



July 27, 2006

Richard A. Muench  
President and Chief Executive Officer

WM 06-0027

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Reference: Letter WM 06-0011 dated March 31, 2006, from Richard A. Muench, WCNOC, to USNRC

Subject: Docket No. 50-482: 60-Day Response to NRC Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power"

Gentlemen:

The reference submitted the Wolf Creek Nuclear Operating Corporation (WCNOC) response to Nuclear Regulatory Commission (NRC) Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power". The information provided in the reference met the criteria of 10 CFR 2.390 and was exempted from public disclosure.

At the request of the NRC, WCNOC is submitting as Attachment II, an additional version of the reference with the sensitive information removed. This letter is suitable for public disclosure. The reference remains WCNOC complete and official response and no change of our response is intended by this version.

WCNOC is submitting this letter in accordance with 10 CFR 50.54(f).

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No commitments are identified in this submittal. If you have any questions concerning this matter, please contact me at (620) 364-4000, or Mr. Kevin Moles at (620) 364-4126.

Very truly yours,

A handwritten signature in black ink, appearing to read "R. Muench", written in a cursive style.

Richard A. Muench

RAM/rlt

Attachment I: Oath  
Attachment II: Response to GL 2006-02

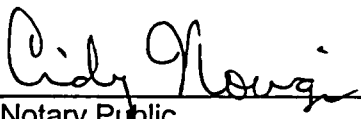
cc: J. N. Donohew (NRC), w/a  
W. B. Jones (NRC), w/a  
B. S. Mallett (NRC), w/a  
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS     )  
                              ) SS  
COUNTY OF COFFEY    )

Richard A. Muench, of lawful age, being first duly sworn upon oath says that he is President and Chief Executive Officer of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By   
Richard A. Muench  
President and Chief Executive Officer

SUBSCRIBED and sworn to before me this 27<sup>th</sup> day of July, 2006.

  
Notary Public

Expiration Date 7/8/10



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

The Nuclear Regulatory Commission (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. Wolf Creek Nuclear Operating Corporation (WCNOC) responses are provided below.

**NRC Question 1:**

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).

Use of protocols between the nuclear power plant (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 plant TS.

**NRC Question 1(a):**

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

**WCNOC Response:**

Yes, Wolf Creek Nuclear Operating Corporation (WCNOC) has a formal agreement with the TSO, Westar Energy Transmission Services (WETS). (

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**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.

**WCNOC Response:**

The TSO monitors switchyard voltage (actual and predicted) and will contact the WCNOC Control Room in the event that any of the conditions outlined in ( ) are met.

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WCNOC Response:

WCNOC Procedure ( ) discusses communication between WCGS and the TSO for entry into the switchyard and of all planned, unplanned, and emergency plant outages.

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WCNOC Procedure ( ) references the WCNOC Operations communications web page for guidance on communicating with Systems Operations. (

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**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).

**WCNOC Response:**

The WCNOC Operators receive training on the use of ( ) both in the classroom and on the plant reference simulator. In addition to this training, the operating crews receive training on degraded grid voltage conditions and subsequent recovery procedures. (

) This training is conducted on the simulator as well as in the classroom.

Operating crews are evaluated on the Loss of All AC Power through the use of dynamic simulator examinations and with written exams as part of periodic testing and may be included on the biennial written examination depending on the examination sample plan. Response to degraded grid voltage conditions is tested on written examinations associated with the week during which the training is conducted.

**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.

**WCNOC Response:**

As previously stated in response to question 1(a), WCNOC has a formal agreement with the TSO.(

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This question is not applicable to WCNOC.

**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 set-point 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).

**WCNOC Response:**

As previously stated, WCNOC has a formal agreement with the TSO. (

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Regarding immediate conditions that may affect WCGS switchyard voltage, there is no specific procedural requirement for the TSO to notify WCNOC of conditions that may cause a degraded voltage condition to occur at some point in the future. The suggested conditions have not actually affected WCGS switchyard voltage and therefore the offsite power circuits remain capable of affecting a safe shutdown and mitigating the effects of an accident. It is also important to note that the TSO typically notifies WCNOC of such conditions, however it is not required by procedure.

