

WOLF CREEK NUCLEAR OPERATING CORPORATION

Cleveland Reasoner
Site Vice President

September 23, 2015
WO 15-0051

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

Subject: Docket No. 50-482: License Amendment Request to Revise Technical Specification 3.8.1, "AC Sources – Operating," Surveillance Requirements 3.8.1.10 and 3.8.1.14

Gentlemen:

Pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Wolf Creek Nuclear Operating Corporation (WCNOC) hereby requests an amendment to Renewed Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS). The proposed amendment revises the diesel generator (DG) full load rejection test and endurance and margin test specified by Technical Specification (TS) 3.8.1, "AC Sources – Operating," Surveillance Requirements (SR) 3.8.1.10 and 3.8.1.14, respectively. The proposed change adds a new Note to SR 3.8.1.10 and SR 3.8.1.14 consistent with Technical Specification Task Force (TSTF) traveler TSTF-276-A, Revision 2, "Revise DG full load rejection test." The Note allows the full load rejection test and endurance and margin test be performed at the specified power factor with clarifications addressing situations when the power factor cannot be achieved.

Attachment I provides a description of the proposed change and the supporting assessment of applicability and plant-specific variations. Attachment II provides the existing TS pages marked up to show the proposed change. Attachment III provides revised (clean) TS pages. Attachment IV provides the existing TS Bases pages marked up to show the proposed changes and is for information only. Final TS Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specification (TS) Bases Control Program," at the time the amendment is implemented.

It has been determined that this amendment application does not involve a significant hazard consideration as determined per 10 CFR 50.92, "Issuance of amendment." Pursuant to 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," Section (b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

A001
NRR

The Plant Safety Review Committee reviewed this amendment application. In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," 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 September 24, 2016 allowing implementation during Refueling Outage 21. It is anticipated that the license amendment, as approved, will be effective upon issuance and will be implemented within 90 days of Nuclear Regulatory Commission (NRC) issuance.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4171, or Cynthia R. Hafenstine at (620) 364-4204.

Sincerely,



Cleveland Reasoner

COR/rit

Attachments: I Evaluation
II Proposed Technical Specification Changes (Markup)
III Revised Technical Specification Pages
IV Proposed Technical Specification Bases Changes (For Information Only)

cc: T. A. Conley (KDHE), w/a
M. L. Dapas (NRC), w/a
C. F. Lyon (NRC), w/a
N. H. Taylor (NRC), w/a
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Cleveland Reasoner, of lawful age, being first duly sworn upon oath says that he is Site Vice President 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 *Cleveland Reasoner*
Cleveland Reasoner
Site Vice President

SUBSCRIBED and sworn to before me this 23rd day of September, 2015.



Rhonda L. Tiemeyer
Notary Public

Expiration Date January 11, 2018

EVALUATION

- 1.0 SUMMARY DESCRIPTION
- 2.0 DETAILED DESCRIPTION
- 3.0 TECHNICAL EVALUATION
- 4.0 REGULATORY EVALUATION
 - 4.1 Applicable Regulatory Requirements/Criteria
 - 4.2 Precedent [optional]
 - 4.3 No Significant Hazards Consideration
 - 4.4 Conclusions
- 5.0 ENVIRONMENTAL CONSIDERATION
- 6.0 REFERENCES

EVALUATION

1.0 SUMMARY DESCRIPTION

The proposed amendment revises the diesel generator (DG) full load rejection test and endurance and margin test specified by Technical Specification (TS) 3.8.1, "AC Sources – Operating," Surveillance Requirements (SR) 3.8.1.10 and 3.8.1.14, respectively. The proposed change adds a new Note to SR 3.8.1.10 and SR 3.8.1.14 consistent with Technical Specification Task Force (TSTF) traveler TSTF-276-A, Revision 2, "Revise DG full load rejection test," (Reference 1). The Note allows SR 3.8.1.10 and SR 3.8.1.14 be performed at the specified power factor with clarifications addressing situations when the power factor cannot be achieved.

2.0 DETAILED DESCRIPTION

The following revisions are proposed for the Wolf Creek Generating Station (WCGS) TS in accordance with TSTF-276-A, Revision 2.

