



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 11, 2013

Mr. Matthew W. Sunseri
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - ISSUANCE OF AMENDMENT RE:
REVISE TECHNICAL SPECIFICATION 3.8.1, "AC SOURCES - OPERATING"
(TAC NO. ME7674)

Dear Mr. Sunseri:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 204 to Renewed Facility Operating License No. NPF-42 for the Wolf Creek Generating Station. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated November 30, 2011, as supplemented by letters dated August 16 and December 7, 2012, and March 3, 2013.

The amendment revises the TS 3.8.1, "AC [Alternating Current] Sources - Operating," Surveillance Requirements related to Diesel Generator test loads, voltage, and frequency. The proposed changes will correct non-conservative Diesel Generator load values that are currently under administrative controls.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink that reads "CF Lyon".

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures:

1. Amendment No. 204 to NPF-42
2. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 204
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Wolf Creek Generating Station (the facility) Renewed Facility Operating License No. NPF-42 filed by the Wolf Creek Nuclear Operating Corporation (the Corporation), dated November 30, 2011, as supplemented by letters dated August 16 and December 7, 2012, and March 3, 2013, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

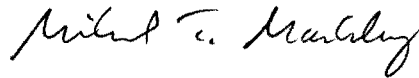
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-42 is hereby amended to read as follows:

- (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 204, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. The Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License and
Technical Specifications

Date of Issuance: April 11, 2013

ATTACHMENT TO LICENSE AMENDMENT NO. 204

RENEWED FACILITY OPERATING LICENSE NO. NPF-42

DOCKET NO. 50-482

Replace the following pages of the Renewed Facility Operating License No. NPF-42 and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Renewed Facility Operating License

<u>REMOVE</u>	<u>INSERT</u>
4	4

Technical Specifications

<u>REMOVE</u>	<u>INSERT</u>
3.8-7	3.8-7
3.8-8	3.8-8
3.8-9	3.8-9
3.8-10	3.8-10
3.8-11	3.8-11
3.8-13	3.8-13
3.8-16	3.8-16
3.8-17	3.8-17

- (5) The Operating Corporation, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (6) The Operating Corporation, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission, now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level
- The Operating Corporation is authorized to operate the facility at reactor core power levels not in excess of 3565 megawatts thermal (100% power) in accordance with the conditions specified herein.
- (2) Technical Specifications and Environmental Protection Plan
- The Technical Specifications contained in Appendix A, as revised through Amendment No. 204, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. The Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
- (3) Antitrust Conditions
- Kansas Gas & Electric Company and Kansas City Power & Light Company shall comply with the antitrust conditions delineated in Appendix C to this license.
- (4) Environmental Qualification (Section 3.11, SSER #4, Section 3.11, SSER #5)*
- Deleted per Amendment No. 141.

*The parenthetical notation following the title of many license conditions denotes the section of the supporting Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.</p>	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 5650 kW and ≤ 6201 kW.</p>	31 days
SR 3.8.1.4	Verify each fuel oil transfer pump starts on low level in the associated day tank standpipe.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify each fuel oil transfer system operates to transfer fuel oil from the storage tank to the day tank.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	<p>-----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves:</p> <ul style="list-style-type: none"> a. In ≤ 12 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz; and b. Steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz. 	184 days
SR 3.8.1.8	Not Used.	
SR 3.8.1.9	Not Used.	
SR 3.8.1.10	Verify each DG operating at a power factor ≤ 0.9 and ≥ 0.8 does not trip and voltage is maintained ≤ 4784 V and frequency is maintained ≤ 65.4 Hz during and following a load rejection of ≥ 5650 kW and ≤ 6201 kW.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected shutdown loads through the shutdown sequencer, 3. maintains steady state voltage ≥ 3950 V and ≤ 4320 V, 4. maintains steady state frequency ≥ 59.4 Hz and ≤ 60.6 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by a prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. <hr/> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3950 V and frequency ≥ 59.4 Hz; b. Achieves steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected and energized through the LOCA sequencer from the offsite power system. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----NOTE----- Momentary transients outside the load and power factor ranges do not invalidate this test. ----- Verify each DG operating at a power factor ≤ 0.9 and ≥ 0.8 operates for ≥ 24 hours:</p> <ul style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 6300 kW and ≤ 6821 kW; and b. For the remaining hours of the test loaded ≥ 5650 kW and ≤ 6201 kW. 	<p>18 months</p>
<p>SR 3.8.1.15 -----NOTES-----</p> <ul style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 5650 kW and ≤ 6201 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. <p>----- Verify each DG starts and achieves:</p> <ul style="list-style-type: none"> a. In ≤ 12 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz; and b. Steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. <hr/> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated Safety Injection signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3950 V and ≤ 4320 V, 4. achieves steady state frequency ≥ 59.4 Hz and ≤ 60.6 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20</p> <p>-----NOTE----- All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify when started simultaneously from standby condition, each DG achieves:</p> <p>a. In ≤ 12 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz; and</p> <p>b. Steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.</p>	<p>10 years</p>
<p>SR 3.8.1.21</p> <p>-----NOTE----- The continuity check may be excluded from the actuation logic test.</p> <p>-----</p> <p>Perform ACTUATION LOGIC TEST for each train of the load shedder and emergency load sequencer.</p>	<p>31 days on a STAGGERED TEST BASIS</p>



