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Callaway Plant

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August 01, 2006

U.S. Nuclear Regulatory Commission
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Ladies and Gentlemen: ULNRC-05313

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FOLLOW-UP RESPONSE TO NRC GENERIC LETTER 2006-02, "GRID RELIABILITY AND THE IMPACT ON PLANT RISK AND THE OPERABILITY OF OFFSITE POWER"

Reference 1: AmerenUE letter ULNRC-05270, "60-Day Response to NRC Generic Letter 2006-02, 'Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power,'" dated March 31, 2006

By letter dated March 31, 2006 (Reference 1), AmerenUE (Union Electric) submitted its response to Generic Letter (GL) 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power." AmerenUE's submittal consisted of a cover letter and an attachment that provided AmerenUE's responses to all of the questions and requests for information contained in GL 2006-02.

In the cover letter, as well as on the first page of the attachment to the submittal, AmerenUE noted that due to the sensitive information being provided in the attachment, the attachment should be withheld from public disclosure pursuant to the provisions of 10 CFR 2.390. On the basis of that wording, the entire attachment, i.e., all of the information contained therein, was to be withheld from disclosure to the public.

In response to initial review of AmerenUE's submittal by the NRC staff, and upon further consideration of AmerenUE's 10 CFR 2.390 request for withholding, AmerenUE has determined that not all of the information provided in the attachment of its March 31, 2006 letter is necessarily "sensitive" or requires withholding from public disclosure. Consequently, AmerenUE is submitting a follow up version of its GL 2006-02 response in which only portions of the provided information are to be withheld from public disclosure pursuant to the provisions of 10 CFR 2.390.

Attached to this letter, therefore, is an attachment that is based on the attachment provided in AmerenUE's March 31, 2006 submittal except that in this case the particular

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information to be withheld from public disclosure per the provisions of 10 CFR 2.390 has been omitted. Brackets ("[ ]") have been inserted to indicate where such text was omitted (and where the remaining text was edited as necessary for readability or consistency due to the removed text). The attachment to this letter thus constitutes a non-proprietary version of AmerenUE's response to GL 2006-02.

In addition, it should be noted that a typographical error was identified in AmerenUE's response to GL 2006-02, subsequent to the March 31 submittal. Specifically, the word "not" was inadvertently omitted in the first sentence of the third paragraph of the response to Question 5(h). The sentence should have stated that "...maintenance personnel are *not* directly trained on the formal agreements/protocols with the transmission system operator." A corrected response to Question 5(h) appears in the attachment to this letter.

For any questions regarding this letter and its attachment, please contact D. E. Shafer at 314-554-3104.

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

Sincerely,

Executed on August 01, 2006

Keith D. Young
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TBE/jdg

Attachment

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Attachment to
ULNRC-05313

AmerenUE Response to Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power"

Note: The responses provided below are either identical to or based on the responses provided in AmerenUE's March 31, 2006 submittal (identified as Reference 1 on the cover letter). For some responses, portions containing sensitive or proprietary information have been omitted on the basis that such information is requested to be withheld from public disclosure pursuant to 10 CFR 2.390. Brackets ("[ ]") have been inserted to indicate where such text has been omitted and/or where remaining text has been edited as necessary for readability or consistency due to the removed text.

The NRC requested that each licensee provide answers to the following questions and provide information to determine if compliance is being maintained with respect to grid reliability and the impact on plant risk and the operability of offsite power. AmerenUE's responses for the Callaway plant are provided below.

* * * * * * * * * *

Use of protocols between the nuclear power plant (NPP) licensee and the TSO, ISO, or RC/RA and the use of analysis tools by TSOs to assist NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant TS.

General Design Criteria (GDC) -17, 10 CFR Part 50, Appendix A, requires that licensees minimize the probability of the loss of power from the transmission network given a loss of the power generated by the nuclear power unit(s).

1. Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA to assist the NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under the plant Technical Specifications:.

NRC Question 1(a):

Do you have a formal agreement or protocol with your transmission system operator (TSO)?

AmerenUE Response:

Yes, a formal agreement between Ameren and Midwest Independent Transmission System Operator, Inc. (i.e., the Midwest ISO, or MISO) has been established for Callaway Plant. [This agreement requires compliance with additional documents that establish the basis for procedures that support the reliability and safety of Callaway Plant, and which define the respective roles of the Midwest ISO (as Transmission Provider and Reliability Coordinator), Callaway Plant (i.e., Ameren as the Callaway Plant Owner), and the transmission operator (i.e., Ameren as Transmission Owner/Operator).]

NRC Question 1(b):

Describe any grid conditions that would trigger a notification from the TSO to the NPP licensee and if there is a time period required for the notification.

AmerenUE Response:

As stated in the Generic Letter, "...it is important that the NPP operator know when the transmission system near the NPP can no longer sustain NPP voltage based on the TSO's analysis of a reasonable number of contingencies." 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. [...]

NRC Question 1(c):

Describe any grid conditions that would cause the NPP licensee to contact the TSO. Describe the procedures associated with such a communication. If you do not have procedures, describe how you assess grid conditions that may cause the NPP licensee to contact the TSO.

AmerenUE Response:

Grid conditions and status are the primary responsibility of the Midwest ISO, while more local conditions are also monitored by Ameren as the Transmission Operator/Owner. [...]

Relative to this question, "grid conditions" are assumed to be Callaway Plant conditions that could impact analysis of the grid interface. Callaway Plant notifies Transmission Operations (who in turn notifies MISO as necessary) for the following conditions and/or activities:

- Changes to switchyard voltage, switchyard breaker alignment, main generator VAR loading - Notification of such changes is performed in accordance with the following Callaway Plant procedures:
  - APA-ZZ-00310, "Workman's Protection Assurance," and ODP-ZZ-00310, "WPA and Caution Tagging" - These procedures require communications with the Ameren Transmission Operator prior to removing any switchyard breakers from service.
  - APA-ZZ-00322, "Integrated Work Management Process Description" - This procedure requires communication with Ameren Transmission Operator four weeks ahead and then 24 hours ahead of any scheduled work requiring a power reduction or system outage. Scheduled work requiring notification includes manual operation of the load tap changers (LTCs) for the station's ESF transformers (XNB01/2), as well as returning the LTCs to automatic

operation, and removal of the associated capacitor banks (NB03/4) from service, as well their return to service.
- o ODP-ZZ-00001, "Operations Department Code of Conduct," Attachment 3, "Unit Reliability/Load Reductions/Switchyard Work" - This procedure requires that communication with the Ameren Transmission Operator occur two days in advance of any scheduled switchyard maintenance, maintenance affecting unit reliability, or maintenance requiring a load reduction.

