenUE} shall submit a complete set of plant-specific Emergency Action Levels (EALs) for {Callaway Plant Unit 2} in accordance with NEI 99-01 Revision 5, or the most current NRC endorsed version available at the time of EAL submittal, to the NRC for approval at least 180 days prior to initial fuel load. The submitted EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.*

Critical Element 4 – The EALs will be maintained in a lower tier document, the Callaway Plant Unit 2 U.S. EPR EAL Technical Bases Manual, which is subject to the requirements of 10 CFR 50.54(q). The Callaway Plant Unit 2 Emergency Plan Annex Section 3.3, Maintenance of the Emergency Action Levels, contains the following statement:

The details of EAL development are documented in an Emergency Action Level Technical Basis Document. Revision of the Technical Basis Document is controlled the same way as the Callaway Plant Unit 2 Emergency Plan, requiring the same reviews including a review in accordance with §50.54(q).

### **COL Impact**

The Callaway Plant Unit 2 COLA will be updated to incorporate the response to this RAI question, as shown on Enclosure 2 for COLA Part 5 Emergency Response Plan Annex and COLA Part 5 Enclosures A, B and C, and as shown on Enclosure 3 for COLA Part 10 Appendix A Item 8 and Part 10 Appendix B Table 2.3-1 in a future COLA revision.

## SA4

### Initiating Condition - ALERT

UNPLANNED partial loss of indicating, monitoring and control functions for 15 minutes or longer.

**Operating Mode Applicability:** Power Operation, Startup, Hot Standby, Hot Shutdown

### Example Emergency Action Level:

**Note:** The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

1. UNPLANNED loss of **PICS** indicating, monitoring and control functions for **15 minutes** or longer.
- OR
2. UNPLANNED loss of **SICS** indicating, monitoring and control functions for **15 minutes** or longer.

### Basis:

This IC recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the indication and control systems.

This IC recognizes the challenge to the control room staff to monitor and control the plant due to partial loss of normal and safety indication and monitoring systems. An Alert is considered appropriate if the control room staff requires additional personnel to assist in monitoring alternative indications, manipulate equipment and restore the systems to full capability.

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

*[The Process Information and Control System (PICS) is a non-safety related, augmented quality digital I&C system. It provides a screen based interface for the operators in the control room and in the remote shutdown station to control and monitor all plant parameters by interfacing with the plant automation systems. The Safety Information and Control System (SICS) is a safety related I&C system which contains both safety and non-safety related equipment. It provides the Human-System Interface (HSI) to perform control and information functions needed to monitor the plant's safety status and bring the unit to and maintain it in a safe shutdown state in case of unavailability of the PICS.]*

*The SICS provides controls for actuating manual reactor trips and manual system level functions performed by the Protection System (PS) and the Safety Automation System (SAS) via the Priority Actuation and Control System (PACS) in order to bring the plant to and maintain it in a cold shutdown state.*

*Either PICS or SICS is separately capable of bringing the reactor to a safe shutdown. Therefore, a partial loss of the indicating, monitoring, and control functions when the plant has experienced the complete loss of one of the two capable systems (PICS or SICS) and a total loss of the indicating, monitoring, and control functions (i.e. inability to monitor and control the plant from the MCR) is characterized by the complete loss of both capable systems (PICS and SICS).*

*Loss of the PICS system is indicated by no PICS terminal in the control room being functional. Loss of the SICS system is indicated by no SICS terminal in the control room being functional.]*

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor and control the plant.

**Initiating Condition - SITE AREA EMERGENCY**

Inability to monitor and control the plant for 15 minutes or longer.

**Operating Mode Applicability:** Power Operation, Startup, Hot Standby, Hot Shutdown

**Example Emergency Action Level:**

**Note:** The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

1. a. Loss of **PICS** for **15 minutes** or longer.

**AND**

- b. Loss of **SICS** for **15 minutes** or longer.

**Basis:**

This IC recognizes the inability of the control room staff to monitor and control the plant due to loss of normal and safety indication and monitoring systems, and diverse indication and control systems that allow the operators to monitor and safely shutdown the plant.

A Site Area Emergency is considered to exist if the control room staff cannot monitor and control safety functions needed for protection of the public.

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

*[The Process Information and Control System (PICS) is a non-safety related, augmented quality digital I&C system. It provides a screen based interface for the operators in the control room and in the remote shutdown station to control and monitor all plant parameters by interfacing with the plant automation systems. The Safety Information and Control System (SICS) is a safety related I&C system which contains both safety and non-safety related equipment. It provides the Human-System Interface (HSI) to perform control and information functions needed to monitor the plant's safety status and bring the unit to and maintain it in a safe shutdown state in case of unavailability of the PICS.]*

*The SICS provides controls for actuating manual reactor trips and manual system level functions performed by the Protection System (PS) and the Safety Automation System (SAS) via the Priority Actuation and Control System (PACS) in order to bring the plant to and maintain it in a cold shutdown state.*

*Either PICS or SICS is separately capable of bringing the reactor to a safe shutdown. Therefore, a partial loss of the indicating, monitoring, and control functions when the plant has experienced the complete loss of one of the two capable systems (PICS or SICS) and a total loss of the indicating, monitoring, and control functions (i.e. inability to monitor and control the plant from the MCR) is characterized by the complete loss of both capable systems (PICS and SICS).*

*Loss of the PICS system is indicated by no PICS terminal in the control room being functional. Loss of the SICS system is indicated by no SICS terminal in the control room being functional.]*

**Enclosure 2**

Proposed changes to COLA Part 5

<b>COLA Part</b>	<b>Chapter</b>	<b>Page No.</b>	<b>Description</b>
5	EP Annex	1-8 through 1-26	Revision of Section 3.1, deletion of Section 3.2, and withdrawal of detail from Table 3-1, Emergency Action Levels, until related as-built plant design information and setpoints are finalized.
5	Enclosure A	All	Withdrawal of detail from all of Enclosure A until related as-built plant design information and setpoints are finalized.
5	Enclosure B	All	Withdrawal of detail from all of Enclosure B until related as-built plant design information and setpoints are finalized.
5	Enclosure C	All	Withdrawal of detail from all of Enclosure C until related as-built plant design information and set points are finalized.

### 3.0 CLASSIFICATION OF EMERGENCIES

Section D of the Callaway Plant Unit 2 Emergency Plan describes the classification of emergencies into four levels of Emergency Class. They are the UNUSUAL EVENT, ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY. These classification levels are entered by meeting the criteria of Emergency Action Levels (EALs) provided in this section of the U.S. EPR Annex.

#### 3.1 EMERGENCY ACTION LEVELS (EALS)

An Emergency Action Level scheme based on Revision 5 of NEI 99-01 dated 2/2008, "Methodology for Development of Emergency Action Levels," currently approved for use by NRC letter from Christopher G. Miller to NEI dated 2/22/08, or the most current NRC endorsed version available at the time of EAL submittal, is used for Callaway Plant Unit 2. Specific items not applicable to the U.S. EPR design are identified and alternate initiating conditions used as appropriate. Table 3-1, Emergency Action Level Initiating Conditions, provides a list of conditions considered for classification. The submittal EALs will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.

