

10 CFR 50.90

RS-08-071

June 26, 2008

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: License Amendment Request to Revise Emergency Diesel Generator Start Time Surveillance Requirements

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) requests an amendment to Facility Operating License Nos. NPF-72 and NPF-77 for Braidwood Station, Units 1 and 2, and Facility Operating License Nos. NPF-37 and NPF-66 for Byron Station, Units 1 and 2. The proposed change revises Technical Specifications (TS) Surveillance Requirements (SRs) 3.8.1.7, 3.8.1.12, 3.8.1.15, and 3.8.1.20. This change clarifies 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 10 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 10 seconds and verified to be within the voltage and frequency limits at steady state conditions. The change is 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." TSTF-163, Revision 2 was approved by the NRC on April 22, 1998.

This request is subdivided as follows.

- Attachment 1 provides a description and evaluation of the proposed change.
- Attachment 2 provides a markup of the affected TS pages for Braidwood Station.
- Attachment 3 provides a markup of the affected TS pages for Byron Station.

- Attachments 4 and 5 provide a markup of the affected TS Bases page for Braidwood Station and Byron Station, respectively. The TS Bases pages are provided for information only and do not require NRC approval.

The proposed change has been reviewed by the Plant Operations Review Committees at both of the stations and approved by the Nuclear Safety Review Board in accordance with the requirements of the EGC Quality Assurance Program.

EGC requests approval of the proposed change by June 26, 2009. Once approved, the amendment will be implemented within 60 days. This implementation period will provide adequate time for the affected station documents to be revised using the appropriate change control mechanisms.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), EGC is notifying the State of Illinois of this application for license amendment by transmitting a copy of this letter and its attachments to the designated State Official.

There are no regulatory commitments contained in this letter. If you have any questions concerning this letter, please contact Ms. Tricia Mattson at (630) 657-2813.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 26th day of June 2008.

Respectfully,



Patrick R. Simpson
Manager - Licensing

Attachments:

1. Evaluation of Proposed Change
2. Markup of Proposed Technical Specifications Pages for Braidwood Station
3. Markup of Proposed Technical Specifications Pages for Byron Station
4. Markup of Proposed Technical Specifications Bases Page for Braidwood Station
5. Markup of Proposed Technical Specifications Bases Page for Byron Station

ATTACHMENT 1
Evaluation of Proposed Change

1.0 DESCRIPTION

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1.0 DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) requests an amendment to the Technical Specifications (TS) of Facility Operating License Nos. NPF-72, NPF-77, NPF 37, and NPF-66 for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2, respectively.

The proposed change revises TS Surveillance Requirements (SRs) 3.8.1.7, 3.8.1.12, 3.8.1.15, and 3.8.1.20. This change clarifies 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 less than or equal to 10 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 10 seconds and verified to be within the voltage and frequency limits at steady state conditions.

The change is 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," (Reference 1). TSTF-163, Revision 2 was approved by the NRC on April 22, 1998.

2.0 PROPOSED CHANGE

The proposed change revises SR 3.8.1.7 to read:

"Verify each DG starts from normal standby condition and achieves:

- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and
- b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

The proposed change revises SR 3.8.1.12 to read:

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

- a. In ≤ 10 seconds achieves voltage ≥ 3950 V and frequency ≥ 58.8 Hz;
- b. Achieves steady state voltage ≥ 3950 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and
- c. Operates for ≥ 5 minutes."

The proposed change revises SR 3.8.1.15 to read:

"...Verify each DG starts and achieves:

- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and

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- b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

The proposed change revises SR 3.8.1.20 to read:

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

- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and
- b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz."

3.0 BACKGROUND

The onsite Class 1E AC Distribution System is divided into redundant load groups in order that the loss of any one group does not prevent the minimum safety functions for the design basis accident (DBA) from being performed. Each Engineered Safety Feature (ESF) division has connections to two offsite power sources and a single DG. The DGs provide an independent emergency source of power in the event of a complete loss of offsite power. The DG supplies all of the electrical loads, which are required for reactor safe shutdown either with or without a loss-of-coolant accident (LOCA).