Most of the above procedures are under the responsibility of Work Control, typically the Work Week Coordinator, who works closely with Operations at Callaway Plant.

- Changes in Callaway Plant post-trip offsite power loading - Such changes may be indicated by the following:
  - o Alarm Response Procedure OTA-RK-00016, "Annunciator Response Procedure MCB Panel RK016," Addenda 19D (22D), "XNB01(2) Transformer/Voltage Control Trouble," and 19E (22E), "NB01(2) Bus Degraded Voltage" - These procedure addenda require communications with the Ameren Transmission Operator to determine if switchyard voltage can be maintained above the limits described in OSP-NB-00001, "Class IE Electrical Source Verification."
  - o Alarm response procedure OTA-RK-00026, "Annunciator Response Procedure MCB Panel RK026," Addendum 134D, "Switchyard Voltage Hi/Lo" - This procedure requires communication with the Ameren Transmission Operator to check system conditions upon receipt of an alarm, and if voltage is low the procedure refers to OSP-NB-00001, "Class IE Electrical Source Verification."

- Changes in status of Callaway Plant offsite power voltage regulating devices (such as LTCs in manual mode versus automatic mode) - Notification of these changes or activities are performed in accordance:
  - o OTN-NB-0001A, "4.16 kV Vital (Class 1E) Electrical System – A Train," Addendum 1, "Transformer XNB01 Load Tap Changer (LTC) Operations," and OTN-NB-0001B, "4.16 kV Vital (Class 1E) Electrical System – B Train," Addendum 1, "Transformer XNB02 Load Tap Changer (LTC) Operations" - These procedure addenda require communication with the Ameren Transmission Operator several days before any planned manual operation of the LTC(s).

Callaway Plant is responsible for communicating applicable changes in outage schedule, test plans, or plant operation to the Ameren Transmission Operator.

NRC Question 1(d):

Describe how NPP operators are trained and tested on the use of the procedures or assessing grid conditions in question 1(c).

AmerenUE Response:

Operations Surveillance Procedure OSP-NB-00001, "Class 1E Electrical Source Verification," is the primary procedure used by the Operations Department to assess the condition or operability of the offsite power sources. Specifically, OSP-NB-00001 is used to verify that two qualified circuits between the offsite transmission network and the onsite Class 1E electrical power distribution system are operable. [...Operability of the offsite circuits is verified, in part, by the absence of an "alarm" condition that is based on the contingent post-trip minimum voltage level.]

Personnel in Initial License Training (ILT) are trained on transmission issues in lesson plan LP-01, "Switchyard – MD." The required Technical Specification AC Sources are discussed, as is the performance of OSP-NB-00001. Additionally, the trainees are presented information on degraded voltage concerns in the switchyard. [The requirement to declare both off site circuits inoperable with a predicted voltage below the required minimum is discussed. The requirement to declare both off site sources inoperable if actual switchyard voltage is below its required minimum when the generator is off line is also discussed.]

Additional topics addressed in the noted lesson plan include the plant modifications that were made in response to previous degraded switchyard voltage concerns. These modifications involved the installation of 6-MVAR capacitor banks connected to XNB01 and XNB02 and the installation of Load Tap Changer (LTC) transformers (in place of the original XNB01 and XNB02 transformers) during Refuel 11. [...]

Personnel in ILT are tested on the above information during the class and via the comprehensive course final and final Licensing Exam.

During execution of the last ILT program, while on observation training, ILT students were also required to perform on-the-job training (OJT) on OSP-NB-00001. This required the candidates to perform the procedure under the instruction of a licensed individual. Additionally, candidates were required to perform and pass a Task Performance Evaluation (TPE) on OSP-NB-00001. This required each candidate to perform OSP-NB-00001 with no assistance, while being evaluated by a licensed Operating Supervisor. The OJT and TPE were documented on the Reactor Operator Qualification Card for each candidate.

Under the Licensed Operator Continuing Training (LOCT) program, incumbent licensed personnel also receive training on how to assess the condition or operability of the offsite power sources. [Specific topics or items addressed in the training include the guidance/requirements of OSP-NB-00001...and degraded switchyard voltage concerns.] A Switchyard Degraded Voltage lesson plan is used for this training. The requirement to declare both off site sources inoperable when actual switchyard voltage is below the

required minimum with the generator off line is discussed. The aforementioned plant modifications (installation of capacitor banks and LTC transformers) to address degraded switchyard voltage concerns are also discussed in the Degraded Switchyard Voltage lesson plan. [The actions that Transmission Operations takes...are discussed (too).]

The LOCT program includes several simulator scenarios that may be performed which require the crew to respond to a simulated [degraded power/grid condition]. [...]

It may be noted that a self-assessment (SA03-NE-F03) was conducted in November, 2003 to assess Callaway Plant's response to Significant Operating Experience Report (SOER) 99-01, "Loss of Grid." With respect to training, this self-assessment confirmed acceptable performance and knowledge on the part of the plant operators for monitoring switchyard voltage and assessing the condition and/or operability of offsite sources for Callaway Plant.

NRC Question 1(e):

If you do not have a formal agreement or protocol with your TSO, describe why you believe you continue to comply with the provisions of GDC-17 as stated above, or describe what actions you intend to take to assure compliance with GDC-17.

AmerenUE Response:

This question is not applicable in light of the fact that a formal agreement/protocol does exist as described in response to question 1(a).