Emergency Action Level Threshold Values for each of the Initiating Conditions are provided in an EAL Technical Basis Document with appropriate basis and references.

An emergency is classified by assessing plant conditions and comparing abnormal conditions to Initiating Conditions and Threshold Values for each Emergency Action Level. Individuals responsible for the classification of events will refer to the Initiating Condition and Threshold Values in an Emergency Plan Implementing Procedure (EPIP). This EPIP contains Initiating Conditions, EAL Threshold Values, Mode Applicability Designators, appropriate EAL numbering system, and additional guidance necessary to classify events.

The EALs are set up in Recognition Categories. The first relates to Abnormal Radiological Conditions / Abnormal Radiological Effluent Releases. The second relates to Fission Product Barrier Degradation. The third relates to Hot Condition System Malfunctions. The fourth relates to Hazards and Other Conditions. The fifth related to Cold Shutdown System Malfunctions.

Emergency Action Levels are the measurable, observable detailed conditions that must be met in order to classify the event. Classification is not to be made without referencing, comparing and satisfying the Threshold Values specified in the Emergency Action Levels.

Mode Applicability provides the unit conditions when the Emergency Action Levels represent a threat. The Basis contains explanations and justification for including the Initiating Condition and Emergency Action Level.

A list of definitions is provided as part of this document for terms having specific meaning to the Emergency Action Levels. Site specific definitions are provided for terms with the intent to be used for a particular Initiating Condition/Threshold Value.

An EAL Technical Basis Document provides references to documents that were used to develop the EAL Threshold Values.

References to the Recovery Manager or Emergency Coordinator means the person in Command and Control as defined in the Emergency Plan. Classification of emergencies is a non-delegable responsibility of the Emergency Coordinator.

RAI 1902  
Q 1303-1

Classifications are based on evaluation of the U.S. EPR Unit condition. All classifications are to be based upon VALID indications, reports or conditions. Indications, reports or conditions are considered VALID when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indications, or (3) by direct observation by plant personnel, such that doubt related to the indication's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

EALs are for unplanned events. A planned evolution involves preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition. Planned evolutions to test, manipulate, repair and perform maintenance or modifications to systems and equipment that result in an EAL Threshold Value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72 and/or 10 CFR 50.73.

When two or more Emergency Action Levels are determined, declaration will be made on the highest classification level for the unit. When both units are affected, the highest classification for the Plant will be used for notification purposes and specific units' classification levels will be noted.

### 3.2 EMERGENCY ACTION LEVEL CATEGORIES

The EAL Scheme is broken into the following five major categories and numerous sub-categories as appropriate. Each major initiating condition described in Table 3-1, Emergency Action Level Initiating Conditions may be broken into additional sub-conditions based on actual threshold values.

#### 3.2.1 CATEGORY F—FISSION PRODUCT BARRIERS

EALs in this category represent threats to the defense in depth design concept that precludes the release of highly radioactive fission products to the environment. This concept relies on multiple physical barriers any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary fission product barriers are:

1. Reactor Fuel Clad (FC): The zirconium tubes which house the ceramic uranium oxide pellets along with the end plugs which are welded into each end of the fuel rods comprise the Fuel Clad.
2. Reactor Coolant System (RC): The Reactor Vessel shell, vessel head, vessel nozzles and penetrations and all primary systems directly connected to the Reactor Vessel up to the first Containment isolation valve comprise the RCS.
3. Containment (CT): The vapor Containment structure and all isolation valves required to maintain Containment integrity under accident conditions comprise the Containment barrier.

The EALs in this category require evaluation of the Loss and Potential Loss thresholds listed in the fission product barrier matrix of Table 3-1. "Loss" and "Potential Loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials. "Potential Loss" means integrity of the barrier is threatened and could be lost if conditions continue to degrade.

The number of barriers that are lost or potentially lost and the following criteria determine the appropriate emergency classification level:

Unusual Event: Any loss or any potential loss of Containment

Alert: Any loss or any potential loss of either Fuel Clad or RCS

Site Area Emergency: Loss or potential loss of any two barriers

General Emergency: Loss of any two barriers and loss or potential loss of third barrier

The logic used for emergency classification based on fission product barrier monitoring should reflect the following considerations:

The ability to escalate the emergency classification as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

Fission product barrier monitoring must be capable of addressing dynamic conditions. If reaching a loss or potential loss threshold is imminent (i.e., within 1 to 2 hours) while an event or multiple events occur, judgment dictates that the imminent situation deserves classification as if the thresholds were actually exceeded.

### 3.2.2 CATEGORY R—RADIOLOGICAL EFFLUENT / ABNORMAL RAD LEVELS

Many EALs are based on actual or potential degradation of fission product barriers because of the elevated potential for offsite radioactivity release. Degradation of fission product barriers, though, is not always apparent via non-radiological symptoms. Therefore, direct indication of elevated radiological effluents or area radiation levels are appropriate symptoms for emergency classification.

At lower levels, abnormal radioactivity releases may be indicative of a failure of containment systems or precursors to more significant releases. At higher release rates, offsite radiological conditions may result which require offsite protective actions.

Elevated area radiation levels in the plant may also be indicative of the failure of containment systems or preclude access to plant vital equipment necessary to ensure plant safety.

Events of this category pertain to the following subcategories:

#### 1. Radiological Effluents

Direct indication of effluent radiation monitoring systems provides a rapid assessment mechanism to determine releases in excess of classifiable limits. Projected offsite doses, actual offsite field measurements or measured release rates via sampling indicate doses or dose rates above classifiable limits.

#### 2. Abnormal Radiation Levels

Sustained general area radiation levels in excess of those indicating loss of control of radioactive materials or those levels that may preclude access to vital plant areas also warrant emergency classification.

**3.2.3 CATEGORY H—HAZARDS**

Hazards are non-plant, system-related events that can directly or indirectly affect plant operation, reactor plant safety or personnel safety.

The events of this category pertain to the following subcategories:

1. Security

Unauthorized entry attempts into the Protected Area, bomb threats, sabotage attempts, and actual security compromises threatening loss of physical control of the plant.

2. Control Room Evacuation

Events that are indicative of loss of Control Room habitability. If the Control Room must be evacuated, additional support for monitoring and controlling plant functions is necessary through the emergency response facilities.

3. Natural & Destructive Phenomena

Natural events include earthquakes or tornadoes that have potential to cause plant structure or equipment damage of sufficient magnitude to threaten personnel or plant safety. This also includes non-naturally occurring events that can cause damage to plant facilities including vehicle crashes, missile impacts from turbine failure, etc.

4. Fire or Explosion

Fires can pose significant hazards to personnel and reactor safety. Appropriate for classification are fires within the site Protected Area or which may affect operability of vital equipment.

5. Toxic / Flammable Gas

This includes non-naturally occurring events that can cause damage to plant facilities including toxic or flammable gas leaks.

6. Judgment

The EALs defined in other categories specify the predetermined symptoms or events that are indicative of emergency or potential emergency conditions and thus warrant classification. While these EALs have been developed to address the full spectrum of possible emergency conditions which may warrant classification and subsequent implementation of the Emergency Plan, a provision for classification of emergencies based on operator/management experience and judgment is still necessary. The EALs of this category provide the Shift Manager, Emergency Coordinator and/or Recovery Manager the latitude to classify emergency conditions consistent with the established classification criteria based upon their judgment.

