WOLF CREEK
NUCLEAR OPERATING CORPORATION

Donna Jacobs
Vice President Operations and Plant Manager

December 13, 2004

WO 04-0050

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

Subject: Docket No. 50-482: Revision to Technical Specification (TS) 3.8.1, "AC Sources-Operating," Diesel Generator Start Time Surveillance Requirements

Gentlemen:

Pursuant to 10 CFR 50.90, Wolf Creek Nuclear Operating Corporation (WCNOC) hereby requests an amendment to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS).

This amendment application would revise Technical Specification (TS) Surveillance Requirements (SR) 3.8.1.7 (fast-start test), SR 3.8.1.12 (safety injection actuation signal test), SR 3.8.1.15 (hot restart test), and SR 3.8.1.20 (redundant unit test). This change would clarify the requirements for the start time test performed by these SRs. The current requirement is to have the diesel generators (DGs) within the voltage and frequency limits within 12 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 12 seconds and verified to be within the voltage and frequency limits as a steady state condition. The changes are consistent with Revision 2 of NRC-approved Industry/Technical Specification Task Force (TSTF) Standard TS Change Traveler, TSTF-163, "Minimum vs. Steady State Voltage and Frequency.

WCNOC is submitting this license amendment application in conjunction with several licensees as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Energy, AmerenUE, WCNOC, Pacific Gas and Electric Company, STP Nuclear Operating Company, and Arizona Public Service Company. WCNOC's Wolf Creek Generating Station is the lead plant for the proposed license amendment and other members of the STARS group can be expected to submit a license amendment request similar to this one. The other members license amendment requests, as applicable, will be submitted on a staggered basis.

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Attachments I through IV provide the evaluation, markup of technical specification pages, retyped technical specification pages, and proposed technical specification bases changes respectively, in support of this amendment request. Attachment V contains a list of commitments. Attachment IV is provided for information only. Final TS Bases pages will be implemented pursuant to TS 5.5.14, "Technical Specifications (TS) Bases Control Program."

This amendment application was reviewed by the Plant Safety Review Committee and the Nuclear Safety Review Committee. In accordance with 10 CFR 50.91, a copy of this amendment application, with attachments, is being provided to the designated Kansas State official.

WCNOC requests approval of the proposed amendment by August 2005. The changes proposed are not required to address an immediate safety concern. It is anticipated that the license amendment, as approved, will be effective upon issuance, to be implemented within 90 days from the date of issuance. Please contact me at (620) 364-4246 or Mr. Kevin Moles at (620) 364-4126 for any questions you may have regarding this application.

Very truly yours,

Donna Jacobs

DJ/rlg

Attachments: I - Evaluation
II - Markup of Technical Specification pages
III - Retyped Technical Specification pages
IV - Proposed TS Bases Changes (for information only)
V - List of Commitments

cc: V. L. Cooper (KDHE), w/a
J. N. Donohew (NRC), w/a
D. N. Graves (NRC), w/a
B. S. Mallett (NRC), w/a
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Donna Jacobs, of lawful age, being first duly sworn upon oath says that she is Vice President Operations and Plant Manager of Wolf Creek Nuclear Operating Corporation; that she has read the foregoing document and knows the contents thereof; that she 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 her knowledge, information and belief.

By _____
Donna Jacobs
Vice President Operations and Plant Manager

SUBSCRIBED and sworn to before me this 13 day of Dec., 2004.

_____
Notary Public

Expiration Date July 16, 2007

CAROLYN G. KEENE
NOTARY PUBLIC
MY APPT. EXP. 7/16/2007
STATE OF KANSAS

EVALUATION

1.0 DESCRIPTION

This amendment application would revise Technical Specification (TS) Surveillance Requirements (SR) 3.8.1.7 (fast-start test), SR 3.8.1.12 (safety injection actuation signal test), SR 3.8.1.15 (hot restart test), and SR 3.8.1.20 (redundant unit test). This change would clarify the requirements for the start time test performed by these SRs. The current requirement is to have the diesel generators (DGs) within the voltage and frequency limits within 12 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 12 seconds and verified to be within the voltage and frequency limits as a steady state condition. The changes are consistent with Revision 2 of NRC-approved Industry/Technical Specification Task Force (TSTF) Standard TS Change Traveler, TSTF-163, "Minimum vs. Steady State Voltage and Frequency.