Each unit of the Byron and Braidwood Stations has two emergency DGs that provide power to emergency 4.16-kV buses. Each DG unit consists of a diesel engine, an electrical generator and fuel oil, lubricating oil, combustion air, cooling water and diesel-generator room ventilation support systems that must all be functional when a diesel start signal is received. Once the diesel start signal is received, the DG is designed to attain rated voltage and frequency and be ready to accept load within 10 seconds.

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) 17 and 18. Periodic component tests are supplemented by extensive functional tests during refueling outages. The SRs for demonstrating the operability of the DGs are in accordance with the recommendations of Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Revision 3, and Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, as addressed in the Updated Final Safety Analysis Report (UFSAR).

Exception has been taken from Regulatory Guide 1.9 against use of the term "standby conditions" to denote "normal standby conditions" as described in Appendix A of the UFSAR. This is reflected in the current wording of SR 3.8.1.7 and its associated TS Bases. The plant specific DG design for Byron and Braidwood provides for a continuous prelube and keep warm system, which when operating constitutes the "standby status" of the DG. The term "standby condition" is interpreted as any conditional state of the DG in which the DG is considered operable. More specifically, standby conditions for a DG refer to a condition whereby the diesel engine lube oil is being continuously circulated and engine jacket water and lube oil temperatures are consistent with manufacturer's recommended operating range (i.e., low lube oil and jacket water temperature alarm settings to the high lube oil and jacket water temperature

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alarm settings). The term "normal standby condition" defines a conditional state of the DG in which lube oil and jacket water temperatures are within the prescribed temperature bands of these subsystems when the DG has been at rest for an extended period of time with the prelube oil and jacket water circulating systems operational.

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 DBA assumed is a 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. In the initial part of the DG SR testing, the test is performed with the DG breaker open.

The current TS requirement is to have the DGs within the voltage and frequency limits within 10 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 10 seconds and verified to be within the voltage and frequency limits at steady state conditions. The purpose of the DG surveillance test is to confirm the capability of each DG to start and achieve the minimum conditions required to accept load in the accident analysis. The way the current SRs are worded, however, requires for steady state voltage and frequency to be achieved within the given time range. This may lead to the DG being declared inoperable and taken out of service when a problem does not actually exist. When a test is performed that does not result in tying the DG to the bus, a momentary voltage or frequency overshoot or undershoot can occur because no load is being tied to the DG. Loading tends to minimize the overshoot or undershoot. The overshoot or undershoot could be such that the voltage or frequency is momentarily outside the specified limits at the time limit of 10 seconds. This condition is not uncommon due to the nature of the DG governor as it seeks to control DG speed during that fast start when the DG is unloaded. The overshoot or undershoot condition does not affect the permissive for closure of the DG output breakers, since the permissive is dependent on minimum conditions being achieved, regardless of any overshoot or subsequent momentary undershoot. Thus, this condition is not indicative of an inoperable DG, provided that steady state voltage and frequency are subsequently achieved.

The adjustment of the DG governor is the primary consideration as to whether the DG can satisfy the SR. A balance exists between the steady state condition of the DG and the speed at which it accelerates to rated nominal values. Under certain conditions, the DG may not attain steady state voltage and frequency within 10 seconds. In addition, tuning the DG governor system to meet steady state conditions pushes the controls to the edge of instability. By eliminating the upper voltage and frequency limits, the governor can be set up to provide a more stable power source and meet breaker closure requirements, load rejection tests and load acceptance requirements. In addition, consistent with TSTF-163, Revision 2, the Bases will be revised to require periodically monitoring and evaluating the trend associated with the time for the DG to reach steady state operation, unless the modified start time is employed, to identify degradation of governor and voltage regulator performance. Therefore, additional monitoring does not need to be added as a regulatory commitment as recommended within TSTF-163.