- 2.1 SR 3.8.1.10 (full load rejection test) is revised by deleting the phrase "operating at a power factor ≤ 0.9 and ≥ 0.8 " from the surveillance statement. A new Note is added that states:

If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

- 2.2 SR 3.8.1.14 (endurance and margin test) is revised by deleting the phrase "operating at a power factor ≤ 0.9 and ≥ 0.8 " from the surveillance statement. The existing Note is numbered as Note 1 and "NOTE" is revised to "NOTES" with the addition on new Note 2. New Note 2 states:

If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

During Refueling Outage 20 (Spring 2015), when performing SR 3.8.1.10, the test was suspended and rescheduled due to the inability to maintain the power factor within the specified limit while maintaining engineered safety feature (ESF) bus voltages within specified administrative limits due to high voltage concerns.

Changes to the affected TS Bases pages are provided in Attachment IV for information and will be incorporated in accordance with TS 5.5.14, "Technical Specifications (TS) Bases Control Program," following issuance of the amendment.

3.0 TECHNICAL EVALUATION

3.1 Description of Class 1E Alternating Current (AC) Electric Power Distribution System and Diesel Generators

WCGS TS 3.8.1, "AC Sources – Operating," specifies requirements for the Class 1E AC Electrical Power Distribution System. The unit Class 1E AC Electrical Power Distribution System consist of the offsite power sources (preferred power sources, normal and alternate from the redundant Engineered Safety Feature (ESF) transformers), and the onsite standby power sources (Train A and Train B DGs). As required by 10 CFR 50, Appendix A, General Design Criterion (GDC) 17, the design of the AC electric power system provides independence and redundancy to ensure an available source of power to the ESF systems.

Offsite power is supplied to the unit switchyard from the offsite transmission network by three transmission lines. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System, separate and independent DGs for each train, and redundant load shedder and emergency load sequencer for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence or a postulated design basis accident.

The onsite Class 1E AC Electrical Power Distribution System is divided into redundant load groups (trains) so that the loss of any one group does not prevent the minimum safety functions from being performed. Each train has connections to its preferred offsite power source and a single DG.

The standby power supply for each safety related load group consists of one DG complete with its accessories and fuel storage and transfer systems. It is capable of supplying essential loads necessary to reliably and safely shut down and isolate the reactor. Each DG is rated at 6,201 kW for continuous operation. Additional ratings are 6,635 kW for 2,000 hours, 6,821 kW for 7 days, and 7,441 kW for 30 minutes. The DG 2-hour rating is equal to the 7-day rating. Each DG is connected exclusively to a single 4.16-kV engineered safety feature 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.

Figure 1 (below) provides a simplified diagram of the transmission network, Offsite Electric Power System, and onsite Class 1E AC Electrical Power Distribution System (Onsite Electric Power System).