**3.2.4 CATEGORY S—SYSTEM MALFUNCTION**

Numerous system-related equipment failure events that warrant emergency classification have been identified in this category. They may pose actual or potential threats to plant safety.

The events of this category pertain to the following subcategories:

1. Loss of AC Power

Loss of vital plant AC electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems that may be necessary to ensure fission product barrier integrity. This category includes total losses of vital plant power sources.

2. Loss of DC Power

Loss of vital plant DC electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems that may be necessary to ensure fission product barrier integrity.

3. Failure of Protection System

Events may be related to failure of the Protection System (PS) to initiate and complete reactor trips. In the plant licensing basis, postulated failures of the PS to complete a reactor trip comprise a specific set of analyzed events referred to as Anticipated Transient Without Scram (ATWS) events. For EAL classification however, ATWS is intended to mean any trip failure event that does not achieve reactor shutdown. If RPS actuation fails to assure reactor shutdown, positive control of reactivity is at risk and could cause a threat to Fuel Clad, RCS and Containment integrity.

4. Plant Monitoring

Certain events that degrade plant operator ability to effectively assess plant conditions within the plant warrant emergency classification. Losses of annunciators are in this subcategory.

5. Technical Specification Limits

System malfunctions may lead to loss of capability to accomplish heat removal from the reactor core and RCS.

Only one EAL falls into this subcategory. It is related to the failure of the plant to be brought to the required plant operating condition required by technical specifications if a limiting condition for operation (LCO) is not met.

6. Communications

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification are included here.

7. RCS Leakage

The Reactor Vessel provides a volume for the coolant that covers the reactor core. The Reactor Vessel and associated pressure piping (reactor coolant system) together provide a barrier to limit the release of radioactive material should the reactor Fuel Clad integrity fail.

Excessive RCS leakage greater than Technical Specification limits are utilized to indicate potential pipe cracks that may propagate to an extent threatening Fuel Clad, RCS and Containment integrity.

9. Fuel Clad Degradation (Note: Fuel Clad Degradation is number 9; 8 is a RCS leakage in Category C).

During normal operation, reactor coolant fission product activity is very low. Small concentrations of fission products in the coolant are primarily from the fission of tramp uranium in the Fuel Clad or minor perforations in the clad itself. Any significant increase from these base line levels (2%–5% clad failures) is indicative of fuel failures and is covered under the Fission Product Barriers category. However, lesser amounts of clad damage may result in coolant activity exceeding Technical Specification limits. These fission products will be circulated with the reactor coolant and can be detected by coolant sampling.

### 3.2.5 CATEGORY C—COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION

Category C EALs are directly associated with cold shutdown or refueling system safety functions. Given the variability of plant configurations (e.g., systems out-of-service for maintenance, containment open, reduced AC power redundancy, time since shutdown) during these periods, the consequences of any given initiating event can vary greatly. For example, a loss of decay heat removal capability that occurs at the end of an extended outage has less significance than a similar loss occurring during the first week after shutdown. Compounding these events is the likelihood that instrumentation necessary for assessment may also be inoperable. The cold shutdown and refueling system malfunction EALs are based on performance capability to the extent possible with consideration given to RCS integrity, containment closure, and Fuel Clad integrity for the applicable operating modes (5—Cold Shutdown; 6—Refueling; D—Defueled).

The events of this category pertain to the following subcategories:

1. Loss of AC Power

Loss of vital plant AC electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems that may be necessary to ensure fission product barrier integrity. This category includes total losses of vital plant power sources.

2. Loss of DC Power

Loss of vital plant DC electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems that may be necessary to ensure fission product barrier integrity.

3. Failure of Protection System

If PS actuation fails to assure positive control of reactivity it could cause a threat to Fuel Clad, RCS and Containment integrity.

6. Communications

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification.

7. and 8. RCS Leakage (Note: Categories 7 and 8 are both RCS Leakage in NEI guidance document.)

The Reactor Vessel provides a volume for the coolant that covers the reactor core. The Reactor Vessel and associated pressure piping (reactor coolant system) together provide a barrier to limit the release of radioactive material should the reactor Fuel Clad integrity fail.

Excessive RCS leakage greater than Technical Specification limits are utilized to indicate potential pipe cracks that may propagate to an extent threatening Fuel Clad, RCS and containment integrity. This EAL, for Cold Shutdown and Refueling, will be based on RCS leakage limits that are applicable during the operational modes unless other mode-specific limits have been established.

10. Heat Sink

Loss of the ability to remove decay heat could lead to fuel clad degradation.

### 3.3 MAINTENANCE OF EMERGENCY ACTION LEVELS

The details of EAL development are documented in an Emergency Action Level Technical Basis Document. Revision of the Technical Basis Document is controlled the same way as the Callaway Plant Unit 2 Emergency Plan, requiring the same reviews including a review in accordance with 50.54(q).

**FISSION PRODUCT BARRIER DEGRADATION**

Modes: 1 Power-Operation, 2 Startup, 3 Hot Standby, 4 Hot Shutdown, 5 Cold Shutdown, 6 Refueling, D Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<b>FG1</b> — 1234 <b>FS1</b> 1. Loss of any two barriers and loss or potential loss of the third barrier.	— 1234 <b>FA1</b> 1. Loss or potential loss of any two barriers.	— 1234 <b>FU1</b> 1. Any loss or any potential loss of either fuel-clad or RCS.	— 1234 1. Any loss or any potential loss of containment.

{Add FC2 containment rad-graph here (damage curve based on 300 µCi/gm DEI-131)}

{Add CT2 containment rad-graph here (damage curve based on 20% fuel-clad)}

Sub-Category	FC—Fuel Clad		RC—Reactor Coolant System		CT—Containment	
	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss
2. Containment Radiation Monitoring	1. Containment radiation monitor ((JYK15-CR101)) > [Graph FC2(L)1].	None	1. Containment radiation monitor ((JYK15-CR101)) > [RC2(L)1] R/hr.	None	None	1. Containment radiation monitor ((JYK15-CR101)) > [Graph CT2(PL)1].
3. Core Temperature	1. [Calculated Clad Temperature in Region 2 or higher].	1. [Calculated Clad Temperature in Region 2].	None	None	None	1. a. Calculated Clad Temperature in Region 4. AND b. Restoration procedures not effective within 15 minutes. OR 2. a. Calculated Clad Temperature in Region 3. AND b. RCS level ((JEF10-CL08)) < {CT3(PL)2.b}. AND c. Restoration procedures not effective within 15 minutes.