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 204 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-42

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By application dated November 30, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11340A033), as supplemented by letters dated August 16 and December 7, 2012, and March 3, 2013 (ADAMS Accession Nos. ML12237A298, ML12354A407, and ML130720677, respectively), Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) requested changes to the Technical Specifications (TSs) for Wolf Creek Generating Station (WCGS). The supplemental letters dated August 16 and December 7, 2012, and March 3, 2013, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on June 12, 2012 (77 FR 35078).

The proposed changes would revise the TS 3.8.1, "AC [Alternating Current] Sources - Operating," Surveillance Requirements (SRs) related to Diesel Generator (DG) test loads, voltage, and frequency. The proposed changes will correct non-conservative DG load values that are currently under administrative controls.

Specifically, the licensee proposes to revise the TS SRs to provide a more restrictive voltage and frequency band for DG operation when not connected in parallel with the offsite sources. The licensee proposes to modify SRs 3.8.1.2, 3.8.1.3, 3.8.1.7, 3.8.1.10, 3.8.1.11, 3.8.1.12, 3.8.1.14, 3.8.1.15, 3.8.1.19, and 3.8.1.20 to restrict the voltage and frequency limits for both slow and fast DG starts. The licensee is also changing DG loading requirements to reflect the results of updated calculations.

2.0 REGULATORY EVALUATION

The NRC staff referred to the following regulatory requirements and guidance documents during its review of the application:

- The WCGS Updated Safety Analyses Report (USAR) Section 8.1.4.2, states that the offsite power system and the onsite power systems conform to Title 10 of *Code of Federal Regulations* (10 CFR), Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criteria (GDCs) 17 and 18.
- GDC 17, "Electric power systems," requires, in part, that "An onsite electric power system...shall be provided to permit functioning of structures, systems, and components important to safety... The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure..." In addition, this criterion requires provisions to minimize the probability of losing electric power from any of the remaining supplies as a result of the loss of power from the nuclear power unit, the transmission network, or the onsite electric power supplies.
- GDC 18, "Inspection and testing of electric power systems," requires, in part, that "Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features... The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems..."
- In the regulations in 10 CFR 50.36, "Technical specifications," the NRC established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operations (LCOs), (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. The rule does not specify the particular requirements to be included in a plant's TS. As stated in 10 CFR 50.36(c)(2)(i), the "[l]imiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." The regulations in 10 CFR 50.36(c)(3) state that "[s]urveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."
- NRC Regulatory Guide (RG) 1.9, Revision 3, "Selection, Design, Qualification, and Testing of Emergency Diesel Generators used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," July 1993 (ADAMS Accession No. ML003739929), describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to design and testing of onsite DGs.

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Changes:

In its application, the licensee proposed to change the SRs as follows:

- SR 3.8.1.2 - Start Test

Revise the SR to specify a minimum steady state voltage of ≥ 3950 Volts (V) and a frequency range of ≥ 59.4 Hertz (Hz) and ≤ 60.6 Hz. The current minimum steady state voltage is ≥ 3740 V and a current frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.3 - Load Run Test

Revise the SR to specify a load range of ≥ 5650 Kilowatt (kW) and ≤ 6201 kW. The current load range is ≥ 5580 kW and ≤ 6201 kW.

- SR 3.8.1.7 - Fast-Start Test

Revise the SR to specify a minimum voltage of ≥ 3950 V and a minimum frequency of ≤ 59.4 Hz. Revise the minimum steady state voltage to specify a value of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum voltage and minimum steady state voltage is ≥ 3740 V and a current minimum frequency of ≥ 58.8 Hz and steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.10 - Full Load Rejection Test

Revise the SR to specify a load range of ≥ 5650 kW and ≤ 6201 kW. The current load range is ≥ 5580 kW and ≤ 6201 kW.