In regard to future considerations, Westar Energy System Planning performs planning studies that monitor WCGS switchyard post-trip voltages as part of their short and long term planning processes. These studies help Westar Energy to better predict times in the future when the WCGS switchyard voltage may be susceptible to experiencing lower than normal voltages due to equipment outages, load changes, etc. By performing these analyses for the long term, Westar is able to take actions to ensure the WCGS switchyard voltage limits are not compromised.

**NRC Question 1(g):**

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

**WCNOC Response:**

The degraded voltage relay is set to operate at minimum switchyard voltage coupled with maximum worst case loading on plant safety busses.(

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**NRC Question 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.

**WCNOC Response:**

Yes, the TSO makes use of a contingency analysis program as described in ( ) to predict grid conditions that would render the WCNOC offsite power system inoperable. (

) The TSO uses the contingency analysis program to identify post-trip conditions in the WCGS switchyard. This contingency analysis program has inputs from both real-time data acquired by the Westar Energy Transmission Service's (WETS) Energy Management System (EMS) and



Grid State Estimator. In this way, WETS is able to accurately predict post-trip conditions in the WCGS Switchyard.

The contingency analysis program also has the capability to calculate other contingencies other than a WCGS unit trip. The contingency analysis program is able to take certain transmission lines, or other generating plants off-line, and use the real-time data from EMS (coupled with grid state estimator values) to calculate contingent voltages at the WCGS switchyard. This is especially useful for the transmission operator to prevent any unacceptable voltages in the WCGS switchyard when switching operations are necessary.

**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?

**WCNOC Response:**

Yes, the TSO uses the contingency analysis program, in conjunction with procedures, as the basis for determining when conditions warrant WCNOC notification. (

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**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.

**WCNOC Response:**

Yes, as stated in question 2(b), the TSO analysis tool, in conjunction with procedures, identifies conditions which would actuate the WCGS degraded voltage protection logic and initiate separation from an offsite power source upon a WCGS trip. As previously discussed in 2(a), the analysis is based on a combination of real-time data acquired by Westar's Energy Management System (EMS) and the Grid State Estimator. The conditions encompass those documented in the WCNOC Updated Safety Analysis Report (i.e. a trip of a WCGS unit, 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?

**WCNOC Response:**

As discussed in question 2(b), Westar Energy Transmission Services uses a contingency analysis program, which runs a minimum of once per hour to identify post-trip conditions in the WCGS switchyard. (

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**NRC Question 2(e):**

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

**WCNOC Response:**

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Per WCNOC and Westar procedures, if predicted voltage is below the low switchyard voltage LO WARN, Westar will immediately attempt to correct the low voltage condition and perform additional contingency voltage calculations (

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**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?

**WCNOC Response:**

Yes, the interface agreement does specifically require the TSO to contact WCNOC and advise them when the TSO loses the ability to predict post trip voltages (determine if the offsite voltage and capacity would be inadequate). The TSO is directed per the agreement to use engineering judgment on the adequacy of the offsite source.(

) Refer to the response in question 2(i) for additional discussion concerning an alternate means of determining offsite power adequacy.

**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?

**WCNOC Response:**

The verification of predicted switchyard voltages versus actual switchyard voltages after an unscheduled trip of WCGS is not required by either WCNOC or the TSO. The TSO does not archive predicted WCGS switchyard voltages unless they have initiated the low warning or low alarms discussed in question 1(b). However, as stated in question 1(b) and 1(d), TSO will run a predictive model once every hour using a contingency analysis program in the EMS computer that will capture actual grid configuration, power flows and generation to predict a WCGS 345kV switchyard voltage in the event of a nuclear plant trip with LOCA loads. Following a trip of WCGS, the TSO will continue monitoring voltages, contacting WCGS if any actual voltage set points are breached.(

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**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?

**WCNOC Response:**

The TSO (Westar Energy Transmission or WETS) currently uses a contingency analysis tool.

**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?

**WCNOC Response:**

The TSO currently uses a contingency analysis tool. As described in the response to question 2(f), Westar Energy Transmission is developing an alternate means to verify WCGS switchyard voltages in the case that the existing contingency analysis tool is not available or inaccurate. This analysis is being tracked in the WCNOC corrective action program.

**NRC Question 2(i)(a):**

- (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?