The limits of the voltage and frequency tolerance specified in the current TS are more representative of steady state conditions than transient conditions. The limits of the voltage and frequency in this submittal are consistent with the design considerations of Regulatory

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Guide 1.9, Revision 3. The steady state frequency limits are not being changed. There is no effect on the DG capability to supply the minimum voltage and frequency required within the required time or to achieve the steady state voltage and frequency assumed in the accident analysis. The proposed LAR does not invalidate either the assumptions or the conclusions of the associated design calculations. Therefore, changing the requirement for each DG to achieve a steady state voltage and frequency within the time limit has no impact on safety.

These changes to SRs have been approved by the NRC and incorporated in NUREG-1431, "Standard Technical Specifications Westinghouse Plants," (Reference 2) through the approval of TSTF-163, Revision 2 (Reference 1).

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

The proposed change revises Technical Specifications (TS) Surveillance Requirements (SRs) 3.8.1.7, 3.8.1.12, 3.8.1.15, and 3.8.1.20. This change clarifies 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 10 seconds after the start signal. The proposed change is to have the DG above the minimum voltage and frequency within 10 seconds and verified to be within the voltage and frequency limits at steady state conditions.

According to 10 CFR 50.92, "Issuance of amendment," paragraph (c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

In support of this determination, an evaluation of each of the three criteria set forth in 10 CFR 50.92 is provided below regarding the proposed license amendment.

1. Does the proposed change involve a significant increase in the probability or consequences of an 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.

The revised requirements do not affect the function of the DGs. The DGs and their associated emergency loads are accident mitigating features whose failure

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modes could not act as accident initiators or precursors. The proposed change does not impact the physical configuration or function of plant structures, systems, or components (SSCs) or the manner in which SSCs are operated, maintained, modified, or inspected. The proposed change does not impact the initiators or assumptions of analyzed events, nor does it impact the mitigation of accidents or transient events.

The proposed change does not affect the design of the DGs, the operational characteristics of the DGs, the interfaces between the DGs and other plant systems, the function, or the reliability of the DGs. Thus, the DGs will be capable of performing their accident mitigation function and there is no impact to the radiological consequences of any accident analysis.

Therefore, the proposed change does 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

The proposed change revises surveillance requirements to clarify what voltage and frequency limits are applicable during the transient and steady state portions of DG testing.

The function of the DGs is not altered by this change. The proposed change does not involve a modification to the physical configuration of the plant (i.e., no new equipment will be installed) or change in the methods governing normal plant operation. The proposed change will not introduce a new accident initiator, accident precursor, or malfunction mechanism.

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 change revises surveillance requirements to clarify what voltage and frequency limits are applicable during the transient and steady state portions of DG testing.

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 does it involve any adverse impact on the DGs which

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serve to support these barriers in the event of an accident concurrent with a loss of offsite power. The proposed change doesn't affect the DG's capabilities to provide emergency power to plant equipment that mitigate the consequences of the accident.

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

Based upon the above, Exelon Generation Company, LLC (EGC) 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

The proposed change is consistent with TSTF-163, Revision 2. TSTF-163, Revision 2 (Reference 1) was approved by the NRC on April 22, 1998. The limits of the voltage and frequency in this submittal are consistent with the design considerations of Regulatory Guide 1.9 Revision 3. The proposed change is consistent with 10 CFR 50 Appendix A, GDC-17, "Electric power systems," which 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. The proposed change is also consistent with 10 CFR Appendix A, GDC-18, "Inspection and testing of electric power systems," which requires that electric power systems that are important to safety be designed to permit appropriate periodic inspection and testing of important areas and features, such as insulation and connections to assess the continuity of the systems and the condition of their components. The proposed change is consistent with 10 CFR 50.36(d)(3), "Surveillance requirements," which requires TS to include surveillance 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.

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.

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6.0 ENVIRONMENTAL CONSIDERATION

EGC has evaluated this proposed license amendment and determined that the proposed change 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 significant increase in the amounts of any effluents 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 "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review" paragraph (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.

7.0 PRECEDENTS

The NRC has previously approved similar amendments for the Perry Nuclear Power Plant (Reference 7), and the Wolf Creek Generating Station (Reference 8). The subject license amendment request proposes to adopt TSTF-163 changes similar to those addressed in the previously approved amendments.

