

March 7, 2008

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
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Washington, DC 20555-0001

ULNRC-05482

Ladies and Gentlemen:

**DOCKET NUMBER 50-483  
CALLAWAY PLANT  
UNION ELECTRIC COMPANY  
ONE-TIME COMPLETION TIME EXTENSION  
FOR ESSENTIAL SERVICE WATER (ESW) SYSTEM**

- References: 1. ULNRC-05445 dated October 31, 2007  
2. ULNRC-05476 dated February 21, 2008

In Reference 1 cited above AmerenUE requested a license amendment that would revise Callaway Technical Specification (TS) 3.7.8, "Essential Service Water (ESW) System," and TS 3.8.1, "AC Sources – Operating" to allow a one-time Completion Time extension from 72 hours to 14 days per ESW train to be used prior to December 31, 2008, for replacing underground ESW piping.

Reference 2 responded to eight questions that were received electronically on January 16, 2008.

Enclosure 1 of this letter contains the responses to four questions that were received electronically on February 7, 2008. Enclosure 2 provides a list of commitments for this amendment which supersedes the commitments contained in References 1 and 2. Except for the first commitment on amendment implementation, all of the commitments discussed in Enclosure 2 of this letter address Tier 2 of RG 1.177 – pre-planned activities. Emergent work is discussed under Tier 3 of the original amendment request (Reference 1). Unplanned work (corrective maintenance) or emergent site conditions (grid or switchyard issues) would be addressed under our Tier 3 program (APA-ZZ-00315, EDP-ZZ-01129, and the Safety Monitor). Note the additional commitment regarding alternate AC power in response to question 2.b.

If you have any questions on this letter or its enclosures, please contact Mr. Scott Maglio at (573) 676-8719.

A001  
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I declare under penalty of perjury that the foregoing is true and correct.

Very truly yours,

Executed on: 3-7-2008



Luke H. Graessle  
Manager - Regulatory Affairs

GGY/nls

Enclosures: 1 – Responses to Electrical Branch Questions  
2 – Revised Commitment List

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cc:

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REQUEST FOR ADDITIONAL INFORMATION RELATED TO AN AMENDMENT TO  
REVISE TECHNICAL SPECIFICATIONS FOR ESSENTIAL SERVICE WATER  
CALLAWAY PLANT  
DOCKET NO. 50-483  
TAC NUMBER MD7252

The questions given below are based on the NRC staff's review of the license amendment request (LAR) submitted on October 31, 2007 (ULNRC-05445) by AmerenUE for Callaway Plant. This LAR proposes changes to the Callaway Technical Specifications (TSs).

A revision to the associated commitments for this amendment is also attached.

1. Question:

Describe the safety margins that are being credited in the license amendment request section titled, 'Evaluation of Safety Margins.' Also, demonstrate that the safety margins for the events analyzed in the Callaway Plant Final Safety Analysis Report will not be impacted during the implementation proposed change.

Response:

There are no safety margins being credited in the license amendment request submitted via ULNRC-05445, which involves a one-time, risk-based Completion Time extension request. The amendment request neither impacts any deterministic analysis nor does it credit safety margins in any deterministic analysis.

The containment pressure / temperature analyses in FSAR Section 6.2 and the transient and accident analyses in FSAR Chapter 15 are deterministic in nature. For those types of deterministic analyses, a safety analysis limit (SAL) is the acceptance criterion used in the analysis to assure the integrity of physical plant barriers (i.e., fuel cladding, RCS pressure boundary, and containment) to prevent the uncontrolled release of radioactivity. Therefore, the SALs assure that the design basis limits for fission product barriers (DBLFPBs) are not exceeded. There are no changes to any SALs or DBLFPBs in this amendment request.

Taking this discussion further, nominal trip setpoints (NTSs) are established at an appropriate level away from the SAL. The NTSs are values set into the equipment and are obtained by adding or subtracting channel error allowance terms to/from the SAL (depending on whether the actuation channel is a low level or high level trip). The NTS allows for the normal expected channel behavior such that design limits are protected, inadvertent trips are avoided, and Technical Specification Allowable Values (AVs) will not be exceeded under normal operation and anticipated operational occurrences. The AV is obtained by adding or subtracting a calculated allowance to/from the NTS. This calculated allowance accounts for the function-

specific allowances discussed in the Bases for Technical Specifications 3.3.1 and 3.3.2.

