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10 CFR 50.90

June 15, 2004

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

Peach Bottom Atomic Power Station, Units 2 and 3
Facility Operating License Nos. DPR-44 and DPR-56
Docket Nos. 50-277 and 50-278

Subject: License Amendment Request
Increase Emergency Diesel Generator Load During Technical Specification
Surveillance Testing; SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15

Pursuant to 10 CFR 50.90 Exelon Generation Company, LLC, hereby requests the following amendment to the Technical Specifications (TS), Appendix A of Operating License No. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3.

This proposed change will revise PBAPS TS surveillance requirements; SR 3.8.1.3 (the monthly diesel surveillance test), SR 3.8.1.10 (the diesel full-load rejection test), SR 3.8.1.14.b (the diesel 24-hour run test), and SR 3.8.1.15 (the diesel hot restart test) to permit these tests to be conducted at a higher load of up to 2800 kW.

Exelon requests NRC approval of this change by December 15, 2004, in order to support reduction of visual exhaust emissions output (opacity) observed during EDG operation.

Once approved, the amendment shall be implemented within 30 days.

No new regulatory commitments are established by this submittal.

These proposed changes have been reviewed by the PBAPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board.

Pursuant to 10 CFR 50.91(b)(1), a copy of this License Amendment Request is being provided to the designated official of the Commonwealth of Pennsylvania.

A001

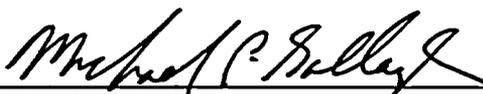
Increase Emergency Diesel Generator Load
During Technical Specification Surveillance Testing
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If any additional information is needed, please contact Mr. Tom Loomis at 610-765-5510.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 06-15-04



Michael P. Gallagher
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments: 1-Description of Proposed Changes
2-Markup of Proposed Technical Specification Pages
3-Markup of Proposed Technical Specification Bases Pages
4-Retyped Technical Specification Pages
5-Retyped Technical Specification Bases Pages

cc: H. J. Miller, Administrator, Region I, USNRC
C. Smith, USNRC Senior Resident Inspector, PBAPS
G. F. Wunder, Project Manager [PBAPS] USNRC
R. R. Janati, Commonwealth of Pennsylvania

ATTACHMENT 1

**PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278**

**INCREASE EMERGENCY DIESEL GENERATOR LOAD DURING
TECHNICAL SPECIFICATION SURVEILLANCE TESTING;
SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15**

DESCRIPTION OF PROPOSED CHANGES

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DESCRIPTION OF PROPOSED CHANGES

1.0 DESCRIPTION

This letter is a request to amend Operating License Nos. DPR-44 and DPR-56 for the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3.

This proposed change will revise the Emergency Diesel Generator (EDG) Technical Specification (TS) required surveillance testing to be performed at an increased load. PBAPS Technical Specification (TS) Surveillance Requirements; SR 3.8.1.3 (the monthly diesel surveillance test), SR 3.8.1.10 (the diesel full-load rejection test), SR 3.8.1.14.b (the diesel 24-hour run test), and SR 3.8.1.15 (the diesel hot restart test) will be revised to permit these tests to be conducted at a higher load of up to 2800 kW.

This change is part of an ongoing action plan to reduce the visual exhaust emissions output (opacity) observed during EDG operation. The opacity limits are specified in accordance with the facility's Commonwealth of Pennsylvania Department of Environmental Protection (PA DEP) Title V Operating Permit No. 67-05020, issued February 27, 2004. This permit requires that opacity from any emissions source **not** be "Equal to or greater than 20% for a period or periods aggregating more than three minutes in any 1 hour." Exelon is required to perform daily visual inspections around the plant periphery to detect visible emissions, and has observed that during EDG TS surveillance testing, the EDGs frequently exceed this limit when operating within the currently required TS surveillance test load range.

There is no relationship between the PA DEP specified opacity limits and the ability of the EDG to meet TS surveillance requirements or to perform any required safety function.

Exelon requests approval of this License Amendment Request by December 15, 2004 in order to support reduction of visual exhaust emissions output (opacity) observed during EDG operation.