**FISSION PRODUCT BARRIER DEGRADATION**

Modes: 1 Power Operation, 2 Startup, 3 Hot Standby, 4 Hot Shutdown, 5 Cold Shutdown, 6 Refueling, D Defueled

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		UNUSUAL EVENT	
FG1		FS1		FA1		FU1	
1. Loss of any two barriers and Loss or Potential Loss of the third barrier.		1. Loss or Potential Loss of any two barriers.		1. Any Loss or any Potential Loss of either Fuel Clad or RCS.		1. Any Loss or any Potential Loss of Containment.	
FC - Fuel Clad		RC - Reactor Coolant System		CT - Containment			
Sub-Category	Loss	Potential Loss	Loss	Potential Loss	Loss	Potential Loss	
4. RPV Level	None	1. a. RCS level ([JEF10-CL081]) < [FC4(PL)1.a]. AND b. [Calculated Clad Temperature in Region 2 or higher].	None	None	None	None	None
5. RCS Leak Rate	None	None	1. RCS leak rate greater than available makeup capacity as indicated by [Calculated Clad Temperature in Region 2 or higher].	1. RCS leak rate requires operation of second charging pump to maintain pressurizer level.	None	None	None
6. SG Tube Leakage / Rupture	None	None	1. RUPTURED SG results in MHSI actuation.		1. RUPTURED SG is also FAULTED outside of containment. OR 2. a. Primary to Secondary leak rate > 10 gpm. AND b. UNISOLABLE steam release from affected SG to the environment.	None	None
7. RCS Activity	1. Coolant activity > 300 µCi/gm Dose Equivalent ± 131.	None	None	None	None	None	None
8. Containment Pressure	None	None	None	None	1. A containment pressure rise followed by a rapid UNPLANNED drop in containment pressure. OR 2. Containment pressure or IRWST level response not consistent with LOCA conditions.	1. Containment pressure > 62 psig and rising. OR 2. Containment Hydrogen > 4%.	
9. Containment Isolation Failure	None	None	None	None	1. a. Failure of ALL isolation valves in any one line to close. AND b. Direct downstream pathway to the environment exists after containment isolation signal.	None	None
10. EC Judgment	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the fuel clad barrier.	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the fuel clad barrier.	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the RCS barrier.	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the RCS barrier.	1. Any condition in the opinion of the Emergency Coordinator that indicates loss of the containment barrier.	1. Any condition in the opinion of the Emergency Coordinator that indicates potential loss of the containment barrier.	



**RADIOLOGICAL EFFLUENT/ABNORMAL RADIATION LEVELS**

Modes: 1—Power Operation, 2—Startup, 3—Hot Standby, 4—Hot Shutdown, 5—Cold Shutdown, 6—Refueling, D—Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	RG1 —123456D	RS1 —123456D	RA1 —123456D	RU1 —123456D
	Offsite dose resulting from an actual or IMMINENT release of gaseous radioactivity greater than 1000 mRem (10mSv) TEDE or 5000 mRem (50 mSv) Thyroid CDE for the actual or projected duration of the release using actual meteorology.	Offsite dose resulting from an actual or IMMINENT release of gaseous radioactivity greater than 100 mRem (1 mSv) TEDE or 500 mRem (5 mSv) Thyroid CDE for the actual or projected duration of the release using actual meteorology.	Any release of gaseous or liquid radioactivity to the environment greater than 200 times the ODCM limit for 15 minutes or longer.	Any release of gaseous or liquid radioactivity to the environment greater than 2 times the ODCM limit for 60 minutes or longer.
	<b>EALs:</b>	<b>EALs:</b>	<b>EALs:</b>	<b>EALs:</b>
<b>Radiological Effluents</b>	<b>Note:</b> If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.	<b>Note:</b> If dose assessment results are available, declaration should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.	<b>Note:</b> In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.	<b>Note:</b> In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.
	1. Vent Stack Noble Gas ((KLK90 FR001)) > [RG1.1] $\mu$ Ci/hr for 15 minutes or longer. OR 2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of EITHER of the following: <ul style="list-style-type: none"> <li>&gt;1000 mRem TEDE</li> <li>&gt;5000 mRem CDE Thyroid</li> </ul> OR 3. Field survey results at or beyond the site boundary indicate EITHER of the following: <ul style="list-style-type: none"> <li>Gamma (closed window) dose rate &gt; 1000 mR/hr for 60 minutes or longer.</li> <li>Air sample analysis &gt; 5000 mRem CDE Thyroid for one hour of inhalation.</li> </ul>	1. Vent Stack Noble Gas ((KLK90 FR001)) > [RS1.1] $\mu$ Ci/hr for 15 minutes or longer. OR 2. Dose assessment using actual meteorology indicates doses at or beyond the site boundary of EITHER of the following: <ul style="list-style-type: none"> <li>&gt;100 mRem TEDE</li> <li>&gt;500 mRem CDE Thyroid</li> </ul> OR 3. Field survey results at or beyond the site boundary indicate EITHER of the following: <ul style="list-style-type: none"> <li>Gamma (closed window) dose rate &gt; 100 mR/hr for 60 minutes or longer.</li> <li>Air sample analysis &gt; 500 mRem CDE Thyroid for one hour of inhalation.</li> </ul>	1. Vent Stack Noble Gas ((KLK90 FR001)) > [RA1.1] $\mu$ Ci/hr for 15 minutes or longer. OR 2. ANY of the following effluent monitors > 200 times the ODCM limit established by a current radioactivity discharge permit for 15 minutes or longer: <ul style="list-style-type: none"> <li>Rad Waste Building Transfer Tank Discharge Line Activity Monitor ((KPK29 CR001/002))</li> <li>Discharge permit specified monitor</li> </ul> OR 3. Confirmed sample analysis for gaseous or liquid releases > 200 times the ODCM limit for 15 minutes or longer.	1. Vent Stack Noble Gas ((KLK90 FR001)) > [RU1.1] $\mu$ Ci/hr for 60 minutes or longer. OR 2. ANY of the following effluent monitors > 2 times the ODCM limit established by a current radioactivity discharge permit for 60 minutes or longer: <ul style="list-style-type: none"> <li>Rad Waste Building Transfer Tank Discharge Line Activity Monitor ((KPK29 CR001/002))</li> <li>Discharge permit specified monitor</li> </ul> OR 3. Confirmed sample analysis for gaseous or liquid releases > 2 times the ODCM limit for 60 minutes or longer.