2.0 PROPOSED CHANGE

- SR 3.8.1.7 (fast-start test) currently states:

  "Verify each DG starts from standby condition and achieves in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

  This SR would be revised as follows:

  "Verify each DG starts from standby condition and achieves:

  a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and

  b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

- SR 3.8.1.12 (safety injection actuation signal test) currently states, in part:

  "Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:

  a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and ≤ 4320 V;

  b. In ≤ 12 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz;"

This SR would be revised as follows:

"Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:

a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz;

b. Achieves steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz;"

- SR 3.8.1.15 (hot restart test) currently states:

"Verify each DG starts and achieves, in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

This SR would be revised as follows:

"Verify each DG starts and achieves:

a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and

b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

- SR 3.8.1.20 (redundant unit test) currently states:

"Verify when started simultaneously from standby condition, each DG achieves, in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

This SR would be revised as follows:

"Verify when started simultaneously from standby condition, each DG achieves:

a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and

b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

3.0 BACKGROUND

The onsite power system is generally divided into two load groups. Each load group consists of an arrangement of buses, transformers, switching equipment, and loads fed from a common power supply. The class 1E AC system loads are accordingly separated into two load groups which are powered from separate engineered safety feature (ESF) transformers. Each load group has power distributed by a 4.16-kV bus (NB01 or NB02), 480-V load centers, and 480-V motor control centers. Each load group is independently capable of safely bringing the plant to

a cold shutdown condition, as the Class 1E electrical power distribution system is designed to satisfy the single-failure criterion.

The onsite standby power system includes Class 1E AC and DC power supply capability for equipment used to achieve and maintain a cold shutdown of the plant and to mitigate the consequences of a design basis accident (DBA). With respect to Class 1E AC power, each of the two Class 1E load groups, at the 4.16-kV bus level, is capable of being powered from an independent DG (one per load group) which functions to provide power in the event of a loss of the preferred power source. Undervoltage relays are provided for each 4.16-kV bus to detect an undervoltage condition and automatically start the diesel generator in response to such a condition.

The onsite standby power sources are designed to permit inspection and testing of all important areas and features in accordance with 10 CFR 50, Appendix A, General Design Criteria (GDC) 18. Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9, Regulatory Guide 1.108, and Regulatory Guide 1.137, as described in the Updated Safety Analysis Report (USAR).

4.0 TECHNICAL ANALYSIS

The design function of the DGs is to provide AC power to required safety systems within a specified time period during any loss of offsite power event. The limiting design basis accident assumed is the Loss of Coolant Accident (LOCA) concurrent with a loss of offsite power. During a loss of offsite power event the DG starts and its output breaker closes on the de-energized bus to supply power. The DG, once loaded, will maintain steady state voltage and frequency.

Current technical specifications require the DG to start from standby conditions and achieve in $\leq$ 12 seconds a voltage between $\geq$ 3740 V and $\leq$ 4320 V and frequency $\geq$ 58.8 Hz and $\leq$ 61.2 Hz. Plant operators measure the time from the start of the engine until the analog meter reaches steady state. The DG output breaker closure circuit receives a closure signal as soon as the engine reaches the required speed, it does not wait for steady state conditions. A difference of 1.22 seconds has shown to occur between output breaker closure time and the operator time waiting for steady state condition. This has lead to the DG being declared inoperable and taken out of service when a problem did not actually exist.

Separation of the SR for the twelve seconds start into two requirements would more closely represent emergency operation. The first requirement would show that a DG is capable of accelerating to the breaker closure permissive and achieving minimum voltage within twelve seconds. The second requirement would verify proper governor and voltage regulator operation by establishing that a DG could maintain proper frequency and voltage control. Other SRs verify the capability of the DG to assume the required load within the acceptance criteria.

Replacing the existing surveillance requirement with two separate requirements that more closely follow the postulated accident scenario, could result in fewer test deficiencies without decreasing the confidence in the capability of the DG. There is no effect on the DG capability to supply the minimum voltage and frequency required within the 12 second acceptance or the steady state voltage and frequency required by the accident analysis. The DGs will continue to perform their intended safety function per the design and licensing basis of the plant. This

surveillance requirement has been incorporated into the Westinghouse Improved Standard Technical Specifications, NUREG-1431, through the approval of the Industry/Technical Specification Task Force Standard TS Change Traveler, TSTF-163, Revision 2.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

This amendment application would revise Technical Specification (TS) Surveillance Requirements (SR) 3.8.1.7 (fast-start test), SR 3.8.1.12 (safety injection actuation signal test), SR 3.8.1.15 (hot restart test), and SR 3.8.1.20 (redundant unit test). This change would clarify the requirements for the start time test performed by these SRs. The current requirement is to have the diesel generators (DGs) within the voltage and frequency limits within 12 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 12 seconds and verified to be within the voltage and frequency limits as a steady state condition.