2.0 PROPOSED CHANGE

The PBAPS Technical Specifications specify four (4) tests that use the EDG continuous rating of 2600 kW as an upper limit. These tests are:

- 1) Surveillance Requirement SR 3.8.1.3 – This is the monthly EDG load-run test. As stated in the TS Bases, this surveillance test verifies that the EDGs are "...capable of synchronizing and accepting a load approximately equivalent to that corresponding to the continuous rating."

- 2) Surveillance Requirement SR 3.8.1.10 - This surveillance is the biennial requirement to verify full-load rejection capability. As stated in the TS bases, the test "...demonstrates the EDG capability to reject full load without overspeed tripping or exceeding predetermined voltage limits."
- 3) Surveillance Requirement SR 3.8.1.14.b - This surveillance is the biennial endurance and margin test. As stated in the TS Bases, the test demonstrates that the EDGs "...can start and run continuously at full load capability for an interval of not less than 24 hours—22 hours of which is at a load equivalent to 90% to 100% of the continuous duty rating of the DG, and 2 hours of which is at a load equivalent to 105% to 110% of the continuous duty rating of the DG."
- 4) Surveillance Requirement SR 3.8.1.15 - This surveillance is the biennial "hot restart" test. As stated in the TS bases, this test demonstrates that the EDGs "...can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 10 seconds."

Exelon proposes that the required EDG load range for the above four (4) tests be revised from " ≥ 2400 kW and ≤ 2600 kW" to " ≥ 2400 kW and ≤ 2800 kW" [emphasis added for clarity], which establishes an allowable EDG load range of approximately 92% to 108% of the EDG continuous rating for these tests.

Changes to the Technical Specification Bases are also proposed to appropriately reflect the revised load range. Editorial changes to the Bases are also being made to align the cited load range percentages to the actual load values in the corresponding SR(s).

Marked up Technical Specification pages showing the requested changes are provided in Attachment 2.

3.0 BACKGROUND

The opacity limit did not change as a result of the issuance/renewal of the facility's PA DEP Title V Operating Permit No. 67-05020. As required by this permit, opacity limits are verified to be met by performing a once a day observation of emissions from the facility. There is no requirement that this observation be performed during EDG operation. However, if a visible emission is observed by plant personnel, the Permit requires a measurement to be obtained by a qualified observer and reported to the PA DEP if found in excess of the 20% limit. Through this mechanism, the PBAPS EDGs have been found to frequently exceed this value during EDG TS surveillance testing. Given Exelon's

support of responsible environmental stewardship, it is our position that the opacity limit should be satisfied during all scheduled/routine EDG runs.

Observations made during special testing on three of the Peach Bottom EDGs show that the exhaust opacity is reduced by 2.5% to 7% if the engine load is increased to the upper portion of the proposed 2400 kW to 2800 kW range. The actual opacity reading varies by EDG and is also dependent on the ambient temperature conditions. Opacity is reduced at higher EDG loads due to the EDG combustion air intake configuration.

There are two locations for combustion air to enter the EDG, one at the generator end and a secondary entry point at the control end of the machine. Both air intake paths are equipped with air filters. The air entering the secondary filter is cooler than the air that enters from the generator end filter due to the proximity of the latter filter to the generator and the additional energy added by the scavenging air blower.

When the engine is operated at the increased load value, the additional air mass required for combustion enters through the secondary filter. This cooler air reduces the bulk combustion air temperature to the engine. With the engine operating at the proposed higher load, the turbochargers are also turning faster which increases the scavenging air pressure. These factors permit better air/fuel homogeneity and more complete fuel burning. More complete fuel combustion produces less smoke.

Exelon has developed a comprehensive action plan to enhance the overall reliability and performance of the Peach Bottom EDGs, and an important element of this plan is to bring the EDGs into compliance with the PA DEP Permit under all ambient conditions. This proposed change is included in the action plan, as it has been demonstrated that EDG operation at higher loads result in an observable reduction in the visible emissions from the EDGs.