The duration of Completion Times in the Required Actions of the Technical Specifications have no tie to the above deterministic analyses. Completion Times were originally established in the first set of Standard Technical Specifications (STS) for Westinghouse plants (NUREG-0452, circa 1980) based on operating experience and/or engineering judgment, and that is largely still the case for the current STS for Westinghouse plants (NUREG-1431). Changes to Completion Times that are consistent with approved NRC staff positions, as discussed in Section 1.1 of RG 1.174 Revision 1, are typically evaluated deterministically by the NRC. Other Completion Time changes are evaluated by the NRC using a combination of deterministic and risk-based considerations; however, the durations of Completion Times are not themselves a factor in any deterministic analysis. Completion Time changes do not affect the values for SAL, NTS, or AV.

Finally, it should be noted that since the requirement to postulate a single failure is suspended during the time a TS Condition is entered, the protected ESW train will continue to be capable of performing the necessary safety functions consistent with accident analysis assumptions.

The above was summarized on page 6 of Attachment 1 to ULNRC-05445 under the heading cited in the question, repeated hereafter.

“Safety analysis acceptance criteria for the events analyzed in FSAR Chapters 6.2 and 15 are not impacted by the proposed change. A one-time ESW Completion Time extension does not impact any of the assumptions or inputs to the safety analyses. Design exceptions are requested against Code Case N-755 in Reference 4; however, the proposed design will result in improved ESW system performance and enhanced system reliability, and will satisfy the criteria of 10 CFR 50.55a(a)(3)(i). Consequently, safety margins are not affected.”

2. Question:

Based on previously approved diesel generator (DG) Technical Specification (TS) Completion Time (CT) extension requests, the staff has found that certain compensatory measures, in the form of regulatory commitments, need to be implemented during the extended DG CT. These regulatory commitments help ensure continued safe operation of the plant. The following compensatory measures are provided as examples of regulatory commitments that other licensees have provided in support of obtaining DG CT extensions. Provide a discussion as to how you will address each of the following compensatory measures for the Callaway Plant.

- a. No maintenance or testing that affects the reliability of the train associated with the OPERABLE DG will be scheduled during the extended CT. If any testing and maintenance activities must be performed while the extended CT is in effect, an evaluation will be performed in accordance with Title 10 to the *Code of Federal Regulations* (10 CFR) Section 50.65(a)(4).

- b. An alternate power source with capacity equal to or greater than the capacity of the inoperable DG will be available as a backup to the inoperable DG. After entering the extended CT, this source will be verified available every 8 hours and treated as protected equipment.
- c. The scheduling of DG preplanned maintenance will be avoided during seasons when the probability of severe weather or grid stress conditions is high or forecasted to be high.
- d. The system load dispatcher will be contacted once per day to ensure no significant grid perturbations are expected during the extended CT. Also, the system load dispatcher should inform the plant operator if conditions change during the extended CT (e.g., unacceptable voltages could result due to a trip of the nuclear unit).
- e. Component testing or maintenance of safety systems and important non-safety equipment including offsite power systems (auxiliary and startup transformers) that increase the likelihood of a plant transient or loss-of-offsite power (LOOP) will be avoided. In addition, no discretionary switchyard maintenance will be allowed.
- f. TS requirements of verification that the required systems, subsystems, trains, components, and devices that depend on the remaining DG(s) are operable and positive measures will be provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices.
- g. Turbine driven auxiliary feedwater pump will be controlled as “protected equipment,” and will not be taken out of service for planned maintenance while a DG is out of service for extended maintenance.

