

March 10, 2004

MEMORANDUM TO: File

FROM: Jack N. Donohew, Senior Project Manager, Section 2 **/RAI/**  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: WOLF CREEK GENERATING STATION, UNIT 1 - CLARIFICATION OF  
LICENSEE'S APPLICATION AND RESPONSE TO NRC REQUEST FOR  
ADDITIONAL INFORMATION (TAC NO. MB8763)

By letter dated December 18, 2003 (WO 03-0062), Wolf Creek Nuclear Operating Corporation (the licensee) submitted its responses to the NRC request for additional information (RAI) dated September 25, 2003. The RAI was for the licensee's license amendment request (LAR) on Technical Specifications 3.8.1 and 3.8.4 submitted by application dated April 30, 2003 (WO 03-0009).

The NRC staff had the following questions to clarify the information provided by the licensee in its application and RAI response:

1. The emergency diesel generator (EDG) protection in the case of loss-of-offsite power (LOOP) is discussed in the LAR application. State what is (1) the EDG protection for the EDG during EDG testing in Modes 1 and 2, when the EDG is connected to the offsite power supply (i.e., what ensures that the EDG is not damaged by the offsite power supply during this testing), and (2) the surveillance of this EDG protection, including how often the protective relay features are calibrated. The details on the EDG protection are in the LAR application.
2. For the four restrictions given below, on testing the EDG in Modes 1 and 2 connected to the offsite power supply, state if the testing restrictions discussed in the LAR application and the supplemental RAI response letter encompass the four restrictions:
  - Weather conditions will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted for severe weather watches or warnings.
  - The condition of the offsite power supply will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted if the offsite power supply is being challenged.
  - No discretionary switchyard maintenance, including the main, auxiliary, or startup transformers, will be allowed during testing of the EDG in Modes 1 and 2 connected to the offsite power supply.

- No maintenance or testing that affects the reliability of the train associated with the EDG [not] being tested will be conducted during testing of the EDG in Modes 1 and 2 connected to the offsite power supply. If any testing or maintenance of the train must be performed at this time, then a 10 CFR 50.65(a)(4) evaluation will be performed prior to the EDG testing connected to the offsite power supply.

Enclosed is the licensee's e-mail providing the answers to the above questions.

The above questions were discussed with the licensee in the conference call on February 12, 2004. In that call, I stated that the reference to "the train associated with the EDG being tested" in the fourth bullet above was in fact a reference to "the train associated with the EDG not being tested."

Docket No. 50-482

Attachment: E-Mail dated February 25, 2004

- No maintenance or testing that affects the reliability of the train associated with the EDG [not] being tested will be conducted during testing of the EDG in Modes 1 and 2 connected to the offsite power supply. If any testing or maintenance of the train must be performed at this time, then a 10 CFR 50.65(a)(4) evaluation will be performed prior to the EDG testing connected to the offsite power supply.

Enclosed is the licensee's e-mail providing the answers to the above questions.

The above questions were discussed with the licensee in the conference call on February 12, 2004. In that call, I stated that the reference to "the train associated with the EDG being tested" in the fourth bullet above was in fact a reference to "the train associated with the EDG not being tested."

Docket No. 50-482

Attachment: E-Mail dated February 25, 2004

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E-MAIL DATED FEBRUARY 25, 2004

**From:** Wideman Steven G <stwidem@WCNOC.com>  
**To:** "Jack Donohew" <JND@nrc.gov>  
**Date:** 2/25/04 3:21PM  
**Subject:** RE: Questions on TS 3.8.1/3.8.4 AC/DC Sources License Amendment Requests

Jack - that attached file provides Wolf Creek's responses to the two questions.

Steve Wideman  
WCNOC Licensing  
620-364-4037

-----Original Message-----

From: Jack Donohew [mailto:JND@nrc.gov]  
Sent: Wednesday, February 04, 2004 3:51 PM  
To: DShafer@ameren.com; telwood@ameren.com; Tom Weber; DXS4@pge.com; Tom Grozan; stwidem@wcnoc.com  
Subject: Questions on TS 3.8.1/3.8.4 AC/DC Sources License Amendment Requests

Below are two questions on your respective license amendment request (LAR) applications for "Revisions to Technical Specifications Surveillance Requirements 3.8.1 and 3.8.4." The questions are related to the testing of the emergency diesel generator (EDG) in Modes 1 and 2 with the EDG connected to the offsite power supply.