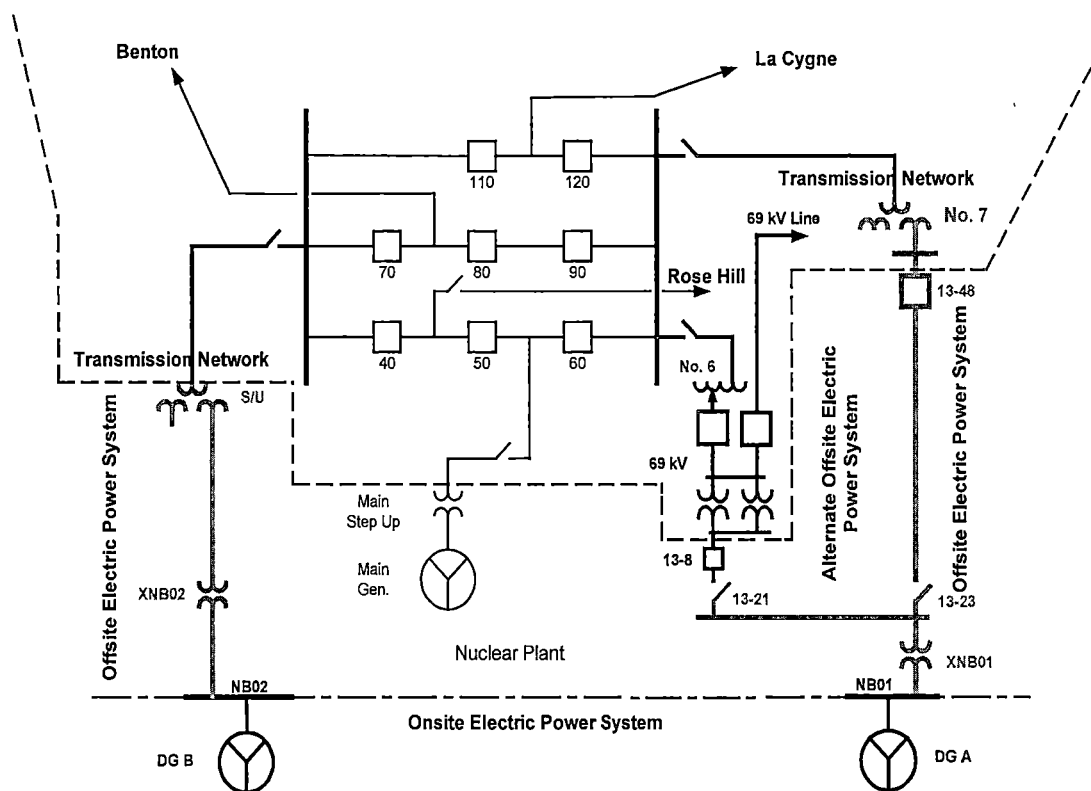


FIGURE 1

3.2 Evaluation

When the DG is not paralleled to the grid, the power factor is determined by plant load and cannot be adjusted. Therefore, power factor requirements are applicable only when the surveillance test is performed with the DG paralleled to the grid. This change provides the allowance to proceed with the surveillance test even if the specified power factor is not achieved. This change adds detail and is intended to improve clarity and ensure requirements are fully understood and consistently applied.

The proposed changes to SRs 3.8.1.10 and 3.8.1.14 to require that these SRs be performed at a power factor of ≤ 0.9 if performed with the DG synchronized to the grid unless grid conditions do not permit are consistent with NRC approved traveler TSTF-276-A, Revision 2. The proposed changes require the DG to be tested under load conditions that are as close to design basis conditions as possible. A power factor of ≤ 0.9 is representative of the actual inductive loading a DG would see under design basis accident conditions. This power factor should normally be able to be achieved when performing this surveillance test at power and synchronized with offsite power. Under certain conditions, however, the proposed change allows the surveillance to be conducted at a power factor other than ≤ 0.9 and ≥ 0.8 . These conditions can occur when grid voltage is higher than typical; the additional field excitation current required to achieve a power factor ≤ 0.9 results in ESF bus voltage exceeding the maximum steady state voltage limit. Increased grid voltage typically occurs when the plant is shutdown and the loads on the associated ESF transformer are too light to lower the voltage sufficiently to achieve a 0.9 power factor. Under these conditions, the power factor should be maintained as close as practicable to a 0.9 power factor while still maintaining acceptable

voltage limits on the ESF busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding DG excitation limits.

3.3 Optional Changes and Variations

TSTF-276-A, Revision 2, also included revising Note 2 to SR 3.8.1.9 of NUREG-1431 to allow the SR be performed at the specified power factor with clarifications addressing situations when the power factor cannot be achieved. In the WCGS TS, SR 3.8.1.9 is not used. During the conversion to the improved TS, SR 3.8.1.9 was not adopted as the equivalent current TS surveillance requirement was eliminated via Amendment No. 101 (Reference 2).

4.0 REGULATORY ANALYSIS

4.1 Applicable Regulatory Requirements/Criteria

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include Technical Specifications (TSs) as part of the operating license. The TSs ensure the operational capability of structures, systems, and components that are required to protect the health and safety of the public. The U.S. Nuclear Regulatory Commission's (NRC's) requirements related to the content of the TSs are contained in Section 50.36 of the Title 10 of the *Code of Federal Regulations* (10 CFR 50.36) which requires that the TSs include items in the following specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements per 10 CFR 50.36(c)(3); (4) design features; and (5) administrative controls.

General Design Criteria (GDC) 17, "Electric power systems," of 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants," 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 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 unit, the transmission network, or the onsite electric power supplies.

GDC 18, "Inspection and Testing of Electric Power Systems," requires that electric power systems important to safety be designed to permit appropriate periodic inspection and testing to demonstrate operability and functional performance.

The proposed change does not violate any requirement for assuring the OPERABILITY of the diesel generator (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. The evaluations documented above confirm that WCNOG will continue to comply with all applicable regulatory requirements.

4.2 Precedent

The proposed changes to SR 3.8.1.10 and SR 3.8.1.14 in this license amendment request are similar to the Cooper Nuclear Station (CNS) request submitted February 25, 2010 (Reference 3). The NRC approved the requested changes in Amendment No. 237 to Renewed Facility Operating License No. DPR-46 on February 28, 2011 (Reference 4). The differences in the CNS request and this license amendment request is that WCNOG is not requesting a change to the current power factor value and CNS does not have a full load rejection surveillance requirement.