4.0 TECHNICAL ANALYSIS

As discussed in PBAPS TS Bases 3.8.1, the PBAPS AC sources for the Class 1E AC Electrical Power Distribution System consist of the offsite power sources, and the onsite standby power sources that are diesel generators. As required by the PBAPS UFSAR Sections 1.5 and 8.4.2, the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

The onsite standby power source for the four 4 kV emergency buses in each unit consists of four EDGs manufactured by Fairbanks Morse Engine in 1970. The four EDGs provide onsite standby power for both Unit 2 and Unit 3. Each EDG provides standby power to two 4 kV emergency buses — one associated with

Unit 2 and one associated with Unit 3. Each EDG starts automatically on a loss of coolant accident (LOCA) signal (i.e., low reactor water level signal or high drywell pressure signal) from either Unit 2 or Unit 3 or on an emergency bus degraded voltage or undervoltage signal. After the EDG has started, it automatically connects to its respective bus after offsite power is tripped as a consequence of emergency bus undervoltage or degraded voltage, independent of - or coincident with - a LOCA signal. The EDGs also start and operate in the standby mode without connecting to the emergency bus on a LOCA signal alone. Following the trip of offsite power, all loads are stripped from the emergency bus. When the EDG is connected to the emergency bus, individual timers associated with each automatically connected load then sequentially connect loads to its respective emergency bus.

The failure of any one EDG does not impair safe shutdown because each EDG serves an independent, redundant 4 kV emergency bus for each unit. The remaining EDGs and emergency buses have sufficient capability to mitigate the consequences of a DBA on one unit, support the shutdown of the other unit, and maintain both units in a safe condition.

The load ratings for the EDGs have been evaluated with respect to the recommendations in Safety Guide 9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies." The matter of Peach Bottom EDG load ratings is discussed in PECO's April 15, 1991 letter to the NRC (see Reference 3). The EDG post-accident loads are maintained below the 2000-hour rating of the machines, with the exception that the loading of EDG E2 may exceed the 2000-hour rating during the first 10 minutes of a DBA LOCA. Each of the four EDGs has the following ratings:

- a. 2600 kW—Continuous,
- b. 3000 kW—2000 hours,
- c. 3100 kW—200 hours,
- d. 3250 kW—30 minutes.

The diesel engine is the limiting component for the load rating. The generator and associated controls have a continuous load rating of 3100 kW @ 0.8 pf.

Review of the opacity readings obtained during tests of the EDGs in the latter half of 2003 shows that a typical Peach Bottom EDG exhaust is greater than 30% opacity at nominally 2500 kW (the mid-point of the existing TS operating range) during the summer months. Testing on the E1, E2 and E4 EDGs shows that the opacity is reduced by 2.5% to 7% with the engine load set to approximately 2800 kW. There is also a strong correlation to ambient temperature, as measurements taken in late 2003 show that the opacity frequently falls within the Permit limit of

20%. The reason for the reduced opacity is both a function of engine load and ambient temperature. EDG operation at higher loads or lower ambient temperatures results in an increased air mass that supports better fuel combustion and therefore the engine produces less smoke.

Exelon recognizes that increasing the engine load for surveillance testing purposes – by itself – will not ensure that Peach Bottom remains in compliance with the PA DEP permit opacity limit of 20%. The load change is one component of Exelon's comprehensive action plan to improve the overall reliability of these machines. In developing the plan, experts from Fairbanks Morse Engine (the Original Equipment Manufacturer, OEM) were brought onsite to witness PBAPS diesel operation and to formulate recommendations to reduce the opacity. Their recommendations, as appropriate, are planned to be implemented over the next two years as the plant work schedule permits. It is anticipated that with the implementation of their recommendations and the ability to perform EDG TS surveillance testing at increased loads, the opacity limit will be able to be met under all expected ambient conditions.

Exelon is requesting the expansion of the allowable load range from ≥ 2400 kW and ≤ 2600 kW to ≥ 2400 kW and ≤ 2800 kW. The lower load limit will remain unchanged so that EDG TS surveillance testing can be performed within the previously established load range as ambient conditions permit and higher loads if ambient conditions warrant and still maintain within opacity limits.