**RADIOLOGICAL EFFLUENT/ABNORMAL RADIATION LEVELS**

Modes: 1—Power Operation, 2—Startup, 3—Hot Standby, 4—Hot Shutdown, 5—Cold Shutdown, 6—Refueling, D—Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Abnormal Radiation Levels</b></p>		<p><b>RA2</b> <span style="float: right;">-1234560-</span></p> <p>Damage to irradiated fuel or loss of water level that has resulted or will result in the uncovering of irradiated fuel outside the reactor vessel.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>-A water level drop in the reactor refueling cavity, spent fuel pool or fuel transfer canal that will result in irradiated fuel becoming uncovered.</li> <li>OR</li> <li>&gt;1000 mR/hr on ANY of the following due to damage to irradiated fuel or loss of water level:                             <ul style="list-style-type: none"> <li>Reactor Building Refueling Bridge Area Dose Rate Monitor ((JYK15-CR003))</li> <li>Fuel Building Spent Fuel Mast Bridge Dose Rate Monitor ((JYK28-CR002))</li> <li>Fuel Building Fuel Pool Dose Rate Monitor ((JYK28-CR001))</li> <li>Transfer Pit Dose Rate Monitor ((JYK23-CR001))</li> </ul> </li> </ol>	<p><b>RU2</b> <span style="float: right;">-1234560-</span></p> <p>UNPLANNED rise in plant radiation levels.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>a. UNPLANNED water level drop in the reactor refueling cavity, spent fuel pool or fuel transfer canal as indicated by ANY of the following:                             <ul style="list-style-type: none"> <li>Reactor refueling cavity level ((FAK31-CL003 or CL004)) &lt; {RU2.1.a(b1)} feet.</li> <li>Spent fuel pool level ((FAL18-CL001)) &lt; {RU2.1.a(b2)} feet.</li> <li>Fuel transfer canal level ((FAL18-CL004 or CL005)) &lt; {RU2.1.a(b3)} feet.</li> <li>Report of visual observation.</li> </ul> </li> <li>AND</li> <li>b. Area radiation monitor rise on ANY of the following:                             <ul style="list-style-type: none"> <li>Reactor Building Refueling Bridge Area Dose Rate Monitor ((JYK15-CR003))</li> <li>Fuel Building Spent Fuel Mast Bridge Dose Rate Monitor ((JYK28-CR002))</li> <li>Fuel Building Fuel Pool Dose Rate Monitor ((JYK28-CR001))</li> <li>Transfer Pit Dose Rate Monitor ((JYK23-CR001))</li> </ul> </li> <li>OR</li> <li>UNPLANNED area radiation monitor or radiation survey &gt; 1000 times NORMAL LEVELS.</li> </ol>
			<p><b>RA3</b> <span style="float: right;">-1234560-</span></p> <p>Rise in radiation levels within the facility that impedes operation of systems required to maintain plant safety functions.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>Dose rate &gt; 15 mR/hr in ANY of the following areas requiring continuous occupancy to maintain plant safety functions:                             <ul style="list-style-type: none"> <li>Control Room</li> <li>Central Alarm Station</li> </ul> </li> </ol>



**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

Modes: 1 Power Operation, 2 Startup, 3 Hot Standby, 4 Hot Shutdown, 5 Cold Shutdown, 6 Refueling, D Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	<b>HG1</b> —123456D-	<b>HS1</b> —123456D-	<b>HA1</b> —123456D-	<b>HU1</b> —123456D-
	HOSTILE ACTION resulting in loss of physical control of the facility.	HOSTILE ACTION within the PROTECTED AREA.	HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat.	Confirmed SECURITY CONDITION or threat which indicates a potential degradation in the level of safety of the plant.
<b>Security</b>	<b>EALs:</b> 1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions. <b>OR</b> 2. A HOSTILE ACTION has caused failure of spent fuel-cooling systems and IMMEDIATE fuel damage is likely.	<b>EALs:</b> 1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the Security Shift Supervisor.	<b>EALs:</b> 1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor. <b>OR</b> 2. A validated notification from the NRC of a LARGE AIRCRAFT attack threat within 30 minutes of the site.	<b>EALs:</b> 1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor. <b>OR</b> 2. A credible site-specific security threat notification. <b>OR</b> 3. A validated notification from the NRC providing information of an aircraft threat.
		<b>HS2</b> —123456D-	<b>HA2</b> —123456D-	
<b>CR Evacuation</b>		Control Room evacuation has been initiated and plant control cannot be established.	Control Room evacuation has been initiated.	
		<b>EALs:</b> 1. a. Control Room evacuation has been initiated. <b>AND</b> b. Control of the plant cannot be established within 15 minutes.	<b>EALs:</b> 1. Control Room evacuation has been initiated.	

**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

Modes: 1—Power Operation, 2—Startup, 3—Hot Standby, 4—Hot Shutdown, 5—Cold Shutdown, 6—Refueling, D—Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	<p><b>Table H-1: Safe Shutdown Vital Areas</b></p> <ul style="list-style-type: none"> <li>• Control Room</li> <li>• Safeguards Buildings</li> <li>• Containment</li> <li>• Nuclear Auxiliary Building</li> <li>• Emergency Power Generating Buildings</li> <li>• ESW Cooling Towers</li> </ul>	<p><b>HA3</b> <span style="float: right;">-123456D-</span></p> <p>Natural or destructive phenomena affecting VITAL AREAS:</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. a. Seismic event &gt; OBE as indicated by PICS seismic monitoring system. <b>AND</b></li> <li>b. Earthquake confirmed by ANY of the following: <ul style="list-style-type: none"> <li>• Earthquake felt in plant</li> <li>• National Earthquake Center</li> <li>• Control Room indication of degraded performance of systems required for the safe shutdown of the plant.</li> </ul> </li> <li><b>OR</b></li> <li>2. Tornado or high winds &gt; {45 m/sec (100 mph)} resulting in EITHER of the following: <ul style="list-style-type: none"> <li>• VISIBLE DAMAGE to ANY structures in Table H-1 areas containing safety systems or components.</li> <li>• Control Room indication of degraded performance of those safety systems.</li> </ul> </li> <li><b>OR</b></li> <li>3. Internal flooding in Table H-1 areas resulting in EITHER of the following: <ul style="list-style-type: none"> <li>• Electrical shock hazard that precludes access to operate or monitor safety equipment.</li> <li>• Control Room indication of degraded performance of those safety systems.</li> </ul> </li> <li><b>OR</b></li> <li>4. Turbine failure-generated PROJECTILES resulting in EITHER of the following: <ul style="list-style-type: none"> <li>• VISIBLE DAMAGE to or penetration of ANY structures in Table H-1 areas containing safety systems or components.</li> <li>• Control Room indication of degraded performance of those safety systems.</li> </ul> </li> <li><b>OR</b></li> <li>5. Vehicle crash resulting in EITHER of the following: <ul style="list-style-type: none"> <li>• VISIBLE DAMAGE to ANY structures in Table H-1 areas containing safety systems or components.</li> <li>• Control Room indication of degraded performance of those safety systems.</li> </ul> </li> </ol>	<p><b>HU3</b> <span style="float: right;">-123456D-</span></p> <p>Natural or destructive phenomena affecting the PROTECTED AREA.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. a. Seismic event trigger as indicated by PICS seismic monitoring system. <b>AND</b></li> <li>b. Earthquake confirmed by EITHER of the following: <ul style="list-style-type: none"> <li>• Earthquake felt in plant</li> <li>• National Earthquake Center</li> </ul> </li> <li><b>OR</b></li> <li>2. a. Tornado within the PROTECTED AREA. <b>OR</b></li> <li>b. High winds &gt; {45 m/sec (100 mph)}.</li> <li><b>OR</b></li> <li>3. Internal flooding in Table H-1 areas that has the potential to affect safety-related equipment required by Technical Specifications for the current operating mode. <b>OR</b></li> <li>4. Turbine failure resulting in casing penetration or damage to turbine or generator seals.</li> </ol>

Natural or Destructive Phenomena

**HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY**

Modes: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown, 5 - Cold Shutdown, 6 - Refueling, D - Defueled