4.3 No Significant Hazards Consideration Determination

WCNOG is proposing an amendment to revise the DG full load rejection test and endurance and margin test specified by TS 3.8.1, "AC Sources – Operating," Surveillance Requirements (SR) 3.8.1.10 and 3.8.1.14, respectively. The proposed change adds new Notes to SR 3.8.1.10 and SR 3.8.1.14 consistent with Technical Specification Task Force (TSTF) traveler TSTF-276-A, Revision 2, "Revise DG full load rejection test." The Note allows SR 3.8.1.10 and SR 3.8.1.14 be performed at the specified power factor with clarifications addressing situations when the power factor cannot be achieved.

WCNOG has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) 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

Performing a SR that tests the DG is not a precursor of any accident previously evaluated. These changes only affect surveillance testing of mitigative equipment and, therefore, do not have an impact on the probability of an accident previously evaluated.

Relaxing the requirement to maintain PF when paralleled to offsite power does not affect performance of the DG under accident conditions. The performance of the surveillances ensures that mitigative equipment is capable of performing its intended function,

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 kind of accident from any accident previously evaluated?

Response: No

No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed changes. The systems, structures, and components previously required for the mitigation of a transient remain capable of fulfilling their intended design functions. The proposed changes have no adverse effects on a safety-related system or component and do not challenge the performance or integrity of safety related systems. As such, it does not introduce a mechanism for initiating a new or different accident than those described in the Updated Safety Analysis Report.

Therefore, the proposed change does 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 proposed changes do not involve a significant reduction in a margin of safety. The margin of safety is related to the ability of the fission product barriers to perform their design safety functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and containment. The proposed changes to the testing requirements for the plant DGs do not affect the OPERABILITY requirements for the DGs, as verification of such OPERABILITY will continue to be performed as required. Continued verification of OPERABILITY supports the capability of the DGs to perform their required function of providing emergency power to plant equipment that supports or constitutes the fission product barriers. Only one DG is tested at a time and the remaining DG will be available to safely shut down the plant or respond to a design basis accident, if required. Consequently, the performance of these fission product barriers will not be impacted by implementation of the proposed amendment.

In addition, the proposed changes involve no changes to safety setpoints or limits established or assumed by the accident analysis. On this and the above basis, no safety margins will be impacted.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, WCNOG concludes that the proposed change 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.

4.4 Conclusions

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.

4.0 ENVIRONMENTAL EVALUATION

The proposed change 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, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a 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 change meets the eligibility criterion for categorical exclusion set forth 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 change.

5.0 REFERENCES

1. Technical Specifications Task Force Traveler (TSTF) TSTF-276-A, Revision 2, "Revise DG full load rejection test."
2. NRC letter from J. C. Stone, USNRC, to N. S. Carns, WCNOG, "Wolf Creek Generating Station - Amendment No. 101 to Facility Operating License No. NPF-42 (TAC NO. M89995), August 9, 1996. ADAMS Accession No. ML022040294
3. Letter NLS2010006 from S. B. Minahan, NPPD, to USNRC, "License Amendment Request to Correct Power Factor Limit and to Incorporate a Generic Revision in Technical Specification Surveillance Requirement 3.8.1.9," February 25, 2010. ADAMS Accession No. ML100610521.
4. NRC letter from L. E. Wilkins, USNRC, to B. J. O'Grady, NPPD, "Cooper Nuclear Station – Issuance of Amendment RE: Correction to Power Factor Limit and Incorporation of a Generic Revision in Technical Specification Surveillance Requirement 3.8.1.9 (TAC NO. ME3441), February 28, 2011. ADAMS Accession No. ML110340160.

ATTACHMENT II
PROPOSED TECHNICAL SPECIFICATION CHANGES (MARKUP)

SURVEILLANCE REQUIREMENTS (continued)



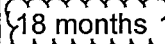
SURVEILLANCE		FREQUENCY
SR 3.8.1.7	<p style="text-align: center;">-----NOTE-----</p> <p>All DG starts may be preceded by an engine prelube period.</p> <hr/> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. In ≤ 12 seconds, voltage ≥ 3950 V and frequency ≥ 59.4 Hz; and</p> <p>b. Steady state voltage ≥ 3950 V and ≤ 4320 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.</p>	184 days
SR 3.8.1.8	Not Used.	
SR 3.8.1.9	Not Used.	
SR 3.8.1.10	<p>Verify each DG operating at a power factor ≤ 0.9 and ≥ 0.8 does not trip and voltage is maintained ≤ 4992 V and frequency is maintained ≤ 65.4 Hz during and following a load rejection of ≥ 5650 kW and ≤ 6201 kW.</p>	18 months