WCNOC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

(1) Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change does not affect the DGs ability to supply the minimum voltage and frequency within 12 seconds or the steady state voltage and frequency. The DGs will continue to perform their intended safety function, in accordance with the safety analysis. The design of plant equipment is not being modified by the proposed change. In addition, the DGs and their associated emergency loads are accident mitigating features. As such, testing of the DGs themselves is not associated with any potential accident-initiating mechanism.

The proposed changes do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility or the manner in which the plant is operated and maintained. The proposed changes do not alter or prevent the ability of structures, .systems, and components (SSCs) from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The proposed changes do not affect the source term, containment isolation, or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated. Further, the proposed changes do not increase the types or amounts of radioactive effluent that may be released offsite, nor significantly increase individual or cumulative occupational public radiation exposures. The proposed changes are consistent with the safety analysis assumptions and resultant consequences.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Does the proposed change create the possibility of a new or different accident from any accident previously evaluated?

Response: No

The proposed change revises surveillance requirements to clarify what voltage and frequency limits are applicable during the transient and steady state portions of the DG start testing. No changes are being made in equipment hardware, operational philosophy, testing frequency, system operation, or how the DGs are physically tested.

The proposed changes do not result in a change in the manner in which the electrical distribution subsystems provide plant protection. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The proposed change does not directly affect these barriers, nor do they involve any significantly adverse impact on the DGs which serve to support these barriers in the event of an accident concurrent with a loss of offsite power.

The proposed change does not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation are determined. The safety analysis acceptance criteria are not impacted by these changes. The proposed changes will not result in plant operation in a configuration outside the design basis.

Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Based on the above, WCNOC concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50, Appendix A, GDC-17, "Electric power systems," requires that an onsite electric power system and an offsite electric power system be provided to permit functioning of structures, systems and components important to safety. GDC-17 further requires the onsite system is required to have sufficient independence, redundancy, and testability, to perform its safety function, assuming a single failure. The offsite power system is required to supply electric power with two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. This criterion further requires provisions to

minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

10 CFR 50, Appendix A, GDC-18, "Inspection and testing of electric power systems," requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

Regulatory Guide 1.9, Revision 3, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," regulatory position C.2 provides recommended surveillance tests for demonstrating OPERABILITY of the DGs.

The proposed change does not violate any requirement or recommended method for assuring the OPERABILITY of the DG and maintaining the plant design and licensing basis. The change verifies the required parameters are within prescribed limits and independently verifies that the time assumed in the accident analysis is satisfied. This testing is performed at the stipulated frequencies to assure continued OPERABILITY of the DG.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) 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.

6.0 ENVIRONMENTAL CONSIDERATION

WCNOC has evaluated the proposed amendment for environmental considerations. The review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, and would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendments meet the eligibility criterion for categorical exclusion set for in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. Industry/Technical Specification Task Force Standard TS Change Traveler, TSTF-163, Revision 2, "Minimum vs. Steady State Voltage and Frequency."

A similar change was approved for the Virgil C. Summer Nuclear Station, Unit No. 1, in Amendment No. 164, dated September 26, 2003. In the issuance of this amendment, changes in addition to the voltage and frequency requirements were approved. Additionally, a similar change was approved for the Comanche Peak Steam Electric Station, Units 1 and 2, in Amendment No. 66, dated August 3, 1999.

ATTACHMENT II
MARKUP OF TECHNICAL SPECIFICATION PAGES

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 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 ≥ 5580 kW and ≤ 6201 kW.	18 months

(continued)

a. In ≤12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and

b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 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. ----------	
	Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:	18 months
	a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and ~~≤ 4320 V~~;	frequency ≥ 58.8 Hz
	b. ~~In ≤ 12 seconds after auto-start and during tests,~~ achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz;	steady state voltage ≥ 3740 V and ≤ 4320 V, and
	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.	