	GENERAL EMERGENCY	SITE-AREA EMERGENCY	ALERT	UNUSUAL EVENT
Fire / Explosion		<p><b>Table H-1: Safe Shutdown Vital Areas</b></p> <ul style="list-style-type: none"> <li>Control Room</li> <li>Safeguards Buildings</li> <li>Containment</li> <li>Nuclear Auxiliary Building</li> <li>Emergency Power-Generating Buildings</li> <li>ESW Cooling Towers</li> </ul>	<p><b>HA4</b> <del>123456D</del></p> <p>FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>FIRE or EXPLOSION resulting in EITHER of the following:                             <ul style="list-style-type: none"> <li>VISIBLE DAMAGE to ANY structures in Table H-1 areas containing safety systems or components.</li> <li>Control Room indication of degraded performance of those safety systems.</li> </ul> </li> </ol>	<p><b>HU4</b> <del>123456D</del></p> <p>FIRE within the PROTECTED AREA not extinguished within 15 minutes of detection or EXPLOSION within the PROTECTED AREA.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>FIRE not extinguished within 15 minutes of Control Room notification or verification of a Control Room FIRE alarm in actual contact with or immediately adjacent to ANY of the Table H-1 areas.                             <p><b>OR</b></p> </li> <li>EXPLOSION within the PROTECTED AREA.</li> </ol>
	Toxic Gas			<p><b>HA5</b> <del>123456D</del></p> <p>Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant or flammable gases, which jeopardize the ability to safely operate or shutdown the reactor.</p> <p><b>Note:</b> If the equipment in the VITAL AREA was inoperable or out of service before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability to safely operate or shutdown the plant beyond that allowed by Technical Specifications at the time of the event.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant or flammable gases, which jeopardize the ability to safely operate or shutdown the reactor.</li> </ol>
Judgment		<p><b>HG6</b> <del>123456D</del></p> <p>Other conditions exist which in the judgment of the Emergency Coordinator warrant declaration of General Emergency.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.</li> </ol>	<p><b>HS6</b> <del>123456D</del></p> <p>Other conditions exist which in the judgment of the Emergency Coordinator warrant declaration of Site Area Emergency.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>Other conditions exist which in the judgment of the Emergency Coordinator 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.</li> </ol>	<p><b>HA6</b> <del>123456D</del></p> <p>Other conditions exist which in the judgment of the Emergency Coordinator warrant declaration of an Alert.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>Other conditions exist which in the judgment of the Emergency Coordinator indicate that events are in progress or have occurred which involve actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.</li> </ol>



**SYSTEMS MALFUNCTIONS — HOT**

Modes: 1 Power Operation, 2 Startup, 3 Hot Standby, 4 Hot Shutdown, 5 Cold Shutdown, 6 Refueling, D Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<b>Loss-of-AC</b>	<b>SG1</b> — 1 2 3 4 Prolonged loss of all offsite and all onsite AC power to emergency busses.	<b>SS1</b> — 1 2 3 4 Loss of all offsite and all onsite AC power to emergency busses for 15 minutes or longer.	<b>SA1</b> — 1 2 3 4 AC power capability to emergency busses reduced to a single source for 15 minutes or longer such that any additional single failure would result in a loss of all AC power to the emergency busses.	<b>SU1</b> — 1 2 3 4 Loss of all offsite AC power to emergency busses for 15 minutes or longer.
	<b>EALs:</b> 1. a. Loss of ALL offsite and ALL onsite AC power to 31, 32, 33 and 34 BDA busses. <b>AND</b> b. EITHER of the following: • Restoration of at least one emergency bus within 2 hours is not likely. • [Calculated Clad Temperature in Region 4].	<b>EALs:</b> 1. Loss of ALL offsite and ALL onsite AC power to 31, 32, 33 and 34 BDA busses for 15 minutes or longer.	<b>EALs:</b> 1. a. AC power to 31, 32, 33 and 34 BDA busses is reduced to a single source for 15 minutes or longer. <b>AND</b> b. Any additional single failure will result in a loss of all AC power to 31, 32, 33 and 34 BDA busses.	<b>EALs:</b> 1. Loss of ALL offsite AC power to 31, 32, 33 and 34 BDA busses for 15 minutes or longer.
<b>Loss-of-DC</b>		<b>SS2</b> — 1 2 3 4 Loss of vital DC power for 15 minutes or longer.		
		<b>EALs:</b> 1. <210 VDC on the vital 31, 32, 33 and 34 BUC busses for 15 minutes or longer.		
<b>Failure of Protection Systems</b>	<b>SG3</b> — 1 2 Automatic trip and all manual actions failed to shutdown the reactor and indication of an extreme challenge to the ability to cool the core exists.	<b>SS3</b> — 1 2 Automatic trip failed to shutdown the reactor and manual actions taken from the reactor control console failed to shutdown the reactor.	<b>SA3</b> — 1 2 Automatic trip failed to shutdown the reactor and the manual actions taken from the reactor control console are successful in shutting down the reactor.	<b>SU3</b> — 3 4 Inadvertent criticality.
	<b>EALs:</b> 1. a. An automatic reactor trip failed to shutdown the reactor as indicated by reactor power > 5%. <b>AND</b> b. All manual actions failed to shutdown the reactor as indicated by reactor power > 5%. <b>AND</b> c. EITHER of the following have occurred: • Calculated Clad Temperature in Region 3 or higher. • Loss of all four trains of Emergency Feedwater.	<b>EALs:</b> 1. a. An automatic reactor trip failed to shutdown the reactor as indicated by reactor power > 5%. <b>AND</b> b. Manual actions taken at the reactor control console failed to shutdown the reactor as indicated by reactor power > 5%.	<b>EALs:</b> 1. a. An automatic reactor trip failed to shutdown the reactor as indicated by reactor power > 5%. <b>AND</b> b. Manual actions taken at the reactor control console successfully shutdown the reactor as indicated by reactor power < 5%.	<b>EALs:</b> 1. UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

**SYSTEMS MALFUNCTIONS — HOT**

Modes: 1 — Power Operation, 2 — Startup, 3 — Hot Standby, 4 — Hot Shutdown, 5 — Cold Shutdown, 6 — Refueling, D — Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<b>Plant Monitoring</b>		<p><b>SS4</b> — 1234</p> <p>Loss of all monitoring functions for 15 minutes or longer with a SIGNIFICANT TRANSIENT in progress.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. a. Loss of SICS for 15 minutes or longer.</li> <li>AND</li> <li>b. Loss of PICS for 15 minutes or longer.</li> <li>AND</li> <li>c. ANY of the following SIGNIFICANT TRANSIENTS are in progress:                             <ul style="list-style-type: none"> <li>• Automatic runback &gt; 50% thermal power</li> <li>• Electrical load reject &gt; 50% full load</li> <li>• Reactor trip</li> <li>• MHSI actuation</li> </ul> </li> </ol>	<p><b>SA4</b> — 1234</p> <p>Loss of all monitoring functions for 15 minutes or longer.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. a. Loss of SICS for 15 minutes or longer.</li> <li>AND</li> <li>b. Loss of PICS for 15 minutes or longer.</li> </ol>	<p><b>SU4</b> — 1234</p> <p>Degradation of monitoring functions for 15 minutes or longer.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. Loss of SICS for 15 minutes or longer.</li> <li>OR</li> <li>2. Loss of PICS for 15 minutes or longer.</li> </ol>
	<b>T.S. Limits</b>			
<b>Communications</b>				