(continued)

-----NOTE-----

If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14  →</p> <p style="text-align: center;">-----NOTE----- </p> <p>Momentary transients outside the load and power factor ranges do not invalidate this test.</p> <p>-----</p> <p>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 style="text-align: center;"></p>
<p>SR 3.8.1.15</p> <p style="text-align: center;">-----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>-----</p> <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 style="text-align: center;">18 months</p>

2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. (continued)

ATTACHMENT III
REVISED TECHNICAL SPECIFICATION PAGES

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	<p style="text-align: center;">-----NOTE-----</p> <p>All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts from standby condition and 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>	184 days
SR 3.8.1.8	Not Used.	
SR 3.8.1.9	Not Used.	
SR 3.8.1.10	<p style="text-align: center;">-----NOTE-----</p> <p>If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.</p> <p>-----</p> <p>Verify each DG does not trip and voltage is maintained ≤ 4992 V and frequency is maintained ≤ 65.4 Hz during and following a load rejection of ≥ 5650 kW and ≤ 6201 kW.</p>	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. <p style="text-align: center;">-----</p> <p>Verify each DG operates for ≥ 24 hours:</p> <ol 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</p> <p style="text-align: center;">-----NOTES-----</p> <ol 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 style="text-align: center;">-----</p> <p>Verify each DG starts and achieves:</p> <ol 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)

ATTACHMENT IV
PROPOSED TS BASES CHANGES (FOR INFORMATION ONLY)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Not Used.

SR 3.8.1.9

Not Used.

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

~~In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a power factor ≥ 0.8 and ≤ 0.9 . This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.~~

The DG is considered OPERABLE while it is paralleled to the offsite power source, consistent with the Technical Evaluation (i.e., Section 4.0) contained in the Safety Evaluation provided for Amendment No. 154 (Reference 17). This includes consideration of the potential challenges to the DG, its response to a LOCA and/or a loss of offsite power, and appropriate operator actions to restore the DG.

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.10 (continued)

The 18 month Frequency is consistent with the recommendation of Regulatory Guide 1.9, Rev. 3 (Ref. 3), and is intended to be consistent with expected fuel cycle lengths.

INSERT B 3.8.1-24

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as-designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

The DG autostart time of 12 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.9, Rev. 3 (Ref. 3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing,

INSERT B 3.8.1-24

This SR has been modified by a Note. The Note ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.9 . This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, the Note allows the Surveillance to be conducted at a power factor other than ≤ 0.9 . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding the DG excitation limits.

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.13 (continued)

mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 18 month Frequency is based on engineering judgment and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.14

Regulatory Guide 1.9, Rev. 3, (Ref. 3), requires demonstration once per 18 months that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, ≥ 2 hours of which is at a load not greater than 110% of the continuous duty rating (short-time rated load) and the remainder of the time at a load equivalent to the continuous duty rating (continuous rated load) of the DG. The short-time rated load and the continuous rated load may be applied in either order. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

~~In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor of ≥ 0.8 and ≤ 0.9 at a voltage of 4160 ± 160 - 210 volts and a frequency of 60 ± 0.6 Hz. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. 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.~~

Administrative controls for performing this SR in MODES 1 or 2, with the DG connected to an offsite circuit, ensure or require that:

- a. Weather conditions are conducive for performing this SR.
 - b. The offsite power supply and switchyard conditions are conducive for performing this SR, which includes ensuring that switchyard access is restricted and no elective maintenance within the switchyard is performed.
 - c. No equipment or systems assumed to be available for supporting the performance of the SR are removed from service.
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BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.14 (continued)

The DG is considered OPERABLE during performance of the Surveillance, i.e., while it is paralleled to the offsite power source, consistent with the Technical Evaluation (i.e., Section 4.0) contained in the Safety Evaluation provided for Amendment No. 154 (Reference 17). This includes consideration of the potential challenges to the DG, its response to a LOCA and/or a loss of offsite power, and appropriate operator actions to restore the DG.

The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.9, Rev. 3 (Ref. 3), and is intended to be consistent with expected fuel cycle lengths.

two Notes.

Note 1

This Surveillance is modified by a Note. The Note states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients outside the power factor range will not invalidate the test.

INSERT B 3.8.1-28

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 12 seconds. The 12 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.9, Rev. 3 (Ref. 3).

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least 2 hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.

INSERT B 3.8.1-28

Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ 0.9 . This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ 0.9 . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding the DG excitation limits.