- SR 3.8.1.11 - Loss-of-Offsite Power (LOOP) Test

Revise the SR to specify a minimum steady state voltage of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum steady state voltage is ≥ 3740 V and a steady state frequency of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.12 - Safety Injection Actuation Signal (SIAS) Test

Revise the SR to specify a minimum voltage of ≥ 3950 V and a minimum frequency of ≥ 59.4 Hz. Revise the minimum steady state voltage to specify a value of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum voltage and minimum steady state voltage is ≥ 3740 V and a current minimum frequency of ≥ 58.8 Hz and steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.14 - Endurance and Margin Test

Delete Note 2 and change the "Notes" heading to "Note" and remove the number (1.) from Note 1. Revise the load range for the 2 hours portion of the SR to specify a load range of ≥ 6300 kW and ≤ 6821 kW. The current load range is ≥ 6600 kW and ≤ 6821 kW. Revise the load range for the remaining hours of the SR to ≥ 5650 kW and ≤ 6201 kW. The current load range is ≥ 5580 kW and ≤ 6201 kW.

- SR 3.8.1.15 - Hot Restart Test

Revise Note 1 to specify a load range of ≥ 5650 kW and ≤ 6201 kW. The current load range is ≥ 5580 kW and ≤ 6201 kW. Additionally, revise this SR to specify a minimum voltage of ≥ 3950 V and a minimum frequency of ≥ 59.4 Hz. Revise the minimum steady state voltage to specify a value of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum voltage and minimum steady state voltage is ≥ 3740 V and a current minimum frequency of ≥ 58.8 Hz and steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.19 - Combined SIAS and LOOP Tests

Revise the SR to specify a minimum steady state voltage of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum steady state voltage is ≥ 3740 V and a current steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

- SR 3.8.1.20 - Simultaneous Start

Revise the SR to specify a minimum voltage of ≥ 3950 V and a minimum frequency of ≥ 59.4 Hz. Revise the minimum steady state voltage to specify a value of ≥ 3950 V and a steady state frequency range of ≥ 59.4 Hz and ≤ 60.6 Hz. The current minimum voltage and minimum steady state voltage is ≥ 3740 V and a current minimum frequency of ≥ 58.8 Hz and steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz.

3.2 NRC Staff Evaluation

The NRC staff reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment, which is described in Attachment 1 of the application.

The offsite and onsite power systems at the WCGS are designed to comply with the requirements of GDCs 17 and 18, respectively. The WCGS USAR states that the existing onsite power system consists of two physically independent sources of offsite power are brought to the onsite power system, designed and located so as to minimize the likelihood of simultaneous failure. Each of these independent circuits has the capability to safely shut down the unit. The first preferred circuit, which is connected to the startup transformer, has the capacity to supply the startup and all the auxiliary loads (both group 1 and group 2, simultaneously) of the unit. The second preferred power circuit, which supplies power to the

engineered safety features (ESF) transformer, has the capacity to supply all the safety-related loads of the unit.

The standby alternating current (AC) power system for WCGS consists of two DG units separated into two independent divisions. USAR Section 8.3.1.1.3, "Standby Power Supply," states that either DG unit is capable of supplying loads needed to safely shut down the reactor and maintaining the reactor in a safe shutdown condition after a design-basis accident. Each DG is rated at 6201 kW for continuous operation. Additional ratings are 6635 kW for 2000 hours, 6821 kW for 7 days, and 7441 kW for 30 minutes. The DG 2-hour rating is equal to the 7-day rating of 6821 kW. Each DG is connected exclusively to a single 4.16-kV ESF bus for one load group. The load groups are redundant and have similar safety-related equipment. Each load group is adequate to satisfy minimum ESF demand caused by a loss-of-coolant accident (LOCA) and/or loss of preferred power supply. The USAR also states that the diesel generator loads are determined on the basis of nameplate rating, pump pressure and flow conditions, or pump run-out conditions. The continuous rating of the diesel generator is based on the maximum total load required at any time.

Any variation in steady state voltage and/or frequency affects the operating characteristics of motor-driven loads. If variation in both voltage and frequency occurs simultaneously, the effect will be superimposed and compounded such that the available margin in DG capacity may be eroded. In its application, the licensee proposed to narrow the existing allowable range of frequency and voltage for the acceptance criteria during DG surveillance testing to avoid the potential for overloading the DGs and to assure that safe shutdown equipment will perform as required by accident analyses.