It should be noted that compliance with GDC-17 is not predicated on such an agreement. Compliance with the *design* criteria of GDC-17 was taken into account in the design and licensing of Callaway Plant. The requirements of the Technical Specifications with regard to the "qualified circuits between the offsite transmission network and the onsite Class1 E AC electrical power distribution system" and the associated operability requirements specified therein are viewed to have a separate or different intent and scope relative to GDC-17. Nevertheless, as addressed further in the responses to questions 3(a) and 3(d), procedures have been established based on application of the agreement described in response to question 1(a), and those procedures are used during plant operation to evaluate switchyard voltage levels relative to a contingent Callaway Plant trip and to thus conservatively assess operability of the offsite power system for determining whether entry into a Condition(s) and Required Action(s) of Callaway Technical Specification 3.8.1, "AC Sources – Operating," should be made.

NRC Question 1(f):

If you have an existing formal interconnection agreement or protocol that ensures adequate communication and coordination between the NPP licensee and the TSO, describe whether this agreement or protocol requires that you be promptly

notified when the conditions of the surrounding grid could result in degraded voltage (i.e., below technical specification (TS) nominal trip setpoint value requirements; including NPP licensees using allowable value in its TSs) or loss of offsite power (LOOP) after a trip of the reactor unit(s).

AmerenUE Response:

In accordance with the agreement/protocol described in the response to question 1(a), the Midwest ISO and the Ameren Transmission Operator will initiate communication with each other to verify study results that indicate a post-contingent violation of operating criteria. Upon verification, the Ameren Transmission Operator and the Midwest ISO will initiate steps to mitigate the pre- and post-contingent operating criteria violation. If the violation is not mitigated within 15 minutes of the verification of the study results, the Ameren Transmission Operator will immediately notify Callaway Plant.

NRC Question 1(g):

Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection.

AmerenUE Response:

With the addition of the aforementioned LTC transformers and voltage-controlled capacitor banks at Callaway Plant, the design minimum steady-state voltage in the switchyard for the off-site power sources is [at a level that ...ensures the plant is positioned to withstand a wide range of voltages from the grid. Voltages above...the design minimum steady-state voltage level ...ensure the degraded voltage relays will reset after motor starts resulting from a design-basis loss-of-coolant accident (LOCA).]

Grid analysis is performed prior to each winter and summer peak to ensure the switchyard voltage is adequate to meet the off-site preferred power source requirements. Large power cross-flows due to marketing activities, peak transmission system loading, and grid system contingencies are included in the analysis.

2. Use of criteria and methodologies to assess whether the offsite power system will become inoperable as a result of a trip of your NPP:

NRC Question 2(a):

Does your NPP's TSO use any analysis tools, an online analytical transmission system studies program, or other equivalent predictive methods to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? If available to you, please provide a brief description of the analysis tool that is used by the TSO.

AmerenUE Response:

Yes, the Midwest ISO and Ameren Transmission Operations use analysis tools to predict grid conditions that would make the Callaway Plant offsite power system (sources) inoperable. [The tools include...a real-time contingency analysis program, a grid state estimator, and a data acquisition system.] Ameren Transmission Operations is responsible for analyzing the transmission system from a local perspective for contingency impacts on Callaway Plant. Periodic studies are performed by Ameren to evaluate the predicted seasonal loads and generation patterns for their impact on Callaway Plant's offsite power source.

NRC Question 2(b):

Does your NPP's TSO use an analysis tool as the basis for notifying the NPP licensee when such a condition is identified? If not, how does the TSO determine if conditions on the grid warrant NPP licensee notification?

AmerenUE Response:

[Yes, the Midwest ISO and Ameren Transmission Operations use analysis tools...in conjunction with procedures, as the basis for determining when conditions warrant notification.] The preferred notification to the Callaway control room is from the Ameren Transmission Operator. (Both the Midwest ISO and the Ameren Transmission Operator monitor the contingencies that could make Callaway's offsite power system inoperable. If the Midwest ISO first recognizes the system condition, the Midwest ISO will normally notify the Ameren Transmission Operator.) If necessary, the Midwest ISO will directly contact the Callaway Plant control room.

NRC Question 2(c):

If your TSO uses an analysis tool, would the analysis tool identify a condition in which a trip of the NPP would result in switchyard voltages (immediate and/or long-term) falling below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and consequent actuation of

plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.

AmerenUE Response:

Yes, Midwest ISO and Ameren Transmission Operations' analysis tools, in conjunction with Callaway Plant analysis, are used to identify conditions that would actuate the Callaway Plant degraded voltage protection logic and initiate separation from the offsite power source upon a Callaway Plant trip. As previously discussed, the analysis capability addresses all grid operating conditions via Midwest ISO and Ameren Transmission Operations' online real-time analysis. The conditions envelope those documented in the Callaway Plant FSAR (i.e., a trip of Callaway Plant, a trip of the largest generator on the system, or a trip of the most critical transmission path).

NRC Question 2(d):

If your TSO uses an analysis tool, how frequently does the analysis tool program update?

AmerenUE Response:

The [Ameren Transmission Operations real-time contingency analysis program] presently updates the Callaway plant trip contingency and the entire set of other contingencies on a six-minute automatic basis. The Ameren contingency simulation can be activated on a more frequent basis as needed for changing system conditions. The Midwest ISO [real-time contingency analysis program] presently updates the Callaway Plant trip contingency and the entire set of other contingencies, on a five-minute automatic basis. The Midwest ISO state estimator program updates on a 90-second time interval. [The data acquisition system information available to the Ameren Transmission Operator is updated on a 4-10 second interval.] Ameren transmits this data to the Midwest ISO on a 10-second basis through the Inter-Control Area Communication Protocol (ICCP). The Midwest ISO and Ameren Transmission Operations periodic analyses are constantly reviewed by the Transmission Operations Supervisor or Reliability Coordinator, respectively. The Callaway Plant/TSO agreement [described in the response to question 1(a)] requires prior Callaway Plant notification regarding planned changes to the transmission system local to, or affecting, Callaway Plant. Callaway Plant can also request updates at any time.

NRC Question 2(e):

Provide details of analysis tool-identified contingency conditions that would trigger an NPP licensee notification from the TSO.