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8.0 REFERENCES

1. TSTF-163, Technical Specification Task Force Standard TS Change Traveler, Revision 2, "Minimum vs. Steady State Voltage and Frequency," dated April 22, 1998
2. NUREG-1431, "Standard Technical Specifications Westinghouse Plants," Volume 1, Revision 3, dated March 2004
3. NRC Regulatory Guide 1.9, Revision 3, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," dated July 1993
4. NRC Regulatory Guide 1.137, Revision 1, "Fuel-Oil Systems for Standby Diesel Generators," dated October 1979
5. Braidwood Station and Byron Station Updated Final Safety Analysis Report, Section 8.3
6. Braidwood Station and Byron Station Updated Final Safety Analysis Report, Appendix A
7. Letter from U. S. NRC to Mr. L.W. Pearce (FirstEnergy Nuclear Operating Company), "Perry Nuclear Power Plant, Unit No. 1 – Issuance of Amendment Re: Emergency Diesel Generator Surveillance Testing Voltage and Frequency Limits (TAC No. MC8997)," dated April 30, 2007
8. Letter from U. S. NRC to Mr. Rick Muench (Wolf Creek Nuclear Operating Corporation), "Wolf Creek Generating Station – Issuance of Amendment Re: Emergency Diesel Generator Voltage and Frequency Limits (TAC No. MC5382)," dated April 21, 2005

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages for Braidwood Station

Braidwood Station, Units 1 and 2

Facility Operating License Nos. NPF-72 and NPF-77

REVISED TECHNICAL SPECIFICATIONS PAGES

3.8.1 - 6

3.8.1 - 9

3.8.1 - 10

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ 450 gal of fuel oil.	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 the fuel oil transfer system operates to automatically transfer fuel oil from storage tank(s) to the day tank.	31 days
SR 3.8.1.7	Verify each DG starts from normal standby condition and achieves in ≤ 10 seconds, voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	Verify manual transfer of AC power sources from the required normal qualified circuit(s) to the reserve required qualified circuit(s).	18 months

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- :
- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and
 - b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <p>a. In ≤ 10 seconds achieves voltage ≥ 3950 V and ≤ 4580 V;</p> <p>b. In ≤ 10 seconds achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and</p> <p>c. Operates for ≥ 5 minutes.</p>	<p>18 months</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Achieves steady state voltage ≥ 3950 V and ≤ 4580 V and</p> </div>
<p>SR 3.8.1.13 Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except:</p> <p>a. Engine overspeed; and</p> <p>b. Generator differential current.</p>	<p>18 months</p>
<p>SR 3.8.1.14 -----NOTE----- Momentary transients outside the load range do not invalidate this test. -----</p> <p>Verify each DG operates for ≥ 24 hours:</p> <p>a. For ≥ 2 hours loaded ≥ 5775 kW and ≤ 6050 kW; and</p> <p>b. For the remaining hours of the test loaded ≥ 4950 kW and ≤ 5500 kW.</p>	<p>18 months</p>

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SURVEILLANCE REQUIREMENTS (continued)

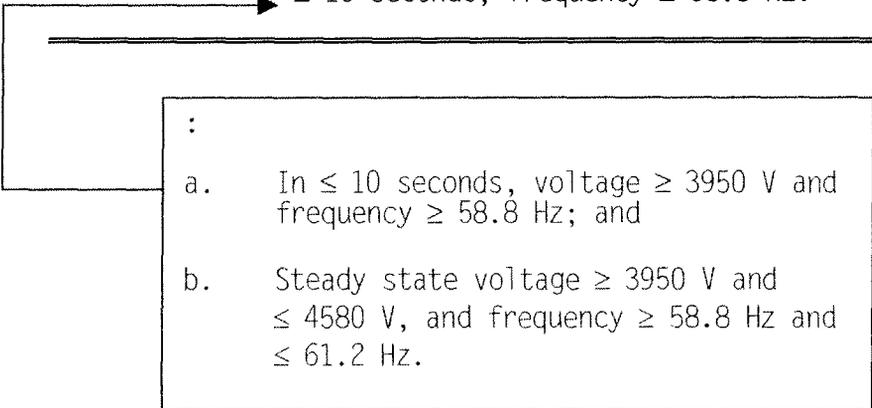
SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 4950 kW and ≤ 5500 kW or until operating temperature has stabilized. 2. Momentary transients outside of load range do not invalidate this test. <p>-----</p> <p>Verify each DG starts and achieves in in ≤ 10 seconds voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>18 months</p>
<p>SR 3.8.1.16 -----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>18 months</p>