Response:

2.a Preservation of the operability of the protected train was discussed in the Tier 2 commitments of ULNRC-05445 (Attachment 1 pages 13-14 and Attachment 6), which were subsequently superseded by the commitments in ULNRC-05476 (Enclosure 2). Those commitments have again been superseded by Enclosure 2 to this letter; see the 2<sup>nd</sup> commitment in Enclosure 2. This commitment will assure that no PRA-modeled equipment, other than the affected ESW train and supported systems rendered inoperable by that ESW train being out of service, will be voluntarily taken out-of-service during the one-time extended Completion Time taken on each train. Required testing that does not impact the operability of protected train PRA-modeled equipment will continue to be performed. The handling of emergent conditions was discussed in the Tier 3 program description of ULNRC-05445 (Attachment 1 pages 15-16).

2.b A temporary alternate AC power source consisting of diesel generators, with combined capacity equal to or greater than the capacity of either one of the installed emergency DGs, will be available as a backup power source. This temporary alternate AC source could power protected train loads in the unlikely event a loss of offsite power event occurred and the protected train's DG failed to start and run. Prior to applying the extended CT, these temporary diesel generators will be load tested to demonstrate their capability of supporting a load equal to the continuous rating of the inoperable DG. After entering the extended CT, this source will be verified available every 8 hours and treated as protected equipment.

Current plans, subject to final design and procedure development processes, are to stage these four DGs in the switchyard such that they can be connected to the safeguard transformer ring bus (as shown in FSAR Site Addendum Figure 8.2-5) and have dedicated manning such that Callaway's 4-hour station blackout coping duration will not be exceeded.

2.c Avoiding the use of the extended CT during times when the probability of a loss of offsite power (LOOP) event is higher was discussed in the Tier 2 commitments of ULNRC-05445 (Attachment 1 pages 13-14 and Attachment 6), which were subsequently superseded by the commitments in ULNRC-05476 (Enclosure 2). Those commitments have again been superseded by Enclosure 2 to this letter; see the 3<sup>rd</sup> and 4<sup>th</sup> commitments in Enclosure 2.

2.d Communications between Transmission Operations (i.e., the Generation Coordinator or Power Supply Supervisor at Ameren) and Callaway staff are discussed in the Generic Letter (GL) 2006-02 response letters cited in the Tier 2 commitments of ULNRC-05445 (Attachment 1 page 14). These communications are discussed in detail in the ULNRC-05270 responses, and ULNRC-05362 follow-up responses, to GL 2006-02 questions 1(b), 1(c), 1(d), 3(d), 5(e), and 5(g).

Callaway staff initiates contact with Transmissions Operations four weeks ahead of, and then again 24 hours before, work that requires a power reduction or plant system outage with the potential to require a plant power reduction. Our Tier 2 commitments will preclude voluntarily pre-planning such work during the use of the extended CT.

The following is excerpted from the response to NRC question 1(b) in ULNRC-05270 with respect to communications initiated by Transmissions Operations to Callaway staff:

“For Callaway Plant and per the agreement/protocol described in the response to question 1 (a), the Transmission Owner/Operator (Ameren) and/or Midwest ISO are required to notify Callaway Plant whenever an impaired or potentially degraded grid condition is recognized by the Transmission Owner/Operator and/or Midwest ISO. Specific examples of conditions identified in the agreement include the following:

1. In accordance with noted agreement/protocol, the Midwest ISO will monitor the appropriate system conditions and notify Callaway Plant via the Ameren Transmission

Operator when operating conditions are outside of established limits, defined as the Category 8 Alarm, as well as when they are restored to within acceptable criteria.

2. In accordance with noted agreement/protocol, the Ameren Transmission Operator will immediately notify Callaway Power Station of an actual violation to the operating criteria affecting Callaway Plant.

3. In accordance with noted agreement/protocol, the Midwest ISO or the Ameren Transmission Operator will immediately notify Callaway Plant upon verification that study results indicate a post-contingent violation of operating criteria not mitigated within 15 minutes.”

2.e See the response to items 2.a and 2.c above as well the Tier 2 commitments of ULNRC-05445 (Attachment 1 pages 13-14 and Attachment 6), which were subsequently superseded by the commitments in ULNRC-05476 (Enclosure 2). Those commitments have again been superseded by Enclosure 2 to this letter; see the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> commitments in Enclosure 2. Required testing that does not impact the operability of protected train PRA-modeled equipment will continue to be performed.