**SYSTEMS MALFUNCTIONS — HOT**

Modes: 1 — Power Operation, 2 — Startup, 3 — Hot Standby, 4 — Hot Shutdown, 5 — Cold Shutdown, 6 — Refueling, D — Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
<b>RCS Leakage</b>			<p><b>SU7</b> — 1 2 3 4</p> <p>RCS leakage.</p> <p><b>EALs:</b></p> <ol style="list-style-type: none"> <li>1. Unidentified or pressure boundary leakage &gt; 10-gpm.</li> <li>OR</li> <li>2. Identified leakage &gt; 25-gpm.</li> </ol>
	<b>Fuel Clad Degradation</b>		



**SYSTEMS MALFUNCTIONS — COLD**

Modes: 1 — Power Operation, 2 — Startup, 3 — Hot Standby, 4 — Hot Shutdown, 5 — Cold Shutdown, 6 — Refueling, D — Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss-of-AC			<p><b>CA1</b> — [5][6][D]</p> <p>Loss of all offsite and all onsite AC power to emergency busses for 15 minutes or longer.</p> <p><b>EALs:</b></p> <p>1. Loss of ALL offsite and ALL onsite AC power to 31, 32, 33 and 34 BDA busses for 15 minutes or longer.</p>	<p><b>CU1</b> — [5][6]</p> <p>AC power capability to emergency busses reduced to a single source for 15 minutes or longer such that any additional single failure would result in a loss of all AC power to the emergency busses.</p> <p><b>EALs:</b></p> <p>1. a. AC power to 31, 32, 33 and 34 BDA busses is reduced to a single source for 15 minutes or longer.  <b>AND</b>                      b. Any additional single failure will result in a loss of all AC power to 31, 32, 33 and 34 BDA busses.</p>
	Loss-of-DC			<p><b>CU2</b> — [5][6]</p> <p>Loss of required DC power for 15 minutes or longer.</p> <p><b>EALs:</b></p> <p>1. &lt; 210 VDC on the required 31, 32, 33 and 34 BUC busses for 15 minutes or longer.</p>
Failure-of-Protection System				<p><b>CU6</b> — [5][6][D]</p> <p>Loss of all onsite or offsite communications capabilities.</p> <p><b>EALs:</b></p> <p>1. Loss of ALL of the following onsite communication methods affecting the ability to perform routine operations:</p> <ul style="list-style-type: none"> <li>• {Radios}</li> <li>• {Plant Page}</li> <li>• {Internal Telephone Systems}</li> </ul> <p><b>OR</b></p> <p>2. Loss of ALL of the following offsite communications methods affecting the ability to perform offsite notifications:</p> <ul style="list-style-type: none"> <li>• SENTRY System</li> <li>• NRC Emergency Notification System — ENS</li> <li>• NRC Health Physics Network — HPN</li> <li>• External Telephone Systems</li> </ul>
Communications				



**SYSTEMS MALFUNCTIONS — COLD**

Modes: 1 — Power Operation, 2 — Startup, 3 — Hot Standby, 4 — Hot Shutdown, 5 — Cold Shutdown, 6 — Refueling, D — Defueled

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	<b>CG7</b> — [5] [6]	<b>CS7</b> — [5] [6]	<b>CA7</b> — [5] [6]	<b>CU7</b> — [5]
	Loss of RPV inventory affecting fuel clad integrity with containment challenged.	Loss of RPV inventory affecting core decay heat removal capability.	Loss of RPV inventory.	RCS leakage.
<b>RCS Leakage</b>	<b>EALs:</b> 1. a. RPV level < [96.0 feet (29.3 meters)] (top of active fuel) for 30 minutes or longer. <b>AND</b> b. ANY Table C-1 containment challenge indications. <b>OR</b> 2. a. RPV level cannot be monitored with core uncover indicated by ANY of the following for 30 minutes or longer: • Reactor Building Refueling Bridge Area — Dose Rate Monitor ((JYK15-CR003)) > [CG7.2.a(b1)] mR/hr. • Erratic source range monitor indication. • UNPLANNED level rise in IRWST. <b>AND</b> b. ANY Table C-1 containment challenge indications. <b>Table C-1: Containment Challenge Indications</b> • CONTAINMENT CLOSURE not established. • Hydrogen concentration > 4% inside containment. • UNPLANNED rise in containment pressure.	<b>EALs:</b> 1. a. CONTAINMENT CLOSURE not established. <b>AND</b> b. Loss of RPV inventory as indicated by RCS level ((JEF10-CL081)) < [CS7.1.b]. <b>OR</b> 2. a. CONTAINMENT CLOSURE established. <b>AND</b> b. RPV level < [96.0 feet (29.3 meters)] (top of active fuel). <b>OR</b> 3. a. RCS level cannot be monitored for 30 minutes or longer. <b>AND</b> b. Loss of RPV inventory as indicated by ANY of the following: • Reactor Building Refueling Bridge Area — Dose Rate Monitor ((JYK15-CR003)) > [CS7.3.b(b1)] mR/hr. • Erratic source range monitor indication. • UNPLANNED level rise in IRWST.	<b>EALs:</b> 1. Loss of RPV inventory as indicated by RCS level ((JEF10-CL081)) < [CA7.1]. <b>OR</b> 2. a. RCS level cannot be monitored for 15 minutes or longer. <b>AND</b> b. Loss of RPV inventory as indicated by UNPLANNED level rise in IRWST.	<b>EALs:</b> 1. RCS leakage results in the inability to maintain or restore RCS level > Procedure Established Minimum Level for 15 minutes or longer. <b>CU8</b> — [6] <b>UNPLANNED</b> loss of RCS inventory. <b>EALs:</b> 1. a. UNPLANNED RCS level drop below the RPV flange for 15 minutes or longer when the RCS level band is established above the RPV flange. <b>OR</b> b. UNPLANNED RCS level drop < Procedure Established Minimum Level for 15 minutes or longer when the RCS level band is established below the RPV flange. <b>OR</b> 2. a. RCS level cannot be monitored. <b>AND</b> b. Loss of RPV inventory as indicated by UNPLANNED level rise in IRWST.
		<b>Table C-2: RCS Reheat Duration Thresholds</b>		
<b>Heat Sink</b>			<b>CA10</b> — [5] [6]	<b>CU10</b> — [5] [6]
			Inability to maintain plant in cold shutdown. <b>EALs:</b> 1. RCS temperature > 200° F for the specified duration on Table C-2. <b>OR</b> 2. RCS pressure rise > 10 psig due to a loss of RCS cooling (this EAL does not apply in solid plant conditions).	UNPLANNED loss of decay heat removal capability. <b>EALs:</b> 1. RCS temperature > 200° F due to an UNPLANNED loss of decay heat removal capability. <b>OR</b> 2. Loss of ALL RCS temperature and RCS level indication for 15 minutes or longer.

\* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, this EAL is not applicable.

# Callaway Plant Unit 2

## Combined License Application

### Part 5: Enclosure A Callaway Plant Unit 2 Summary Explanation of Emergency Action Levels

This Part is completely site specific.