AmerenUE Response:

Examples of contingencies that would be communicated to Callaway Plant would include, but are not limited to, voltages below the identified operating limits, circuit loading in excess of normal and/or emergency ratings, and transmission system topology that would significantly impact the fault level at Callaway Plant.

The only two grid contingencies that would impact the Callaway Plant offsite power determination are:

1. A trip of a Callaway Plant unit with the current grid state and offsite power loading via the first of the offsite transmission network connections, and
2. A trip of a Callaway Plant unit with the current grid state and offsite power loading via the second offsite transmission network connection.

Other contingencies may be considered but they would not impact operability unless one were to actually occur and become the "current" grid configuration. Postulated grid configurations that are analyzed as part of the Midwest ISO and Ameren Transmission Operations periodic study include:

1. Loss of on-line generator units on the system
2. Loss of critical transmission lines.

NRC Question 2(f):

If an interface agreement exists between the TSO and the NPP licensee, does it require that the NPP licensee be notified of periods when the TSO is unable to determine if offsite power voltage and capacity could be inadequate? If so, how does the NPP licensee determine that the offsite power would remain operable when such a notification is received?

AmerenUE Response:

Yes, the MISO-Callaway-Ameren Nuclear Plant Operating Agreement specifically requires Callaway Plant notification for periods of time when offsite power operability is indeterminate. Because the Midwest ISO and Ameren Transmission Operations both monitor Callaway Plant voltage, the agreement requires Midwest ISO and Ameren Transmission Operations to notify each other if the ability of one party to monitor grid conditions for Callaway Plant is lost. If both Midwest ISO and Ameren Transmission Operations lose the ability to monitor grid conditions at Callaway Plant, the plant is notified of that fact.

With no on-line/real-time monitoring capability/information available (such as due to computer failure), Ameren Transmission Operations (working with Callaway Plant) could utilize seasonal analyses and/or data from daily load-flow studies to estimate the

condition of the offsite power system relative to the offsite power source requirements for Callaway Plant.

Existing grid conditions that are more severe with respect to Callaway Plant's voltage requirements or are otherwise unanalyzed would require Callaway Plant notification and may be considered to render the offsite source inoperable.

NRC Question 2(g):

After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the analysis tool?

AmerenUE Response:

After an unscheduled inadvertent trip, resultant switchyard voltages would be monitored by the Transmission Operations Supervisor as a matter of practice to verify that they are either within the limit values of the analysis tools if no alarms existed before the trip or at the value predicted and displayed by the analysis tools if an alarm had been present prior to the trip.

NRC Question 2(h):

If an analysis tool is not available to the NPP licensee's TSO, do you know if there are any plans for the TSO to obtain one? If so, when?

AmerenUE Response:

This question is not applicable since the Midwest ISO and Ameren Transmission Operations do utilize analysis tools and communicate the applicable results/conclusions to Callaway Plant.

NRC Question 2(i):

If an analysis tool is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected timeframe of the study?

(a) Are the key assumptions and parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses?

(b) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?

AmerenUE Response:

This question is not applicable since the Midwest ISO and Ameren Transmission Operations do utilize analysis tools and communicate the applicable results/conclusions to Callaway Plant.

NRC Question 2(j):

If your TSO does not use, or you do not have access to the results of an analysis tool, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC-17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.

AmerenUE Response:

This question is not applicable since the Midwest ISO and Ameren Transmission Operations do utilize analysis tools and communicate the applicable results/conclusions to Callaway Plant.

3. Use of criteria and methodologies to assess whether the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.

NRC Question 3(a):

If the TSO notifies the NPP operator that a trip of the NPP, or the loss of the most critical transmission line or the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?

AmerenUE Response:

Yes, as noted previously, if the predicted voltage is below the minimum value specified per OSP-NB-00001, the offsite power system (sources) would be declared inoperable. When the generator is off line, in any mode, switchyard voltage is verified by actual switchyard voltage. If actual switchyard voltage is below its minimum value when the generator is off line, OSP-NB-00001 requires that both offsite circuits be declared inoperable.

Callaway Plant typically does not declare the offsite power system inoperable for another postulated facility loss. [However, if Callaway Plant received notification that another power station trip would drive voltage below the post-trip contingent value, a determination would be made on whether Technical Specification 3.8.1 Condition C would be entered for both offsite circuits being inoperable.]

See also the response to question 3(d).

NRC Question 3(b):

If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when subjected to a double sequencing (LOCA with delayed LOOP event) as a result of the anticipated system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not?

AmerenUE Response:

A double-sequencing event (i.e., LOCA with a delayed LOOP) is not postulated or addressed in the Callaway Plant licensing basis (as it is not required to be), and therefore Callaway Plant is not designed or analyzed for double-sequencing scenarios.

It may be noted that the aforementioned modifications made to Callaway Plant, i.e., the installed automatic LTC transformers and capacitor banks, lessen the possibility of a double-sequencing event from occurring. These modifications provide the capability for Callaway to withstand a considerable switchyard voltage range. The bottom end of this range is consistent with the minimum planning criteria for voltage and has a considerable margin from observed voltages.

NRC Question 3(c):

Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3(b).

AmerenUE Response:

As noted above, a double-sequencing event is not one that is postulated or analyzed with respect to the design basis of the plant. Therefore, Callaway Plant has not performed a detailed study of the impact of such an event. In general, electrical equipment design will allow for two back-to-back starts without interruption by the electrical protection. However, this has not been verified by a detailed study.

NRC Question 3(d):

If the NPP licensee is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.

AmerenUE Response:

As noted in the responses to Questions 2(c) and 3(a), the condition of the Callaway offsite power sources is monitored via the [predicted/contingent voltage] provided by the Ameren Transmission Operator. If Callaway Plant is notified by the Ameren Transmission Operator that [the contingent "alarm" condition is present (indicating that the post-trip, contingent/predicted voltage could be below the minimum required value)], then operators will respond in accordance with OSP-NB-00001 and make a determination regarding offsite source operability based on the predicted voltage.]

Accounting for grid contingencies to establish a predicted voltage is not a specific requirement of the Technical Specifications. Nevertheless, a conservative approach that takes such contingencies into account has been adopted for Callaway...[ ] ...such that it is applied in determining the operability of the offsite sources as a measure that may be viewed to be beyond the intent or basis of the Technical Specifications.