(continued)

- :
- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and
 - b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ul style="list-style-type: none"> a. De-energization of ESF buses; b. Load shedding from ESF buses; and c. DG auto-starts from standby condition and: <ul style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through the safeguards sequence timers, 3. achieves steady state voltage ≥ 3950 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>18 months</p>
<p>SR 3.8.1.20 Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, frequency ≥ 58.8 Hz.</p>	<p>10 years</p>



ATTACHMENT 3
Markup of Proposed Technical Specifications Pages for Byron Station

Byron Station, Units 1 and 2

Facility Operating License Nos. NPF-37 and NPF-66

REVISED TECHNICAL SPECIFICATIONS PAGES

3.8.1 - 6

3.8.1 - 9

3.8.1 - 10

3.8.1 - 12

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ 450 gal of fuel oil.	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 the fuel oil transfer system operates to automatically transfer fuel oil from storage tank(s) to the day tank.	31 days
SR 3.8.1.7	Verify each DG starts from normal standby condition and achieves in ≤ 10 seconds, voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	Verify manual transfer of AC power sources from the required normal qualified circuit(s) to the reserve required qualified circuit(s).	18 months

(continued)

- :
- a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and
 - b. Steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

SURVEILLANCE REQUIREMENTS (continued)

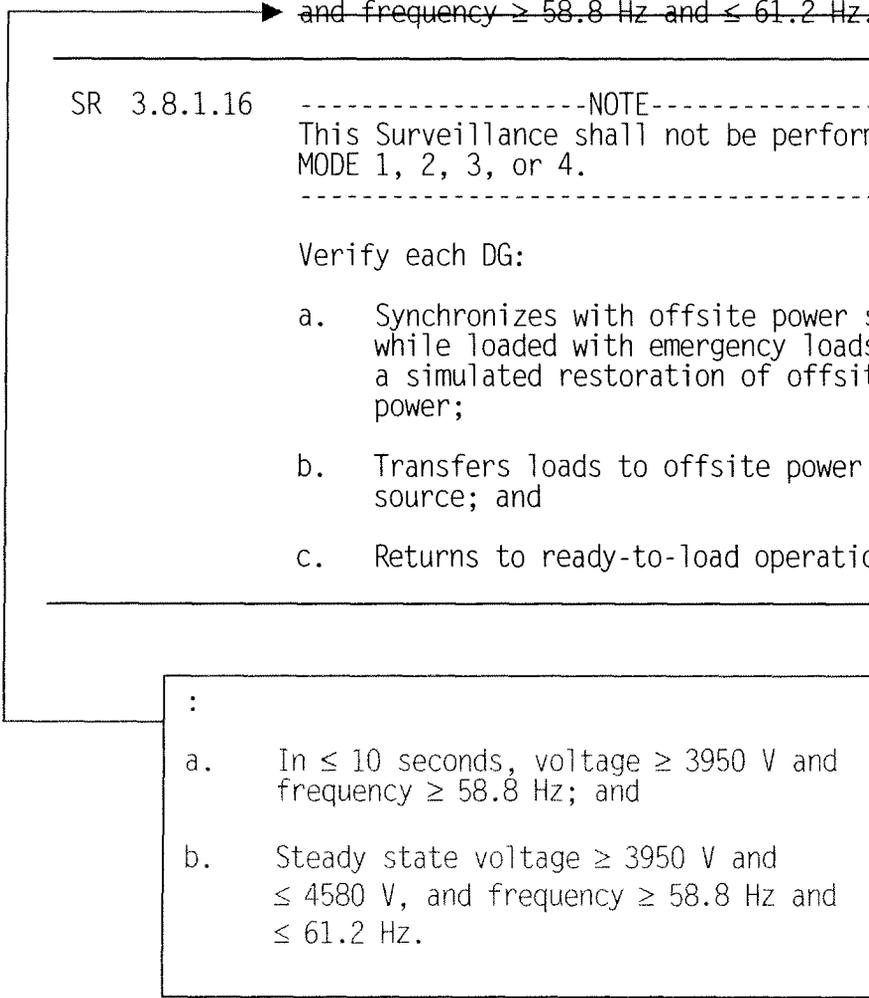
SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <p>a. In ≤ 10 seconds achieves voltage ≥ 3950 V and ≤ 4580 V;</p> <p>b. In ≤ 10 seconds achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and</p> <p>c. Operates for ≥ 5 minutes.</p>	<p>18 months</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Achieves steady state voltage ≥ 3950 V and ≤ 4580 V and</p> </div>
<p>SR 3.8.1.13 Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except:</p> <p>a. Engine overspeed; and</p> <p>b. Generator differential current.</p>	<p>18 months</p>
<p>SR 3.8.1.14 -----NOTE----- Momentary transients outside the load range do not invalidate this test. -----</p> <p>Verify each DG operates for ≥ 24 hours:</p> <p>a. For ≥ 2 hours loaded ≥ 5775 kW and ≤ 6050 kW; and</p> <p>b. For the remaining hours of the test loaded ≥ 4950 kW and ≤ 5500 kW.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----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 ≥ 4950 kW and ≤ 5500 kW or until operating temperature has stabilized. 2. Momentary transients outside of load range do not invalidate this test. <p>-----</p> <p>Verify each DG starts and achieves in in ≤ 10 seconds voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>18 months</p>
<p>SR 3.8.1.16 -----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>18 months</p>