In its letter dated November 30, 2011, the licensee provided details on the DG loading with consideration of frequency and voltage variation. Specifically, the licensee stated that using the current steady state frequency range of ≥ 58.8 Hz and ≤ 61.2 Hz yields worst-case accident loading on the "B" DG of 6315.7 kW at a worst-case over-frequency of 61.2 Hz. This exceeds the 6201 kW continuous rating. The worst-case accident loading on the "B" DG of 5725.5 kW (long time or continuous rating) is greater than the minimum test load value (5580 kW) specified in the TSs. Therefore, the potential existed that the surveillance testing would not have bounded the design basis worst-case accident loading.

The licensee determined that the DGs can operate in a more conservative frequency band and calculated the loads based on the proposed TS changes for allowable frequency variations. Utilizing a revised frequency band of ≥ 59.4 Hz and ≤ 60.6 Hz, the licensee computed a worst-case accident loading of 6172.2 kW during the 30-minute time period and a worst-case accident loading on the "B" DG of 5580.3 kW for the balance of accident coping period.

The licensee also proposed raising the allowable minimum steady state voltage from 3740 V to 3950 V. The licensee reviewed the historical data from the surveillance test procedures performed over the last several years and concluded that the minimum observed voltage at the ESF buses was above 4000 V. The proposed minimum steady state output voltage of 3950 V is 95 percent of the nominal 4160 V output voltage and allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90 percent or 3600 V.

In response to NRC staff requests for additional information (RAIs) dated June 14 and October 9, 2012, and January 31, 2013 (ADAMS Accession Nos. ML12166A404, ML12283A256, and ML13032A226, respectively), the licensee provided additional information by letters dated August 16 and December 7, 2012, and March 3, 2013. The licensee stated that the degraded voltage relay setpoint 3706.5 V is the minimum voltage required at the 4160 V ESF bus to assure satisfactory operation of safety-related equipment during accident conditions. The proposed minimum DG voltage of 3950 V is well above the minimum allowable and provides substantial margin for the equipment. The essential service water (ESW) pump motors, each rated at 1750 horsepower, are the largest motors. The licensee has stated that when an ESW pump motor is started on an ESF bus that is being powered by its associated DG, the voltage at the terminals of the DG drops to 3196.35 V from 4160 V and recovers to 90 percent in less than 0.48 seconds from the minimum dip. Extrapolating the voltage drop, assuming an initial bus voltage of 3950 V, the licensee has computed that the lowest generator terminal voltage would be approximately 3036.53 V with a corresponding bus voltage of 3009 V and 2814 V at the ESW pump motor terminals. Based on these calculations, the licensee has concluded that the loss of voltage relay will not be actuated and there is adequate voltage for the ESW motor to start and accelerate in adequate time to satisfy the design requirements. The licensee also evaluated the impact of the large motor start voltage transient drop-on equipment such as motor starters, contactors, inverters, and auxiliary relays, and stated that there is no adverse impact on these components. The licensee concluded that the proposed minimum DG voltage of 3950 V provides adequate margin for satisfactory operation of safety-related equipment during large motor starts. The degraded voltage relays do not have to be reset if actuated due to a LOOP event when the DG is required to supply plant loads. These relays provide an alarm function only when the DGs are powering the ESF busses.

Regarding its compliance with RG 1.9, Revision 3, the licensee stated that the NRC staff has previously approved its compliance with sections of RG 1.9, Revision 3, and all DG testing is currently based on this revision of the RG. In its application, the licensee requested NRC approval of the licensee's conformance to RG 1.9, Revision 3, with the exception of Regulatory Position C.1.3. Regulatory Position C.1.3 of RG 1.9, Revision 3, states that at the operating license stage of review, the predicted loads should not exceed the continuous rating of the DG. WCNOG is committed to IEEE Std 387-1977, as stated in WCGS USAR Section 8.1.4.3. At WCGS, the predicted DG loads may exceed the continuous rating of the DG during the first 24 hours of a design-basis accident. The predicted loads do not exceed the DG short-term rating. This is acceptable to the NRC staff, pursuant to Regulatory Position C.2 of RG 1.9, Revision 2, which states that, "At the operating license stage of review, the predicted loads should not exceed the short-time rating (as defined in Section 3.7.2 of IEEE Std 387-1977) of the diesel-generator unit."