NRC Question 3(e):

If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment inoperable in any of these circumstances, explain why you believe you comply with the provisions of GDC-17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.

AmerenUE Response:

Based on the responses provided for Questions 3(a), 3(b), 3(c) and 3(d), no further response to this question is required.

NRC Question 3(f):

Describe if and how NPP operators are trained and tested on the compensatory actions mentioned in your answers to questions 3(a) through (e).

AmerenUE Response:

As discussed under Question 1(d), Callaway Plant operators receive training on responding to a low switchyard voltage condition. It is understood that this low switchyard voltage condition could be either a predicted condition or an actual condition.

Per the agreement between Transmission Operations and Callaway Plant, and as noted previously, Transmission Operations maintains [... a program that provides a prediction of what the Callaway Plant switchyard voltage will go to if Callaway Plant trips and the generator is off line. The types of events that the program can analyze and monitor are a trip of Callaway Plant, loss of transmission lines, or loss of any other plant in the area.]

[The "alarm" level (for when the predicted voltage might be unacceptable for certain contingencies / grid conditions) is also dependent on the electrical lineup of the plant with respect to its offsite circuit connections. Transmission Operations must (therefore) be informed of the electrical lineup the plant has established.] This requirement is proceduralized and operators have been trained on the requirement. When a transmission system condition results in [an "alarm" condition], the Transmission Operations Supervisor will contact the control room crew and inform the crew of the alarm and the predicted voltage. If the predicted voltage value is below the minimum established in OSP-NB-00001 the crews have been trained to declare both off-site sources inoperable. This will require the crew to enter Technical Specification LCO 3.8.1 which places the plant in a 24-hour shutdown Action statement.

The procedures that place the plant in a single-source line-up, i.e., OTN-NB-0001A and OTN-NB-0001B, provide specific direction for control room personnel to contact the Transmission Operations Supervisor when going to single-source operation. The

Transmission Operations Supervisor is requested to set [the "alarm" value] based on the plant's Class 1E electrical distribution line up. When returning to dual-source operation the control staff is again directed to inform the Transmission Operations Supervisor of the change in the Class 1E distribution line up.

If the Callaway Plant generator is off line, actual switchyard voltage is monitored. Again, OSP-NB-00001 establishes a minimum voltage level dependent on the plant's Class 1E electrical distribution lineup. As discussed under question 1(d), plant operators have been trained that if actual switchyard voltage drops below the required minimum levels then both off site sources must be declared inoperable.

In the event of a loss offsite power (LOOP), the plant's Load Shedding and Sequencing System (LSELS) will operate to shed plant loads in response to the under-voltage condition, start the plant's emergency diesel generators, and sequence the required loads back onto the emergency busses, NB01 and NB02. Operations personnel are trained on the operation of the LSELS Systems in Initial License Training (ILT).

The LSELS system is also covered in Licensed Operator Continuing Training (LOCT) on a periodic basis or when requested by the Operations Department via the Systematic Approach to Training (SAT) Process. This training addresses the plant's response to a LOOP, with particular regard to the under-voltage and degraded-voltage protective functions of LSELS, including the setpoints and timer settings for the associated relays, how LSELS starts and aligns the diesel generators to supply their respective safety busses, and how LSELS sequences designated loads back on to the safety busses.

Operators are trained that the reason for the degraded voltage function is to provide protection to plant equipment. Specifically, it prevents safety bus voltage from degrading to the point where motor-operated valves, electrical motors, or other electrical equipment may be damaged due to drawing excessive current at low voltage conditions on the safety busses.

Operators are also trained that if a LOCA sequencer actuation, as initiated by a Safety Injection (SI) signal, occurs coincident with a shutdown sequencer actuation (caused by a LOOP), then the LOCA sequencer will block the shutdown sequencer. They are also trained, in simulator scenarios, that if an SI signal is reset and a LOOP occurs, manual actuation of equipment may be necessary.

4. Use of criteria and methodologies to assess whether the offsite power system will remain operable following a trip of your NPP.

NRC Question 4(a):

Do the NPP operators have any guidance or procedures in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations in which the condition of plant-controlled or –monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system? If so, describe how the operators are trained and tested on the guidance and procedures.

AmerenUE Response:

Yes, procedural guidance is available to Callaway Plant operators. OSP-NB-00001 provides different offsite source operability and alarm limits depending on the current plant mode, LTC configuration (Auto or Manual), capacitor bank availability, and the offsite source configuration (single source or dual source).

Personnel in Initial License Training (ILT) are trained on transmission issues in a lesson plan (LP-01) dedicated to the switchyard. The required Technical Specification AC sources are discussed, as is the performance of OSP-NB-00001, in this lesson plan. Also, the plant modifications made in response to previous, degraded switchyard voltage issues are discussed in the lesson plan. These modifications (as described previously) involved the installation of 6-MVAR capacitor banks connected to XNB01 and XNB02, and the installation of LTC Transformers during Refuel 11. Personnel in ILT are tested on this information during the class, and via the comprehensive course final and final Licensing Exam.

Incumbent licensed personnel receive training on procedures assessing grid conditions as part of Licensed Operator Continuing Training (LOCT). [Specific items covered in the training include the procedural guidance of OSP-NB-00001, the real-time contingency analysis program and associated "alarm" provision, and when to declare the offsite sources inoperable.] Additionally, the above-noted plant modifications (installation of capacitor banks and LTC transformers) are also discussed, as addressed in a Degraded Switchyard Voltage lesson plan.

NRC Question 4(b):

If your TS bases sections, the final safety analysis report, and plant procedures do not provide guidance regarding situations in which the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system, explain why you believe you comply with the

provisions of GDC-17 and the plant TSs, or describe what actions you intend to take to provide such guidance or procedures.

AmerenUE Response:

This question is not applicable since Callaway Plant does have procedural guidance for equipment effects on the operability of the offsite power system.

Use of NPP licensee/TSO protocols and analysis tool by TSOs to assist NPP licensees in monitoring grid conditions for consideration in maintenance risk assessments.