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(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. The DG may be loaded to ≥ 5580 kW and ≤ 6201 kW for the entire test period, if auto-connected loads are less than 6201 kW. ---------- Verify each DG operating at a power factor ≤ 0.9 and ≥ 0.8 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 6600 kW and ≤ 6821 kW; and b. For the remaining hours of the test loaded ≥ 5580 kW and ≤ 6201 kW.	18 months
SR 3.8.1.15	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 5580 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. ---------- Verify each DG starts and achieves, in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ----------	
	Verify when started simultaneously from standby condition, each DG achieves, in ≤ 12 seconds, voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years
SR 3.8.1.21	----------NOTE---------- The continuity check may be excluded from the actuation logic test. ----------	
	Perform ACTUATION LOGIC TEST for each train of the load shedder and emergency load sequencer.	31 days on a STAGGERED TEST BASIS

achieves:

a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and

b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

ATTACHMENT III
RETYPED TECHNICAL SPECIFICATION PAGES

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves: a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 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 ≥ 5580 kW and ≤ 6201 kW.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 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. ----------	
	Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3740 V and ≤ 4320V, and frequency ≥ 58.8 Hz and ≤ 61.2 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.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. The DG may be loaded to ≥ 5580 kW and ≤ 6201 kW for the entire test period, if auto-connected loads are less than 6201 kW. ---------- Verify each DG operating at a power factor ≤ 0.9 and ≥ 0.8 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 6600 kW and ≤ 6821 kW; and b. For the remaining hours of the test loaded ≥ 5580 kW and ≤ 6201 kW.	18 months
SR 3.8.1.15	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 5580 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. ---------- Verify each DG starts and achieves: a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify when started simultaneously from standby condition, each DG achieves: a. In ≤ 12 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3740 V and ≤ 4320 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years
SR 3.8.1.21	----------NOTE---------- The continuity check may be excluded from the actuation logic test. ---------- Perform ACTUATION LOGIC TEST for each train of the load shedder and emergency load sequencer.	31 days on a STAGGERED TEST BASIS

ATTACHMENT IV
PROPOSED TS BASES CHANGES (for information only)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 (continued)

independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 2 for SR 3.8.1.2) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.7 testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil temperature are being maintained consistent with manufacturer recommendations.

In order to reduce stress and wear on diesel engines, the manufacturer recommends a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 3, which is only applicable when such modified start procedures are recommended by the manufacturer.

SR 3.8.1.7 requires that, at a 184 day Frequency, the DG starts from standby conditions using one of the following signals and achieves required voltage and frequency within 12 seconds:

, and subsequently achieves steady state required voltage and frequency ranges

a. Manual, or
b. Simulated loss of offsite power by itself, or
c. Safety Injection test signal.

The 12 second start requirement supports the assumptions of the design basis LOCA analysis in the USAR, Chapter 15 (Ref. 5).

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.7 (continued)

The 12 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure as described above is used. If a modified start is not used, the 12 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 12 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.

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The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads and aligned to provide standby power to the associated emergency buses. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source. The DG shall be operated continuously for the 60 minute time period per the guidance of Regulatory Guide 1.9, Position 2.2.2 (Ref. 3).

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while the 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus loads, do not invalidate this test. Momentary power

INSERT B-1

A minimum voltage and frequency is specified rather than an upper and lower limit because DG acceleration is likely to overshoot the upper limit initially and then go through several oscillations prior to a voltage and frequency within the stated upper and lower bounds. The time to reach steady state could exceed 12 seconds, and result in a failure of the SR. However, on an actual emergency start, the DG would reach minimum voltage and frequency in ≤ 12 seconds at which time it would be loaded. Application of the load will dampen the oscillations. Therefore, only specifying the minimum voltage and frequency (at which the EDG can accept load) demonstrates the necessary capability of the DG to satisfy the requirements without including a potential for failing the Surveillance.

While reaching minimum voltage and frequency (at which the DG can accept load) in ≤ 12 seconds is an immediate test of OPERABILITY, the ability of the governor and voltage regulator to achieve steady state operation, and the time to do so are important indicators of continued OPERABILITY. Therefore, the time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance. This additional monitoring and trending is part of the TR 5.5.2, "Emergency Diesel Generator Reliability Program" and is not considered part of the SR.

LIST OF COMMITMENTS

The following table identifies those actions committed to by WCNOC in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Kevin Moles at (620) 364-4126.

COMMITMENT	Due Date/Event
The proposed changes to the WCGS Technical Specifications will be implemented within 90 days of NRC approval.	Within 90 days of NRC approval