In determining the proposed maximum load value of 2800 kW, Exelon has ensured that the 2000-hour rating of 3,000 kW is not exceeded during routine surveillance testing by allowing a sufficient margin for instrument tolerances and for individual engine variations. The ability to operate at the higher load value may result in a small increase in stress and wear on certain engine components. This small increase in stress is expected to be well within the capability of the EDG and any increase in wear would be detected and corrected during the existing 24-month inspections, such that the safety mission of the EDGs is not affected. Operation of the PBAPS EDGs at 2800 kW has been discussed with the OEM.

Considering the PBAPS operating regimen of no greater than 400 hours of operation of the EDGs between inspections, plus the post-accident operating mission, the OEM stated that:

- Operation at 2800 kW is well within the 2000-hour rating;
- The increased rate of wear is within the limitations of the EDG;
- The engine will remain below the 2000-hour rating considering the load instrumentation accuracy;

- The engine must be set up within FM's recommended limits for firing pressures.

Implicit in their statements is that the PBAPS EDGs are well maintained. Exelon's EDG maintenance program coupled with the PBAPS EDG reliability improvement action plan and the PBAPS engine analysis program will ensure that high standards are maintained.

The Commission has issued general guidance to the industry on EDG testing which involves steady-state loaded operation in Regulatory Guide 1.9, Revision 3, Position C.2.2. The general guidance is that the engine should be loaded to 90 to 100 percent of the continuous rating of the diesel generator. The existing PBAPS TS load range of 2400 kW to 2600 kW meets this criteria; the proposed load range of 2400 kW to 2800 kW will allow loading to 108% of the continuous rating of 2600 kW.

Exelon believes that deviation from this general guidance is acceptable for PBAPS since:

- The integrity of the 2000-hour rating is maintained;
- The improved exhaust opacity is consistent with a commitment to responsible environmental stewardship; and
- The PBAPS maintenance program bounds the small increased rate of wear.

Performing the required testing at the higher load does not alter the intent of TS surveillance requirements SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15. The surveillance requirements will continue to demonstrate the ability of the EDGs to perform all required safety functions commensurate with the current TS surveillance requirements.

Based on the above discussion, this change will not impact the ability of the EDGs to perform their intended safety function. This change will continue to ensure that the on-site AC electrical power sources (i.e., the EDGs) continue to provide sufficient capacity, capability, redundancy, and reliability to ensure the necessary power to Engineered Safety Feature (ESF) systems is available.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

Exelon 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 revisions to Technical Specification Surveillance Requirements SR 3.8.1.3 (the monthly diesel surveillance test), SR 3.8.1.10 (the diesel full-load rejection test), SR 3.8.1.14.b (the diesel 24-hour run test), and SR 3.8.1.15 (the diesel hot restart test) to permit these tests to be conducted at the higher load value of 2800 kW do not involve any physical change to any EDG equipment. The Operator using existing EDG load controls will adjust the EDG to carry the increased load during surveillance testing.

The EDGs are designed to provide a reliable source of AC electrical power in the event of an accident coincident with a loss of offsite power. The failure of an EDG itself is not considered an accident evaluated in the UFSAR. This proposed loading change does not affect the current accident initiators or precursors that could lead to a previously evaluated accident.

The failure of a single EDG to perform when required to mitigate the consequences of an accident has already been considered as a subsequent single failure in the current plant safety analyses. The proposed change to increase the allowable load range does not alter the EDG design features, post-accident operation, or accident analysis assumptions which could affect the ability of the EDGs to mitigate the consequences of a previously evaluated accident. Current EDG testing requirements, e.g., starting, timing, and post accident sequencing and loading will continue to ensure reliable EDG operation and are not being changed in this request.

Since the EDG TS surveillance test load is the only parameter involved in this request, the proposed changes will not increase the likelihood of the malfunction of another system, structure, or component that has been assumed as an accident initiator or credited in the mitigation of an accident.

Based on the above discussion, the proposed TS 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.

The EDGs are designed to provide a reliable source of AC electrical power in the event of an accident coincident with a loss of offsite power. No change in the ability of the EDGs to perform their design function is involved. Instrumentation setpoints, starting, sequencing, and post-accident loading functions associated with the EDGs are not affected by the proposed changes. No modifications to the EDGs are required to implement the proposed TS changes. Therefore, no new failure mechanism, malfunction, or accident initiator is considered credible.