2.f Required redundant feature checks are already covered by TS 3.8.1 Required Action B.2, since Condition B of TS 3.8.1 will be entered at the time the 14-day CT is exercised. Protected train commitments are discussed in the response to item 2.a above.

2.g See the 5<sup>th</sup> Tier 2 commitment in Enclosure 2 to ULNRC-05476, repeated in Enclosure 2 to this letter. The TDAFW pump is a redundant required feature for both electrical trains in TS 3.8.1 Condition B and would be required to be operable for the plant to remain at power regardless of this Tier 2 commitment.

3. Question: In accordance with the defense-in-depth philosophy, describe how the remaining systems will be capable of performing the function of the safety system that is being removed from service.

Response:

The defense in depth attributes from RG 1.177 are discussed in ULNRC-5445 (Attachment 1 pages 6-9) and are consistent with the findings made by the NRC in the Catawba precedent cited in that amendment application. Those discussions in ULNRC-05445 are supplemented by the commitment herein for an alternate AC power source as described in the response to item 2.b above.

4. Question: If the DG on the affected train continues to be functional but not OPERABLE, describe the loading capabilities of the functional DG. Also describe how the functional DG would respond if called upon (e.g., a LOOP event).

Response:

The DG on the affected train will not have ESW flow for cooling and may not have normal service water cooling for the entire CT duration either, as discussed in the RAI #7.a response in ULNRC-05476. A temporary source of cooling could be supplied to make the out-of-service (OOS) train's DG functional (via an Emergency Coordinator Supplemental Guideline); however, this would only provide power to the 4.16-kV NB bus in the OOS train. With no ESW or normal service water flow in the OOS train, the associated component cooling water train is inoperable. This, in turn, renders the associated train's SI pump, RHR pump and heat exchanger, centrifugal charging (high head SI) pump, and motor-driven AFW pump inoperable either directly or through a loss of pump room cooling. The functional DG with this temporary cooling source would start and power loads from its 4.16-kV NB bus after a LOOP event (temporary cooling can be improvised to provide 1400 gpm of cooling flow vs. the required 1200 gpm); however, none of the major pumps mentioned above would be available. This is why the decision has been made to provide a temporary alternate AC power source that could power protected train loads in the unlikely event a LOOP event occurred and the protected train's DG failed to start and run.

### SUMMARY OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by AmerenUE in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Scott Maglio, Assistant Manager – Regulatory Affairs, (573) 676-8719.

<b>COMMITMENT</b>	<b>Due Date/Event</b>
The proposed changes to the Callaway Technical Specifications will be implemented prior to December 3, 2008.	Prior to December 3, 2008.
No PRA-modeled equipment, other than the affected ESW train and supported systems rendered inoperable by that ESW train being out of service, will be voluntarily taken out-of-service during the one-time extended Completion Time taken on each train. This commitment applies only to PRA-modeled equipment in the protected ESF train (ESF train not served by the inoperable ESW train). No work will be allowed on the protected (operable) ESW train. No work will be allowed in the area of equipment in the protected ESF train (within 20 feet unless there is an intervening barrier) except for yard piping work and work in control building room 3101 where the underground piping enters the control building.	Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 1.
Access to the switchyard will be limited to personnel with a demonstrable need (e.g., staff associated with the temporary DGs) and no work will be allowed in the switchyard that could cause a loss of offsite power (LOOP) event during the one-time extended Completion Time.	Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 2.
The one-time extended Completion Time will not be entered if, prior to entry, inclement weather conditions are forecasted, i.e., work under the extended Completion Time will not be started if Severe Weather as defined in OTO-ZZ-00012 is forecasted to occur within 140 miles of the plant. National Weather Service reports will be monitored prior to and throughout each ESW train LCO outage.	Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 3.