**WCNOC Response:**

The TSO currently uses a contingency analysis tool.

In regards to the alternate contingency described in the response to question 2(i), the incorporation of the alternate contingency into both WCNOC and the TSO procedural guidance (including assumptions and parameters) is currently in the WCNOC corrective action program.

**NRC Question 2(i)(b):**

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

**WCNOC Response:**

The TSO currently uses a contingency analysis tool.

Similar to the response to Question 2(i)(a), the incorporation of the alternate contingency analysis into both WCNOC and the TSO procedural guidance (including notification requirements) is currently tracked in the WCNOC corrective action program as well. The notification requirements of switchyard voltages will be identical to those notification requirements of the TSO for the contingency analysis calculations.

**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.

**WCNOC Response:**

The TSO currently uses a contingency analysis tool in conjunction with procedures to notify WCNOC of both actual and predicted degraded voltage conditions.

**NRC Question 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?

**WCNOC Response:**

Yes, the offsite power circuit involved would be declared inoperable.

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**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?

**WCNOC Response:**

If a degraded switchyard voltage condition occurs following an accident condition, and sequencing of the LOCA loads causes a loss of off-site power to occur, the safety related bus will be separated from the off-site power source, and the Emergency Diesel

Generator (EDG) will energize the bus supplying power to the safety related loads. The EDG and safety related loads remain operable. (

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**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).

**WCNOC Response:**

As designed, the safety busses will remain energized by the off-site power source until the off-site sources are disconnected as determined by the loss-of-voltage relay or remains in a degraded voltage condition for either ( ) (

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**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.

**WCNOC Response:**

Aside from a predicted degraded switchyard voltage after trips of WCGS and LOCA loading, Technical Specifications are not entered for other grid conditions that might occur. However, precautionary measures may be taken depending on the nature of the event. (

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Postulated contingencies on the transmission grid are not used as a basis for operability determinations since:

- such events are only postulated and have not actually occurred, and
- the offsite power circuits remain capable of effecting a safe shutdown and mitigating the effects of an accident.

**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.

**WCNOC Response:**

If offsite power is degraded (i.e. actual or predicted voltage assuming a unit trip coupled with LOCA loading), it is declared inoperable. However, onsite power will remain operable.

**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).

**WCNOC Response:**

NPP operating crews receive training for degraded grid conditions both in the classroom and on the plant reference simulator (

) In addition to this training, the Off-Normal and Emergency procedure network is structured to diagnose and respond to degraded voltage and loss of power scenarios, taking the necessary actions to ensure critical safety functions are maintained. Operators are trained and tested as part of their scheduled and routine Licensed Operator training.

**NRC Question 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.

**WCNOC Response:**

Eight main control board annunciator windows are provided to alert the operators to a switchyard-related failure(s) that could result in loss of availability of either preferred offsite source to perform its intended function. These alarms are listed below:

ALR 00-012A, 345 KV Trouble  
ALR 00-011A, 345 KV Supervisory Trouble  
ALR 00-012B, 345 KV Battery Trouble  
ALR 00-012C, SL2 Buss 13-40 Breaker Trip  
ALR 00-013B, 69 KV Trouble  
ALR 00-012E, No. 4/No. 5 Transformers not Parallel  
ALR 00-013A, 13-48 Breaker Trip  
ALR 00-013C, No. 1 Switchgear Breaker Trip

In addition to the above main control board alarms, numerous other main control board alarms exist which monitor the main generator, major transformers, and ESF switchgear which would alert the operator to any abnormal conditions that may adversely affect the off-site power system.

Plant-controlled or monitored equipment includes voltage regulators, auto-tap changing transformers, and the Main Generator Voltage Regulator. The TSO monitors and controls capacitors and static VAR compensators. Operators receive training in Initial License training and in continuing training on the operation of these components. Training includes adjusting Main Generator VAR loading to manipulate grid voltage while in communication with the TSO. System, Off-Normal and Emergency procedures are used during simulator training to provide the operators with experience in dealing with abnormal grid conditions and restoration of off-site power to the plant.

**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.

**WCNOC Response:**

Procedural controls are provided. See the response to question 4(a).

**NRC Question 5:**

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.



Performance of grid reliability evaluations as part of the maintenance risk assessments is 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?