1. The EDG protection in the case of loss-of-offsite power (LOOP) is discussed in the LAR application. State what is (1) the EDG protection for the EDG during EDG testing in Modes 1 and 2, when the EDG is connected to the offsite power supply (i.e., what ensures that the EDG is not damaged by the offsite power supply during this testing) and (2) the surveillance of this EDG protection, including how often the protective relay features are calibrated. The details on the EDG protection are in the LAR application.

2. For the four restrictions given below, on testing the EDG in Modes 1 and 2 connected to the offsite power supply, state if the testing restrictions discussed in the LAR application and the supplemental RAI response letter encompass the four restrictions:

\* Weather conditions will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted for severe weather watches or warnings.

\* The condition of the offsite power supply will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted if the offsite power supply is being challenged.

\* No discretionary switchyard maintenance, including the main, auxiliary, or startup transformers, will be allowed during testing of the EDG in Modes 1 and 2 connected to the offsite power supply.

\* No maintenance or testing that affects the reliability of the train associated with the EDG being tested will be conducted during testing of the EDG in Modes 1 and 2 connected to the offsite power supply. If any testing or maintenance of the train must be performed at this time, then a 10 CFR 50.65(a)(4) evaluation will be performed prior to the EDG testing connected to the offsite power supply.

If you have any questions on what is stated above, please contact me.  
<JND>

**CC:** Solorio Luis M <lusolor@WCNOC.com>, Weeks James D <jaweeks@WCNOC.com>, Berry Dale L <daberry@WCNOC.com>

THE ATTACHED FILE

Below are the responses for WCNOC to the two questions that were provided via E-mail on February 4, 2004 to each of the STARS licensees that have submitted (and are awaiting approval of) license amendment applications for revising Surveillance Requirements under Technical Specifications 3.8.1 and 3.8.4. The questions are related to the testing of the emergency diesel generator (EDG) in MODES 1 and 2 with the EDG connected to the offsite power supply. (Note: The second question is a four-part question, and each part is addressed separately under that question.)

\* \* \* \* \*

*1. The EDG protection in the case of loss-of-offsite power (LOOP) is discussed in the LAR application. State what is (1) the EDG protection for the EDG during EDG testing in Modes 1 and 2, when the EDG is connected to the offsite power supply (i.e., what ensures that the EDG is not damaged by the offsite power supply during this testing) and (2) the surveillance of this EDG protection, including how often the protective relay features are calibrated. The details on the EDG protection are in the LAR application.*

**RESPONSE:**

The following is discussed in Attachment I to WO 03-0009 (page 8 of 23):

“Automatic protection for the following conditions is provided for each DG:

- Start failure
- Engine overspeed
- High jacket coolant temperature
- Low lube oil pressure
- High crankcase pressure
- Generator differential

These protective functions (to shut down the diesel or trip the DG breaker) are retained during receipt of an SIS.”

TS SR 3.8.1.13 demonstrates that DG noncritical protective functions are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal. The instrumentation associated with the above critical DG protective functions is normally calibrated on an 18 month frequency.

Additionally, Attachment I to WO 03-0009 (page 8 of 23) states:

“In addition to the above, DG protection is also provided for the following conditions:

- Reverse power
- Loss of field
- Generator over-excitation (Volts/Hertz)
- Generator overcurrent
- Generator voltage-restrained overcurrent
- Generator ground overcurrent
- Underfrequency

These protection functions are only in effect during tests when the diesel generator is operating in parallel with the preferred power system. However, they are automatically bypassed upon receipt of an SIS or loss of power. This is based on the design consideration that DG availability to mitigate a DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The above non-critical protective functions are typically calibrated on an 18 month frequency. The relays associated with the ground overcurrent are calibrated on a 36 month frequency.

2. For the four restrictions given below, on testing the EDG in Modes 1 and 2 connected to the offsite power supply, state if the testing restrictions discussed in the LAR application and the supplemental RAI response letter encompass the four restrictions:

\*(1) Weather conditions will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted for severe weather watches or warnings.