Additionally, the proposed TS changes do not affect the other plant design, hardware, system operation, or procedures. Therefore, based on the above discussion, the above TS 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 underlying purpose of the four (4) diesel generators is to ensure an available source of onsite power to the ESF systems. This change does will not impact this underlying purpose. As discussed above, this change may result in a slight increase in engine wear due to the ability to operate at the higher load, but this increased wear is bounded by the existing 24 month maintenance inspection program. The OEM has stated that the change to increase the allowable load value still remains well within the EDG 2000-hour rating, and the increased rate of wear is within the acceptable limits of the current maintenance program.

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

For the reasons stated above, the proposed Technical Specifications changes do not present undue risk to the public health and safety because the proposed increase in the EDG surveillance testing load limits will not affect the performance or reliability of these machines.

5.2 Applicable Regulatory Requirements/Criteria

As discussed in Section 8.5 of the PBAPS UFSAR ("Standby AC Power Supply and Distribution"), the safety objective of the emergency diesel generators is to provide a reliable source of electrical power for the safe shutdown of the reactors. The total number of standby diesel generator units is such that sufficient power is available to provide for the functioning of required engineered safeguard systems for one reactor unit and the shutting down of the other unit, assuming failure of one standby diesel generator and loss of all offsite power sources. Each diesel generator unit is housed in a seismic Class I structure, and located such that the equipment is protected against other natural phenomena such as flood, tornado, rain, ice, snow, and lightning. Equipment conforms to applicable standards of the NEMA, DEMA, ASME, ASTM, IEEE, ANSI, and state and local regulations. The diesel generator sets have the ability to pick up loads in the sequence necessary for safe shutdown following the design basis accidents. The engines start automatically upon the loss of offsite power, low water level in the reactor, or high drywell pressure. **None of these criteria are impacted by this proposed amendment.**

The Commission has issued general guidance to the industry on EDG testing in Regulatory Guide 1.9, Revision 3, Position C.2. Although Peach Bottom is not committed to this Regulatory Guide, and is not making any commitments to this Guide as a part of this TS amendment request, the tests affected by this amendment request are described in the Guide and therefore warrant discussion. For the monthly "Load-Run Test" (Paragraph C.2.2.2), the "Full Load Rejection Test" (Paragraph C.2.2.8), and the "Hot Restart Test" (Paragraph C.2.2.10), the general guidance is that the engine should be loaded to 90 to 100 percent of the continuous rating of the diesel generator for that testing. This load also applies to the 22-hour portion of the "Endurance and Margin Test" (Paragraph C.2.2.9). The existing PBAPS TS load range of 2400 kW to 2600 kW meets this criteria; the proposed load range of 2400 kW to 2800 kW will allow loading to 108% of the continuous rating of 2600 kW. Exelon asserts that deviation from this general guidance is acceptable for PBAPS since: (1) The integrity of the 2000-hour rating is maintained; (2) the improved exhaust opacity is consistent with responsible environmental stewardship; and (3) the small increased rate of wear is bounded by the PBAPS maintenance program.

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) These 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 CONSIDERATIONS

Exelon is undertaking this TS amendment request to reduce the visible emissions output (opacity) from the EDGs during required surveillance testing. The purpose of this effort is to enhance Peach Bottom's compliance with the facility's Commonwealth of Pennsylvania Department of Environmental Protection (PA DEP) Title V Operating Permit No. 67-05020, issued February 27, 2004. As such, the proposed change will have a beneficial effect upon the regional air quality and the overall environment.

A 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, "Standards for Protection Against Radiation," or 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 amendment 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, paragraph (b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

The following material was used in the preparation of this request:

1. Commonwealth of Pennsylvania Department of Environmental Protection Title V Permit No. 67-05020, Issued February 27, 2004.
2. AEC Safety Guide 9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971.
3. Letter D. R. Helwig (PECo) to USNRC, Dated April 15, 1991.