**WCNOC Response:**

The WCGS 10CFR50.65(a)(4) risk assessment seeks to maintain an adequate defense-in-depth for both the front-line and support systems during maintenance. (

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The Integrated Plant Scheduling group performs an Operational Risk Assessment for activities within a weekly schedule. Compensatory measures are addressed for activities deemed to be risk significant. The weekly scheduled activities and associated Operational Risk Assessment are reviewed by the WCGS Probabilistic Safety Analysis Group and approved by the Plant Manager or designee. The risk assessment process uses checklists, and as appropriate, Probabilistic Risk Assessment (PRA) insights or results from the Safety Monitor™ (quantitative risk assessment). For preplanned or emergent activities, a compensatory measure such as delaying work may be invoked due to "high system demand, low grid stability, or severe weather."

The Operational Risk Assessment Program also addresses the impact on the risk assessment due to added or emergent activities and activities which have slipped from the scheduled completion time. The risk assessment processes are similar regardless of at-power or shutdown conditions. These methods minimize the impact to plant safety should a loss of offsite power occur.

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In addition to notifying System Operations, the current weather conditions are evaluated by WCNOG prior to planned maintenance on a Diesel Generator.

**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?

**WCNOG Response:**

Yes. The TSO monitors switchyard voltage (both actual and predicted) and will contact the control room in the event that any of the conditions outlined in( ) are met. (

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**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.

**WCNOG Response:**

No, there are no significant variations in the stress on the grid around the NPP as a result of seasonal loads or maintenance activities. Seasonal variations do have an impact on grid stress but the seasonal peaks are studied and changes are made in the grid to compensate for increased load/stress.

No, there is no noted seasonal variation in the LOOP frequency. WCGS has not experienced a LOOP. (

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**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?

**WCNOG Response:**

No, WCGS has no seasonal restrictions, however, we do make adjustments depending upon the current and predicted weather conditions.

**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?

**WCNOC Response:**

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), the Control Room  
notifies System Operations prior to removing a Diesel Generator from service for scheduled maintenance. System Operations will inform the Control Room if there is a concern with grid voltage. (  
  
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In addition to notifying System Operations, the current weather conditions are evaluated by WCGS prior to planned maintenance on a Diesel Generator.

WCNOC notifies System Operations when there is planned work on the Diesel Generator. The Maintenance Rule has other Risk Significant components but we are not required to notify System Operations.

**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.

**WCNOC Response:**

Refer to the response to question 5(e). The TSO monitors switchyard voltage (both actual and predicted) and will contact the control room in the event that any of the conditions outlined in ( ) are met. (

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**NRC Question 5(g):**

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

**WCNOC Response:**

No, the TSO will contact us if actual or predicted voltage alarms are received.

**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.

**WCNOC Response:**

Operations personnel are trained on WCNOC Procedure(

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) Operating crews receive training in the classroom and on the plant reference simulator in dealing with degraded grid conditions. Operating crews are evaluated using written exams and simulator evaluations.

The only maintenance performed in the switchyard by WCNOC is on the Supervisory System. Training/Qualifications are required to perform maintenance activities on this system. (

) Switchyard access is part of the pre-job brief.

**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).

**WCNOC Response:**

We have an arrangement for communication with the TSO. (

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Operations will inform the Control Room if there is a concern with grid voltage. (

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In addition to notifying System Operations, the current weather conditions are evaluated by Wolf Creek prior to planned maintenance on a Diesel Generator.

**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.

**WCNOC Response:**

Risk is assessed during the duration of grid risk maintenance activities. Although 10CFR50.65(a)(4) does not require continuing communication with the TSO, as discussed earlier, WCGS has provisions for communications when needed.

**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.

**WCNOC Response:**

As described in the responses to questions 5(a) thru 5(d), risk is assessed prior to and during all grid risk sensitive maintenance activities.

**NRC Question 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?

**WCNOC Response:**

Yes, Transmission Operating Directives describes actions for the System Operator to follow in the event of an outage(

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**NRC Question 6(b):**

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

**WCNOC Response:**

WCGS switchyard and grid maintenance is scheduled and performed by Westar Technical Operations, which is part of the TSO organization. Work by Westar Technical Operations is indirectly coordinated with the TSO by using the clearance order program.