The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing them.

5. *Performance of grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).*

NRC Question 5(a):

Is a quantitative or qualitative grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out-of-service?

AmerenUE Response:

Maintenance risk assessments performed at Callaway pursuant to 10 CFR 50.65(a)(4) are performed quantitatively by use of the plant's Safety Monitor computer program. Callaway work activities, including work on switchyard components, that significantly impact the probability for a loss of offsite power or reactor trip, are included in the risk assessment by adjusting the affected initiating event frequency, as appropriate. Important equipment to be maintained available is addressed by risk management actions, as described in the response to question 6(d). However, beyond the switchyard, the risk assessment would only be done quantitatively for a condition that requires notification to the Callaway Plant (from Transmission Operations at Ameren) and/or corresponding actions per plant procedures.

NRC Question 5(b):

Is grid status monitored by some means for the duration of the grid-risk-sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?

AmerenUE Response:

Conditions in the plant switchyard are monitored continuously by Operations shift personnel. If a need should arise to reevaluate risk, it would be performed by the shift personnel. In addition, Ameren Transmission Operations monitors the grid and can project near-term expected operational conditions. If a situation develops to the point of [an "alarm" condition], Transmission Operations is obligated to notify the Callaway control room as soon as possible.

NRC Question 5(c):

Is there a significant variation in the stress on the grid in the vicinity of your NPP site caused by seasonal loads or maintenance activities associated with critical transmission elements? Is there a seasonal variation (or the potential for a seasonal variation) in the LOOP frequency in the local transmission region? If the answer to either question is yes, discuss the time of year when the variations occur and their magnitude.

AmerenUE Response:

No, seasonal loads and maintenance activities do not significantly vary the stress. High cross-country transmission flows usually driven by daily temperature differentials in the United States are the most likely stressor. There are no apparent seasonal variations that affect LOOP frequency.

NRC Question 5(d):

Are known time-related variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?

AmerenUE Response:

In determining the appropriate time frame to perform risk-sensitive activities, the peak power times during the day, week, and the season of the year are taken into account. However this is a qualitative assessment, not a quantitative assessment.

NRC Question 5(e):

Do you have contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities?

AmerenUE Response:

Callaway Operations personnel (i.e., Work Week Coordinator) notify the Ameren Transmission Operator (i.e., the Generator Coordinator or Power Supply Supervisor) whenever grid-risk-sensitive maintenance activities are to be performed at the plant. Such contact is supported by the aforementioned Nuclear Plant Operating Agreement and by the procedures identified/described in response to question 1(c). For example, as noted in that response, APA-ZZ-00322 requires Callaway Plant to communicate with the Ameren Transmission Operator four weeks and then 24 hours ahead of any scheduled work requiring a power reduction or system outage, and Attachment 3 of ODP-ZZ-00001 requires that communication with the Ameren Transmission Operator occur two days in advance of any scheduled switchyard maintenance, maintenance affecting unit reliability, or maintenance requiring a load reduction.

NRC Question 5(f):

Describe any formal agreement or protocol that you have with your TSO to assure that you are promptly alerted to a worsening grid condition that may emerge during a maintenance activity.

AmerenUE Response:

The MISO-Callaway-Ameren Nuclear Plant Operating Agreement described previously addresses the requirements for Callaway Plant, including the responsibilities and communications necessary for fulfilling those requirements, for each party involved.

NRC Question 5(g):

Do you contact your TSO periodically for the duration of the grid-risk-sensitive maintenance activities?

AmerenUE Response:

Transmission Operations (i.e., the Generation Coordinator or Power Supply Supervisor at Ameren) is contacted with updated information on such activities at least daily and/or when significant changes occur.

As noted previously, if a situation develops to the point of [an "alarm" condition], Transmission Operations is obligated to notify the Callaway Plant control room as soon as possible.

NRC Question 5(h):

If you have a formal agreement or protocol with your TSO, describe how NPP operators and maintenance personnel are trained and tested on this formal agreement or protocol.

AmerenUE Response:

Callaway Plant operators are trained on the agreement between the Callaway Plant and Transmission Operations. Personnel in ILT are trained on the agreement per the previously identified lesson plan (LP–01). Additionally, incumbent licensed personnel are trained on the agreement during LOCT using the previously mentioned Degraded Switchyard Voltage lesson plan. Simulator scenarios involving application of the agreement are executed as part of this training. Furthermore, the agreement is covered in LOCT on a periodic basis or when requested by Operations Department using the SAT process.

The agreement requires that when the plant's Class 1E electrical distribution is significantly changed that Transmission Operations be contacted. Thus, for example, the procedures that place the plant in a single-source line-up, i.e., OTN-NB-0001A and OTN-NB-0001B, contain direction to inform Transmission Operations when making such a change to the distribution line-up.

With regard to maintenance personnel, based on current management configuration and work management controls, maintenance personnel are not directly trained on the formal agreements/protocols with the transmission system operator. An integrated work management team applies defined risk-analysis methods to determine appropriate scheduling of activities. However, as a part operating experience and awareness of risks with switchyard activities, selected maintenance personnel received training on Significant Operating Experience Report (SOER) 99-01, "Loss of Grid."

NRC Question 5(i):

If your grid reliability evaluation, performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4), does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).

AmerenUE Response:

This question is not applicable since grid reliability evaluations performed as part of 10 CFR 50.65(a)(4) risk assessments at Callaway Plant may consider or rely on communication and/or the agreement with the Transmission Operator (Ameren).

NRC Question 5(j):

If risk is not assessed (when warranted) based on continuing communication with the TSO throughout the duration of grid-risk-sensitive maintenance activities, explain why you believe you have effectively implemented the relevant provisions of the endorsed industry guidance associated with the maintenance rule.

AmerenUE Response:

This question is not applicable since, as noted previously, communication with the Transmission Operator (Ameren) is maintained during grid-risk sensitive maintenance activities at Callaway. [Also, as noted previously, if a situation develops to the point of an "alarm" condition], Transmission Operations is obligated to notify the Callaway Plant control room as soon as possible.