4. USNRC 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," July, 1993.

ATTACHMENT 2

License Amendment Request

**Peach Bottom Atomic Power Station
Units 2 and 3**

Docket Nos. 50-277 And 50-278

**Increase Emergency Diesel Generator Load During
Technical Specification Surveillance Testing;
SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15**

Markup of Proposed Technical Specification Pages

Revised TS Pages

3.8-8

3.8-10

3.8-14

3.8-15

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. 5. A single test will satisfy this Surveillance for both units, with synchronization to the Unit 2 4 kV emergency bus for one periodic test and synchronization to the Unit 3 4 kV emergency bus during the next periodic test. However, if the test is not performed on Unit 3, then the test shall be performed synchronized to the Unit 2 4 kV emergency bus. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2400 kW and \leq 2500 kW. 2800</p>	<p>31 days</p>
<p>SR 3.8.1.4 Verify each day tank contains ≥ 250 gal of fuel oil.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTES-----</p> <ol style="list-style-type: none"> 1. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 1.8 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4570 V, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. 	<p>24 months</p>
<p>SR 3.8.1.10 -----NOTE-----</p> <p>A single test at the specified Frequency will satisfy this Surveillance for both units.</p> <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 does not trip and voltage is maintained ≤ 5230 V during and following a load rejection of ≥ 2400 kW and ≤ 2600 kW.</p>	<p>24 months</p>

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----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 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. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 2800 kW and ≤ 3000 kW; and b. For the remaining hours of the test loaded ≥ 2400 kW and ≤ 2500 kW. 	<p>24 months</p>

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(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 ≥ 2400 kW and ≤ 2500 kW. <p style="margin-left: 40px;">Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 4160 V and frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: 20px auto;"> 2800 </div> <p style="text-align: center; margin-top: 100px;">24 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. 5. A single test will satisfy this Surveillance for both units, with synchronization to the Unit 3 4 kV emergency bus for one periodic test and synchronization to the Unit 2 4 kV emergency bus during the next periodic test. However, if the test is not performed on Unit 2, then the test shall be performed synchronized to the Unit 3 4 kV emergency bus. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for > 60 minutes at a load ≥ 2400 kW and \leq 2600 ²⁸⁰⁰ kW.</p>	<p>31 days</p>
<p>SR 3.8.1.4 Verify each day tank contains ≥ 250 gal of fuel oil.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTES-----</p> <ol style="list-style-type: none"> 1. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 1.8 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4570 V, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. 	<p>24 months</p>
<p>SR 3.8.1.10 -----NOTE-----</p> <p>A single test at the specified Frequency will satisfy this Surveillance for both units.</p> <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 does not trip and voltage is maintained ≤ 5230 V during and following a load rejection of ≥ 2400 kW and ≤ 2600 kW.</p>	<p>24 months</p>

2800

(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 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. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 2800 kW and ≤ 3000 kW; and b. For the remaining hours of the test loaded ≥ 2400 kW and ≤ 2600 kW. 	<p>24 months</p>

(continued)

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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 ≥ 2400 kW and ≤ 2600 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 4160 V and frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p style="text-align: center;">2800</p> <p>24 months</p>

(continued)

ATTACHMENT 3

License Amendment Request

**Peach Bottom Atomic Power Station
Units 2 and 3**

Docket Nos. 50-277 And 50-278

**Increase Emergency Diesel Generator Load During
Technical Specification Surveillance Testing;
SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15**

Markup of Proposed Technical Specification Bases Pages

Revised Bases Page

B 3.8-31

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.1.14

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph C.2.2.9, this Surveillance requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, 22 hours ~~of which is~~ at a load equivalent to 90% to 100% of the continuous duty rating of the DG, and 2 hours of which is at a load equivalent to 105% to 110% of the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube 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.