For the majority of scheduled NPP maintenance and testing, the TSO is not normally contacted. However most test procedures, which will cause a change in power output, have a step to notify the TSO prior to test performance.

It is also important to note that most major electrical work (i.e. transformers, major electrical buses, circuit breakers, relaying, etc.) is scheduled and performed during refueling outages. This helps reduce the risk of WCNOC maintenance activities impacting the transmission system during normal plant operation.

**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?

**WCNOC Response:**

Yes, WCNOC Procedure( ) requires evaluation of current and planned work to determine what work/testing should be postponed and/or suspended when actual grid voltage is greater than the LO ALRM set point and less than the LO WARN set point, or predicted switchyard voltage is greater than the LO ALRM set point and less than the Continued LO WARN set point. Refer to the response from question 1(b) for further details on specific voltage levels associated to these set points.

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**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.)

**WCNOC Response:**

As part of the normal work process, we use "Protected Train" signs on the important safety equipment on the train not under maintenance. These signs are intended to heighten awareness of the work force to avoid disturbing this equipment while also helping ensure that the work is being performed on the correct train.

WCNOC has not experienced an actual or imminent degraded grid reliability situation, therefore scheduling maintenance during these situations has not been an issue. However, work has been rescheduled due to weather, (i.e. not started Diesel Generator surveillances during periods of inclement weather).

**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.

**WCNOC Response:**

- 6(a) Transmission Operating Directives describe actions for the Transmission System Operator to follow in the event of an outage (scheduled or unscheduled) of WCGS 345 kV lines. (

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- 6(b) Most in-plant test procedures, which will cause a change in power output have a step to notify the TSO prior to test performance. (

)

- 6(c) Rescheduling of grid-risk-sensitive maintenance activities during degraded grid voltage conditions is addressed in WCNOC Procedure (

)

- 6(d) Use of protected train signs when performing grid-risk-sensitive maintenance activities is addressed in WCNOC Procedure (

)

**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).

**WCNOC Response:**



As previously discussed in the response to question 5(h), operating crews receive training in the classroom and on the plant reference simulator in dealing with degraded grid conditions.(

) Additionally operating crews have received combined simulator training with the TSO's in attendance. Testing is as described in 5(h).

The only maintenance performed in the switchyard by WCNOG is on the Supervisory System. Training/Qualifications are required to perform maintenance activities on this system. ( ) However, they understand the requirements for switchyard entry. Switchyard access is part of the pre-job brief.

**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 10CFR50.65(a)(4).

**WCNOG Response:**

As previously stated, transmission system and WCGS maintenance is effectively coordinated between WCNOG and the TSO.

**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.

**WCNOG Response:**

As discussed in questions 6, WCNOG effectively implements appropriate risk management actions.

**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).

**WCNOG Response:**

This is not applicable to WCNOG. No alternative actions are required.

**NRC Question 7:**

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.

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.

**WCNOC Response:**

Kansas Electric Power Cooperative, Inc. (KEPCo), Kansas Gas and Electric Company (a wholly owned subsidiary of Western Resources, Inc.) doing business as Westar Energy, and Kansas City Power & Light Company (a wholly owned subsidiary of Great Plains Energy, Inc.) are Wolf Creek Nuclear Operating Corporation (WCNOC) owner companies.

(

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**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.

**WCNOC Response:**

(

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**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.

**WCNOC Response:**

As previously stated in response to 7(a), WCNOC has an established agreement.

**NRC Question 8:**

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.

Maintaining SBO coping capabilities in accordance 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.

**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?

**WCNOC Response:**

No, Wolf Creek has not experienced a total LOOP.

**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?

**WCNOC Response:**

Wolf Creek has not experienced a total LOOP. This is not applicable to WCNOC.

**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?

**WCNOC Response:**

Wolf Creek has not experienced a total LOOP. This is not applicable to WCNOC.

**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.

**WCNOC Response:**

Wolf Creek has not experienced a total LOOP. This is not applicable to WCNOC.

**NRC Question 9:**

Actions to ensure compliance.

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.

**WCNOC Response:**

Appropriate procedures and measures are currently in place, therefore this is not applicable to WCNOC.