NRC Question 5(k):

With respect to questions 5(i) and 5(j), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from proposed grid-risk-sensitive activities is assessed before and during grid-risk-sensitive maintenance activities, respectively.

AmerenUE Response:

This question is not applicable based on the responses provided to questions 5(i) and 5(j) for Callaway Plant.

6. *Use of risk assessment results, including the results of grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).*

NRC Question 6(a):

Does the TSO coordinate transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator?

AmerenUE Response:

Yes, maintenance activities performed on the transmission system (which includes most of the Callaway switchyard and the transmission lines entering the switchyard) are coordinated by Transmission Operations (Ameren TSO). Transmission system maintenance activities require a system impact study to be done. Such activities necessarily require coordination between Transmission Operations and Callaway Plant.

NRC Question 6(b):

Do you coordinate NPP maintenance activities that can have an impact on the transmission system with the TSO?

AmerenUE Response:

Yes, Callaway coordinates with Transmission Operations (Ameren TSO) for Callaway maintenance activities that can impact the transmission system. Work performed on the LTC transformers and capacitor banks at Callaway Plant, for example, can impact the voltage alarm levels associated with the contingency analysis program employed by Transmission Operations (Ameren TSO), so it is necessary for such work to be coordinated with the TSO. Such coordination/communication is in keeping with the NPOA described previously and is supported or prompted by procedural guidance per the procedures mentioned in the response to question 1(c).

NRC Question 6(c):

Do you consider and implement, if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?

AmerenUE Response:

Yes, rescheduling of such activities would be considered and/or done if projected or changing grid conditions warranted it.

NRC Question 6(d):

If there is an overriding need to perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive maintenance when grid conditions worsen, do you implement appropriate risk management actions? If so, describe the actions that you would take. (These actions could include alternate equipment protection and compensatory measures to limit or minimize risk.)

AmerenUE Response:

The risk management actions to be taken would be specified in accordance with plant procedures and may include any or all of the following:

- Actions taken to reduce duration of heightened risk and/or to increase risk awareness and control.
- Tag-outs established to minimize restoration time (e.g., room cooler maintenance on a separate tag-out from pump maintenance so either may be cleared upon completion).
- Development of a planned work sequence to clearly delineate responsibilities and expected completion times.
- Obtaining supplemental equipment/personnel.
- Establishing backshift coverage and working the job "24/7," including providing around-the-clock support (Craft, Engineering, Stores, Planning and Materials, etc.).
- Obtaining vendor support.
- Performance of higher assembly replacement.
- Pre-planned walk-downs of work area by the Craft/Engineering/Project Coordinator.
- Pre-staging of parts, materials, and tools.
- Pre-job training with mockups to familiarize craft personnel with task to be performed.
- Actions taken to preclude unnecessary access to areas containing risk sensitive equipment.
- Establishing "protected" train status and/or use of equipment signs and barriers.
- Communication of plant risk condition, including specific equipment to stand clear of, via the following (as appropriate):
  - Public Address announcement
  - Shop/Departmental briefs
  - Operations briefs
  - Daily management and/or schedule update meetings
  - Callaway Communication Network (CCN)

- Review of the schedule and planned work sequences in daily management meetings.
- System outage preparation meetings to review planned work.

With regard to actions taken to minimize the magnitude of risk, equipment determined by the plant risk analysis to be of high or medium importance shall be in service and/or operable before that work activity commences. Associated actions that may be taken include the following:

- Listing of temporary equipment/line-ups, if any, used to minimize risk.
- Plant power reduction, if necessary.
- Review of maintenance activities near risk-significant components (and rescheduled as necessary).
- Review of movement of heavy loads or transient combustibles near risk-significant equipment (and rescheduled as necessary).
- Determination and documentation of specific environmental conditions that could require cancellation of the system outage (such as high system electrical demands, grid instability, or severe weather).
- Review of work schedule for work near equipment that could increase the likelihood of a plant trip or loss of mitigating function(s) and items rescheduled as necessary.
- Evaluation of emergent work for risk impact and actions taken accordingly.
- Review of switchyard work to reduce probability of impact on power availability.
- Establishment of compensatory measures to provide alternate success path for maintaining the safety function.
- Identification of operator actions to prevent loss of equipment function or minimize impact of out of service equipment.
- Prompt restoration of activities.
- Review and/or establishment of special test procedures.
- Use of additional monitoring equipment and/or methodology.

NRC Question 6(e):

Describe the actions associated with questions 6(a) through 6(d) above that would be taken, state whether each action is governed by documented procedures and identify the procedures, and explain why these actions are effective and will be consistently accomplished.

AmerenUE Response:

The actions identified in the response to question 6(d) are implemented as needed or appropriate to manage risk, and are in accordance with established plant administrative procedures, mainly APA-ZZ-0322, Appendix B, "Work Week Schedule and Execution," and EDP-ZZ-01129, "Callaway Plant Risk Assessment." The actions/activities described in response to questions 6(a) and 6(b), i.e., the performance of system impact studies prior to performing transmission system maintenance or taking transmission system components out of service, as well as the coordination/communication between Callaway Plant and Transmission Operations for maintenance activities performed at Callaway

Plant that could impact the transmission system (and vice versa), are also effective in managing risk and are supported by the noted Nuclear Plant Operating Agreement and the procedures noted in the response to question 1(c).

NRC Question 6(f):

Describe how NPP operators and maintenance personnel are trained and tested to assure they can accomplish the actions described in your answers to question 6(e).

AmerenUE Response:

As noted previously, activities between Callaway Plant operators and Transmission Operations are addressed in ODP-ZZ-00001, "Operations Department – Code of Conduct." ODP-ZZ-00001 Attachment 3, "Unit Reliability/Load Reductions/Switchyard Work," directs what operational activities need to be coordinated with Transmission Operations. Attachment 11 to ODP-ZZ-00001 lists the plant components that affect unit reliability, as well as the expected load reductions required when the listed components are removed from service. Furthermore, Attachment 11 provides direction on what actions are required if there is work being performed in the Callaway Plant switchyard or on any of the transmission lines that supply the switchyard, and it provides direction that Transmission Operations is to be contacted two days in advance regarding scheduled maintenance on any of the components listed in the attachment.