<p>From EDP-ZZ-01129 Appendix 2 for a DG or ESW outage, the following Tier 2 commitments are also added to the scope of this amendment request:</p> <ul style="list-style-type: none"> <li>• The turbine-driven auxiliary feedwater pump (TDAFP) will remain Operable.</li> <li>• The TDAFP pump room and associated valve rooms will be posted as restricted access.</li> <li>• The protected train motor-driven auxiliary feedwater pump (MDAFP) pump room and associated valve rooms will be posted as restricted access.</li> <li>• The condensate storage tank (CST) will be posted as restricted access.</li> <li>• No work will be allowed on the Security Diesel.</li> </ul>	<p>Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 4.</p>
<p>The one-time extended Completion Time will be used such that the piping tie-in (new underground PE ESW piping to the rest of the system) will be performed with the normal service water system cooling the affected ESW train heat loads for as much of the 14-day Completion Time as possible. However, this cooling of heat loads by the normal service water system may be unavailable for the entire one-time Completion Time extension. During the portion of the extended Completion Time that normal service water is supplying the ESW loads, the normal service water to ESW supply and return cross-connect valves will be opened and power removed from the operators. The ESW return to UHS valves will be closed and power removed from the operators during this portion of the extended Completion Time as well.</p>	<p>Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 5.</p>
<p>Prior to entering the extended ESW Completion Times, the Operations department will review the operational status of fire protection (operability requirements are spelled out in FSAR Section 9.5.1.7) and flood mitigation (drains, watertight doors) equipment to assure that important plant design features, for mitigation of fires or floods that could impact the protected train, are available. In addition, prior to entering the extended ESW CTs, a walkdown of the above ground portion of the protected ESW train will be performed for transient combustibles, except for the portion of the protected train inside containment or otherwise excluded by the Radiation Protection department.</p>	<p>Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 6.</p>

<p>One-hour and eight-hour fire and flood watches will be instituted on the protected ESW train as discussed in the response to RAI #4 in ULNRC-05476.</p>	<p>Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 6.</p>
<p>Appropriate training will be provided to operations personnel on this TS change and the associated ESW modification, as well as the compensatory measures to be implemented during the one-time extended Completion Time.</p>	<p>Administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 7.</p>
<p>A temporary alternate power source consisting of diesel generators, with combined capacity equal to or greater than the capacity of either one of the installed emergency DGs, will be available as a backup power source. This temporary alternate AC source could power protected train loads in the unlikely event a loss of offsite power event occurred and the protected train's DG failed to start and run. Prior to the extended CT these temporary diesel generators will be load tested to provide a load equal to the continuous rating of the inoperable DG. After entering the extended CT, this source will be verified available every 8 hours and treated as protected equipment.</p>	<p>Equipment and administrative controls in place at time amendment is implemented. This is a Tier 2 commitment. See footnote 8.</p>

1. This commitment was originally discussed in ULNRC-05445 Attachment 1 (pages 13-14), then revised in the responses to RAI #4 and RAI #6.a in ULNRC-05476.
2. This commitment was originally discussed in ULNRC-05445 Attachment 1 (pages 13-14). LOOP frequency adjustments were discussed in the response to RAI #6.b in ULNRC-05476. Temporary DGs as an alternate AC power source are discussed in the response to RAI #2.b in Enclosure 1.
3. This commitment was originally discussed in ULNRC-05445 Attachment 1 (pages 13-14). Severe Weather was defined in the response to RAI #6.d in ULNRC-05476.
4. This commitment was originally discussed in the response to RAI #4 in ULNRC-05476.
5. This commitment was originally discussed in ULNRC-05445 Attachment 1 (pages 6, 7, 13-14), then revised in the response to RAI #7.a in ULNRC-05476. When the 'A' ESW train is out-of-service (OOS), valves EFHV0023, EFHV0025, EFHV0039, and EFHV0041 will be opened and power removed from the valve operators. EFHV0037 (return to UHS) will be closed and power removed from the valve operator. When the 'B' ESW train is OOS, valves EFHV0024, EFHV0026, EFHV0040, and EFHV0042 will be opened and power removed from the valve operators. EFHV0038 (return to UHS) will be closed and power removed from the valve operator.

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6. This commitment was originally discussed in the response to RAI #4 in ULNRC-05476. Additional clarification was provided in that RAI response.
7. This commitment was originally discussed in ULNRC-05445 Attachment 1 (page 13).
8. Temporary DGs as an alternate AC power source are discussed in the response to RAI #2.b in Enclosure 1.