**RESPONSE:**

The Attachment to WO 03-0062 (page 3 or 5, Response to Question 1.f) states, in part:

*"Plant procedures currently require that DG testing will not be performed during adverse weather conditions in the area of WCGS or adverse weather conditions in other areas of the grid controlled by System Operations that may make the grid unstable for WCGS. Procedure AP 21C-001, "Substation Protection," provides guidance for access to the switchyard and assessing the plant conditions prior to performing work activities in the switchyard. The guidance in the procedure identifies that every attempt shall be made to schedule maintenance in the switchyard or in the vicinity of the main, unit auxiliary, and startup transformer, or on the main generator during times when both DGs are OPERABLE."*

*\*(2) The condition of the offsite power supply will be evaluated prior to testing the EDG in Modes 1 and 2 connected to the offsite power supply and the testing would not be conducted if the offsite power supply is being challenged.*

**RESPONSE:**

See the response to restriction (1) above.

*\*(3) No discretionary switchyard maintenance, including the main, auxiliary, or startup transformers, will be allowed during testing of the EDG in Modes 1 and 2 connected to the offsite power supply.*

The Attachment to WO 03-0062 (page 1 or 5, Response to Question 1.f) states, in part:

"Procedure AP 29B-003, "Surveillance Testing," requires the appropriate authorization (shift manager, control room supervisor, or authorized designee) prior to performing the surveillance activity. The authorization for performance of the testing includes determining if plant conditions are appropriate, discussing the surveillance test with the test performer to determine affect on plant status, and assuring that performance of the testing will not place the plant in an unsafe condition.

Procedure AP 22C-003, "Operational Risk Assessment," requires a risk assessment prior to issuance of the weekly work schedule. The risk assessment considers all maintenance and testing activities reflected in the schedule as well as reviewing the equipment out-of-service log, temporary modifications, and the Operator Work Arounds to determine their affect upon the ability to safely operate the plant.

Additionally, the Attachment to WO 03-0062 (page 3 or 5, Response to Question 1.f) states, in part:

"Procedure AP 21C-001, "Substation Protection," provides guidance for access to the switchyard and assessing the plant conditions prior to performing work activities in the switchyard. The guidance in the procedure identifies that every attempt shall be made to schedule maintenance in the switchyard or in the vicinity of the main, unit auxiliary, and startup transformer, or on the main generator during times when both DGs are OPERABLE."

*\*(4) No maintenance or testing that affects the reliability of the train associated with the EDG [not] being tested will be conducted during testing of the EDG in Modes 1 and 2 connected to the offsite power supply. If any testing or maintenance of the train must be performed at this time, then a 10 CFR 50.65(a)(4) evaluation will be performed prior to the EDG testing connected to the offsite power supply.*

**RESPONSE:**

As discussed with the NRC Project Manager [in the conference call held] on February 12, 2004, the first sentence is incorrectly stated, in that the concern is with maintenance or testing that affects the train for which the associated EDG is not being tested (i.e., the train that is redundant to the train whose EDG is being tested. [The not has been added to the above question.] This concern was addressed in several places within Attachment I to WO 03-0009, and it was also addressed in the Attachment to WO 03-0062.

In Section 4.1.3 of Attachment I to WO 03-0009 (page 14 of 23), it was noted that "...the normal practices of risk management exercised at WCGS ..... require only one DG to be tested at a time based on the established practice of "protecting" the other train when a component (or components) of one trains is being tested or declared inoperable." "Protection" of the other train would require consideration to be given of the impact of removing from service any significant component on that train (not just the EDG).

The Attachment to WO 03-0062 (page 2 of 5, responses to Question 1.b and Question 1.d) indicate:

Procedure AP 22C-003, "Operational Risk Assessment," requires a risk assessment prior to issuance of the weekly work schedule. The risk assessment considers all maintenance and testing activities reflected in the schedule as well as reviewing the equipment out-of-service log, temporary modifications, and the Operator Work Arounds to determine their affect upon the ability to safely operate the plant. As part of the scheduling of system/component maintenance, testing, and outages, procedure AP 22C-003 provides the guidance for the assessment and management of operational risk as required by 10 CFR 50.65(a)(4). Added maintenance and testing activities are assessed for their impact on the current Operational Risk Assessment.

Finally, as discussed in the Attachment to WO 03-0062 (response to Question 1.d), removal of additional equipment from service while a EDG is under test could require entry into a short-term Required Action under the applicable Limiting Condition for Operation (LCO) of

the Technical Specifications. If the EDG under test were inoperable, for example, and the other EDG was being considered for removal from service for some reason, not only would the plant risk be evaluated per 10CFR50.65(a)(4), but with two EDGs inoperable, Required Action E.1 of Condition E under TS 3.8.1 would require restoring one EDG to OPERABLE status in 2 hours.