Under the ILT program, candidates are trained on the requirements of ODP-ZZ-00001 in lesson plan A-1 during the Control Board Certification – Module A course. ILT candidates also receive training on assessing plant risk using EDP-ZZ-01129, "Safety Monitor." Furthermore, the Reactor Operator and Senior Reactor Operator qualification cards require that license candidates be capable of determining acceptable risk per EDP-ZZ-01129. The license candidates perform OJT and TPE per the RO qualification card and/or SRO qualification card. Also, the SRO qualification card requires that license candidates coordinate load changes with the Power Supply Supervisor.

For the LOCT program, incumbent Licensed Personnel are also trained on EDP-ZZ-01129 and operation of the safety monitor using a lesson plan ("Safety Monitor") dedicated to this subject. Additionally, licensed personnel are required to read new revisions to ODP-ZZ-00001 per the required reading program at Callaway Plant, which is tracked per the plant's Corrective Action Request System (CARS).

While no specific simulator scenarios have been dedicated to specifically using Attachment 11 of ODP-ZZ-00001, Operations personnel are expected to perform communications consistent with the procedural guidance, for the scenarios that have been executed. This ensures that personnel are continually trained on the requirement to contact Transmission Operations or the Power Supply Supervisor when plant conditions change. For example, in LOCT Cycle 06-1, one of the simulator scenarios required the crew to remove the "A" Circulating Water Pump from service due to a lubrication and

cooling water leak. This is an activity that requires notifying Transmission Operations, so the crews were expected to make such a notification.

With regard to Maintenance personnel, and as stated in the response to question 5(h), Maintenance personnel are not trained on the specific scheduling and risk-management procedures. An integrated work management team applies defined risk-analysis methods to determine appropriate scheduling of activities. Maintenance personnel perform (or do not perform) work as directed by the risk analysis assessment.

In addition, both Operations and Maintenance personnel (and others as applicable) routinely receive pre-job briefs in accordance with plant practice, policy, and procedures prior to performing significant maintenance/work activities. Pre-job briefs help to maintain an awareness or understanding of changing conditions and activities that can impact plant risk. For activities conducted in the switchyard, it may also be noted that access to the switchyard is controlled at all times, but particularly during maintenance activities in accordance with plant procedures.

NRC Question 6(g):

If there is no effective coordination between the NPP operator and the TSO regarding transmission system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).

AmerenUE Response:

This question is not applicable since, as explained previously, there is effective coordination between Callaway and the TSO for or during transmission system and/or Callaway Plant maintenance activities.

NRC Question 6(h):

If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.

AmerenUE Response:

This question is not applicable since appropriate risk-management actions are considered and taken during the subject conditions at Callaway Plant.

NRC Question 6(i):

You may, as an alternative to questions 6(g) and 6(h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).

AmerenUE Response:

This question is not applicable since risk-management actions are considered and/or taken for grid-risk-sensitive maintenance activities associated with the Callaway Plant and offsite power system.

Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155.

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

7. *Procedures for identifying local power sources that could be made available to resupply your plant following a LOOP event.*

   Note: Section 2, "Offsite Power," of RG 1.155 (ADAMS Accession No. ML003740034) states:

   Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable. As a minimum, the following potential causes for loss of offsite power should be considered:

   - Grid undervoltage and collapse
   - Weather-induced power loss
   - Preferred power distribution system faults that could result in the loss of normal power to essential switchgear buses

NRC Question 7(a):

Briefly describe any agreement made with the TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event.

AmerenUE Response:

[The Ameren Operating Manual provides proprietary guidance on how the Callaway Plant switchyard would be supplied following a complete system blackout.]

After the Callaway switchyard is energized, offsite power would be restored per plant emergency procedures. Emergency Operating Procedure Addendum 7, "Restoring Offsite Power," would be used by operators to restore offsite power to the plant. Operators would be directed to Addendum 7 by ECA-0.0, "Loss of All AC Power." Addendum 7 provides explicit direction on how to restore off site power to the plant once the switchyard has been energized.

NRC Question 7(b):

Are your NPP operators trained and tested on identifying and using local power sources to resupply your plant following a LOOP event? If so, describe how.

AmerenUE Response:

Personnel in Initial License Training (ILT) are trained on ECA-0.0 (the above-noted Emergency Operating Procedure) in the classroom per Lesson Plan LP-22 in the D Module of ILT. Additionally, ILT personnel are trained on the use of ECA-0.0 in ILT Simulator Scenarios SD-12, SD-18, and SD-21.

With regard to the licensed operator continuing training (LOCT) program, it may be noted that since January 1, 1999, incumbent licensed personnel have been subject to eight simulator scenarios involving application of ECA–0.0.

NRC Question 7(c):

If you have not established an agreement with your plant's TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.

AmerenUE Response:

No response to this question is required, based on the response provided for question 7(a).

Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 years in accordance with Table 4 of RG 1.155 for complying with 10 CFR 50.63.

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

8. Maintaining SBO coping capabilities in accordance with 10 CFR 50.63.

NRC Question 8(a):

Has your NPP experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?

AmerenUE Response:

Callaway has not experienced a total loss of offsite power due to grid failure since the time when the plant's SBO coping duration was determined.

NRC Question 8(b):

If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if your NPP should be assigned to the P3 offsite power design characteristic group?

AmerenUE Response:

This question is not applicable based on the response provided to question 8(a) for Callaway Plant.

NRC Question 8(c):

If so, what were the results of this reevaluation, and did the initially determined coping duration for the NPP need to be adjusted?

AmerenUE Response:

This question is not applicable based on the responses provided to questions 8(a) and 8(b) for Callaway Plant.

NRC Question 8(d):

If your NPP has experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.

AmerenUE Response:

This question is not applicable based on the responses provided above for Callaway Plant.

Actions to ensure compliance.

9. *If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC-17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.*

AmerenUE Response:

No further actions are required based on Callaway's current NRC-accepted licensing basis, including commitments to the noted regulatory requirements for Callaway.