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ul style="list-style-type: none"> a. De-energization of ESF buses; b. Load shedding from ESF buses; and c. DG auto-starts from standby condition and: <ul style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through the safeguards sequence timers, 3. achieves steady state voltage ≥ 3950 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>18 months</p>
<p>SR 3.8.1.20 Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, frequency ≥ 58.8 Hz.</p>	<p>10 years</p>

→

:

- a. In ≤ 10 seconds, voltage ≥ 3950 V and
frequency ≥ 58.8 Hz; and
- b. Steady state voltage ≥ 3950 V and
 ≤ 4580 V, and frequency ≥ 58.8 Hz and
 ≤ 61.2 Hz.

ATTACHMENT 4
Markup of Technical Specifications Bases Pages for Braidwood Station

Braidwood Station, Units 1 and 2

Facility Operating License Nos. NPF-72 and NPF-77

REVISED TECHNICAL SPECIFICATIONS BASES PAGE

B 3.8.1 - 17

BASES

SURVEILLANCE REQUIREMENTS (continued)

In order to reduce stress and wear on diesel engines, a modified start is used 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 starts in accordance with SR 3.8.1.2.

SR 3.8.1.7 requires that, at a 184 day Frequency, the DG starts from normal standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the UFSAR, Chapter 15 (Ref. 5).

The 10 second start requirement is not applicable to SR 3.8.1.2 (see SR Note) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 10 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 also addressed in SR 3.8.1.2 Note.

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. 8). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

In addition to the SR requirements, 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.

ATTACHMENT 5
Markup of Technical Specifications Bases Pages for Byron Station

Byron Station, Units 1 and 2

Facility Operating License Nos. NPF-37 and NPF-66

REVISED TECHNICAL SPECIFICATIONS BASES PAGE

B 3.8.1 – 17

BASES

SURVEILLANCE REQUIREMENTS (continued)

In order to reduce stress and wear on diesel engines, a modified start is used 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 starts in accordance with SR 3.8.1.2.

SR 3.8.1.7 requires that, at a 184 day Frequency, the DG starts from normal standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the UFSAR, Chapter 15 (Ref. 5).

The 10 second start requirement is not applicable to SR 3.8.1.2 (see SR Note) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 10 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 also addressed in SR 3.8.1.2 Note.

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. 8). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

In addition to the SR requirements, 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.