Regarding DG loading during transient conditions of postulated events, the licensee performed an evaluation of DG loading using the higher brake horsepower of pumps associated with increased flows during run-out conditions. The licensee stated that the loading associated with the LOCA loading profile exceeds the loading associated with the main steam line break (MSLB) loading profile. The response stated that the worst-case loading of 6238.1 kW occurs during the first 24 hours of a LOCA. This accident profile included the increased loading due to the effects of coincident run-out flow rates of large pumps used during the injection mode of operation. The calculation also included loads that are manually loaded through emergency operating procedures. The licensee concluded that the proposed lower load range limit of

6300 kW exceeds the worst-case loading of 6238.1 kW and, therefore, the proposed 2-hour portion of the SR load range of ≥ 6300 kW and ≤ 6821 kW remained acceptable. The proposed load range between ≥ 5650 kW and ≤ 6201 kW for the remaining hours envelopes the design-basis accident loading for continuous operation greater than 7 days.

The licensee evaluated the impact of the proposed change in DG load profile on DG fuel oil requirements and concluded that the existing volume calculation based on 7-day DG operation at rated continuous capacity (6201 kW) was adequate. The licensee also stated that the capacity of the fuel oil storage tank is sufficient to meet the fuel required for a period of 7 days at the 7-day rating (6821 kW), while meeting the TS-required volume.

In its letter dated December 7, 2012, the licensee provided a summary of the evaluation performed to analyze motor-operated valve (MOV) performance during DG loading and steady state conditions. The licensee stated that there are 142 MOVs included in the MOV program at WCGS, of which 64 are automatically connected to the DGs. The licensee's review of its accident analysis determined specific applications where the critical valves were required to function in a timely manner to satisfy the assumptions in the analysis. Based on its review, the licensee did additional evaluation of 19 valves (identified in Table 1 of the Attachment to the December 7, 2012, letter) that were potentially impacted by frequency variations. The licensee concluded that the performance capabilities and higher stroke time of the critical valves do not adversely impact the accident analysis as a consequence of the lower allowable DG frequency.

The licensee performed analyses to demonstrate the DG loading capability to support plant shutdown during postulated events with the DG operating at the proposed more restrictive voltage and frequency limits. Based on its review of the information provided by the licensee, the NRC staff concludes that the licensee's analyses provide assurance that the proposed changes will test the capability of the DG to support plant shutdown during postulated worst-case accident loading, and that the changes in performance capabilities of valves and pumps will not adversely impact accident analyses. The NRC staff concludes that the licensee's evaluation regarding the DG loading under postulated scenarios are reasonable and acceptable, since the DG continues to be capable of supporting plant shutdown with the more restrictive limits. The staff also concludes that the licensee's proposal to demonstrate compliance with RG 1.9, Revision 3, with the exception of Regulatory Position C.1.3, is acceptable, as discussed above.

Based on its review of the licensee's proposed TS changes and the information provided by the licensee, the NRC staff determined that the proposed amendment, related to the allowable steady state operating voltage and frequency band of the DGs, is consistent with the recommendations of the NRC guidance in RG 1.9, Revision 3, and Regulatory Position C.2 of RG 1.9, Revision 2. The staff also concludes that the proposed TS change maintains compliance with requirements in GDCs 17 and 18 governing the design and operation of the onsite electrical power systems, and provides adequate assurance of system operability, since the DGs continue to be capable of supporting plant shutdown during postulated scenarios, with the more restrictive DG limits. Therefore, the NRC staff concludes that the proposed changes are consistent with the NRC regulations and the regulatory guidance and are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Kansas State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on June 12, 2012 (77 FR 35078). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: G. Matharu, EEEB
 R. Li, EEEB

Date: April 11, 2013

April 11, 2013

Mr. Matthew W. Sunseri
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - ISSUANCE OF AMENDMENT RE:
REVISE TECHNICAL SPECIFICATION 3.8.1, "AC SOURCES - OPERATING"
(TAC NO. ME7674)

Dear Mr. Sunseri:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 204 to Renewed Facility Operating License No. NPF-42 for the Wolf Creek Generating Station. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated November 30, 2011, as supplemented by letters dated August 16 and December 7, 2012, and March 3, 2013.

The amendment revises the TS 3.8.1, "AC [Alternating Current] Sources - Operating," Surveillance Requirements related to Diesel Generator test loads, voltage, and frequency. The proposed changes will correct non-conservative Diesel Generator load values that are currently under administrative controls.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,
/RA/

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures:

1. Amendment No. 204 to NPF-42
2. Safety Evaluation

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ADAMS Accession No. ML13077A147

**Previously concurred *via memo dated

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DSS/STSB/BC	NRR/DE/EEEB/BC(A)
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DATE	4/8/13	3/19/13	3/25/13	3/22/13
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NAME	MYoung	MMarkley	FLyon	
DATE	4/8/13	4/11/13	4/11/13	

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