Revision 1  
February 2009

The existing Part 5 Enclosure A is being withdrawn in entirety. This cover page is included for this RAI response to denote that development of this Enclosure is to be determined at a later date.

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# **Enclosure B**

## **Callaway Plant Unit 2 EAL Comparisons and Technical Bases for Changes**

The existing Part 5 Enclosure B is being withdrawn in entirety. This cover page is included for this RAI response to denote that development of this Enclosure is to be determined at a later date.

eRAI 1902  
Q 13-03-1

**Enclosure C**  
**Callaway Plant Unit 2**  
**EAL Technical Bases Manual**

The existing Part 5 Enclosure C is being withdrawn in entirety. This cover page is included for this RAI response to denote the development of this Enclosure is to be determined at a later date.

eRAI 1902  
Q 13-03-1

**Enclosure 3**

Proposed changes to COLA Part 10

<b>COLA Part</b>	<b>Section</b>	<b>Page No.</b>	<b>Description</b>
10	Appendix A	9, 10	Revised the proposed License Condition response to item 8.
10	Appendix B	17	Revised the Acceptance Criteria wording associated with Planning Standard 1.0 Emergency Classification System.

**5. SECURITY PLAN REVISIONS**

An implementation license condition approved in the SRM regarding SECY-05-0197 applies to the security program.

**PROPOSED LICENSE CONDITION:**

{AmerenUE} shall fully implement and maintain in effect the provisions of the Security Plan, which consists of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and Section {} of Appendix {} to Part 52 when nuclear fuel is first received onsite, and continuing until all nuclear fuel is permanently removed from the site.

**6. OPERATIONAL PROGRAM READINESS**

The NRC inspection of operational programs will be the subject of the following license condition in accordance with SECY-05-0197.

**PROPOSED LICENSE CONDITION:**

{AmerenUE} shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-1. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

**7. STARTUP TESTING**

COL application FSAR Section 14.2 specifies certain startup tests that must be completed after fuel load. Operating licenses typically have included the following condition related to startup testing.

**PROPOSED LICENSE CONDITION:**

Any changes to the Initial Startup Test Program described in Chapter 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 or Section {} of Appendix {} to 10 CFR Part 52 shall be reported in accordance with 50.59(d) within one month of such change.

**8. EMERGENCY ACTION LEVELS**

The {Callaway Plant Unit 2} Emergency Action Levels (EALs) and the associated Technical Bases Manual contains bracketed values requiring plant specific values to be provided that can not be determined until after the COL is issued. These bracketed values are associated with certain site specific values and detailed design information, such as setpoints and instrument numbers. In most cases, this information is necessary to determine EAL thresholds.

**PROPOSED LICENSE CONDITION:**

~~{AmerenUE} shall submit the plant specific values to the NRC for approval in order to address the remaining bracketed values in the {Callaway Plant Unit 2} EALs and associated Technical Bases Manual as identified below. These plant specific values shall be submitted to the NRC within 2 years of scheduled date for initial fuel load. {AmerenUE} shall submit a complete set of plant-specific Emergency Action Levels (EALs) for {Callaway Plant Unit 2} in accordance with NEI 99-01 Revision 5, or the most current NRC endorsed version available at the time of EAL submittal, to the NRC for approval at least 180 days prior to initial fuel load. The submittal EALs~~

will be written with no deviations other than those attributable to specific U.S. EPR reactor design considerations.

<b>Emergency- Action Level</b>	<b>Parameter</b>
FC2(L)1	Containment Radiation Monitor
RC2(L)1	
CT2(PL)1	
FC3(L)1	Calculated Clad Temperature
FC3(PL)1	
CT3(PL)1.a	
CT3(PL)2.a	
FC4(PL)1.b	
RC5(L)1	
SG1.b	
SG3-1.c	
CT3(PL)2.b	RCS Level (hot modes)
FC4(PL)1.a	
RG1.1	Vent Stack Noble Gas
RS1.1	
RA1.1	
RU1.1	
RU2-1.a	Reactor Refueling Cavity Level
RU2-1.a	Spent Fuel Pool Level
RU2-1.a	Fuel Transfer Canal Level
SU9.1	Gross Failed Fuel Monitor
CG7-2.a	Source Range Monitor
CS7-3.b	
CS7-1.b	RCS Level (cold modes)
CA7-1	

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Q 1303-1

## 9. ENVIRONMENTAL PROTECTION PLAN

Operating licenses typically have included the following condition related to environmental protection.

### PROPOSED LICENSE CONDITION:

The issuance of this COL, subject to the Environmental Protection Plan and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by Subpart C of 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," and all applicable requirements therein have been satisfied.

**Table 2.3-1—(Emergency Preparedness Inspections, Tests, Analyses, and Acceptance Criteria)**

(Page 1 of 7)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
<b>1.0 Emergency Classification System</b>			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 A standard emergency classification and emergency action level (EAL) scheme exists, and identifies facility system and effluent parameters constituting the bases for the classification scheme. [D.1]	1.1 An inspection of the Callaway Plant Unit 2 Main Control Room, Technical Support Center (TSC), and Emergency Operations Facility (EOF) will be performed to verify that they have displays for retrieving facility system and effluent parameters as specified in the Emergency Classification and EAL scheme and the displays are functional.	1.1.1 The parameters specified in the Callaway Plant Unit 2 U.S. EPR EAL Technical Bases Manual EALs are retrievable and displayed in the Callaway Plant Unit 2 Main Control Room, TSC and EOF.  1.1.2 The ranges of the displays in the Callaway Plant Unit 2 Main Control Room, TSC and EOF encompass the values for the parameters specified in the Callaway Plant Unit 2 U.S. EPR EAL Technical Bases Manual.
<b>2.0 Notification Methods and Procedures</b>			
10 CFR 50.47(b)(5) – Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.	2.1 The means exists to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency. [E.1]  2.2 The means exists to notify emergency response personnel. [E.2]  2.3 The means exists to notify and provide instructions to the populace within the plume exposure EPZ. [E.6]	2.1 A test of the SENTRY system will be performed to demonstrate the capabilities for providing initial notification to the offsite authorities after a simulated emergency classification.  2.2 A test of the primary and backup Emergency Callout systems will be performed.  2.3.1 A test will be performed of the Callaway Plant Unit 2 Public Alert System. The clarifying notes listed in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, will be used for this test.  2.3.2 The pre-operational Federally evaluated exercise (ITAAC 8.0) will demonstrate the means to provide instructions to the populace within the plume exposure EPZ.	2.1 The State of Missouri and the counties of Callaway, Osage, Montgomery and Gasconade receive notification within 15 minutes after the declaration of a simulated emergency classification.  2.2 Callaway Plant Unit 2 emergency response personnel receive the notification message, as validated by a survey (indicating the time of receipt) or a report to ensure full staffing in the prescribed time requirement.  2.3.1 Greater than 95% of Public Alert System sirens are capable of performing their function.  2.3.2 Successful completion of Federal Register 20-580, FEMA Radiological Emergency Preparedness: Exercise Evaluation Methodology, Criterion 5.b.1 (ORO's provide accurate emergency information and instruction to the public and the news media in a timely manner) during the pre-operational federally-evaluated exercise required in ITAAC 8.0.