However, load values may deviate from the Regulatory Guide such that the DG operates for

approximately

approximately

92%

108%

108%

115%

This Surveillance verifies, indirectly, that the DGs are capable of synchronizing and accepting loads equivalent to post accident loads. The DGs are tested at a load approximately equivalent to their continuous duty rating, even though the post accident loads exceed the continuous rating. This is acceptable because regular surveillance testing at post accident loads is injurious to the DG, and imprudent because the same level of assurance in the ability of the DG to provide post accident loads can be developed by monitoring engine parameters during surveillance testing. The values of the testing parameters can then be qualitatively compared to expected values at post accident engine loads. In making this comparison it is necessary to consider the engine parameters as interrelated indicators of remaining DG capacity, rather than independent indicators. The important engine parameters to be considered in making this comparison include, fuel rack position, scavenging air pressure, exhaust temperature and pressure, engine output, jacket water temperature, and lube oil temperature. With the DG operating at or near continuous rating and the observed values of the above parameters less than expected post accident values, a qualitative extrapolation which shows the DG is capable of accepting post accident loads can be made without requiring detrimental testing.

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 ≤ 0.89 . This power factor is chosen to be representative of the actual design basis inductive loading that the DG could

(continued)

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.1.14

approximately

92%

108%

However, load values may deviate from the Regulatory Guide such that the DG operates for

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph C.2.2.9, this Surveillance requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, 22 hours of which is at a load equivalent to 90% to 100% of the continuous duty rating of the DG, and 2 hours of which is at a load equivalent to 105% to 110% of the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelude 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.

108%

115%

This Surveillance verifies, indirectly, that the DGs are capable of synchronizing and accepting loads equivalent to post accident loads. The DGs are tested at a load approximately equivalent to their continuous duty rating, even though the post accident loads exceed the continuous rating. This is acceptable because regular surveillance testing at post accident loads is injurious to the DG, and imprudent because the same level of assurance in the ability of the DG to provide post accident loads can be developed by monitoring engine parameters during surveillance testing. The values of the testing parameters can then be qualitatively compared to expected values at post accident engine loads. In making this comparison it is necessary to consider the engine parameters as interrelated indicators of remaining DG capacity, rather than independent indicators. The important engine parameters to be considered in making this comparison include, fuel rack position, scavenging air pressure, exhaust temperature and pressure, engine output, jacket water temperature, and lube oil temperature. With the DG operating at or near continuous rating and the observed values of the above parameters less than expected post accident values, a qualitative extrapolation which shows the DG is capable of accepting post accident loads can be made without requiring detrimental testing.

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 ≤ 0.89 . This power factor is chosen to be representative of the actual design basis inductive loading that the DG could

(continued)

ATTACHMENT 4

License Amendment Request

**Peach Bottom Atomic Power Station
Units 2 and 3**

Docket Nos. 50-277 And 50-278

**Increase Emergency Diesel Generator Load During
Technical Specification Surveillance Testing;
SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15**

Retyped Technical Specification Pages

Revised TS Pages

3.8-8

3.8-10

3.8-14

3.8-15

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. 5. A single test will satisfy this Surveillance for both units, with synchronization to the Unit 2 4 kV emergency bus for one periodic test and synchronization to the Unit 3 4 kV emergency bus during the next periodic test. However, if the test is not performed on Unit 3, then the test shall be performed synchronized to the Unit 2 4 kV emergency bus. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2400 kW and ≤ 2800 kW.</p>	<p>31 days</p>
<p>SR 3.8.1.4 Verify each day tank contains ≥ 250 gal of fuel oil.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTES-----</p> <ol style="list-style-type: none"> 1. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. 	
<p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 1.8 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4570 V, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. 	<p>24 months</p>
<p>SR 3.8.1.10 -----NOTE-----</p> <p>A single test at the specified Frequency will satisfy this Surveillance for both units.</p> <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 does not trip and voltage is maintained ≤ 5230 V during and following a load rejection of ≥ 2400 kW and ≤ 2800 kW.</p>	<p>24 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----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 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. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 2800 kW and ≤ 3000 kW; and b. For the remaining hours of the test loaded ≥ 2400 kW and ≤ 2800 kW. 	<p>24 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 ≥ 2400 kW and ≤ 2800 kW. <p style="margin-left: 40px;">Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 4160 V and frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>24 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3. -----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. 5. A single test will satisfy this Surveillance for both units, with synchronization to the Unit 3 4 kV emergency bus for one periodic test and synchronization to the Unit 2 4 kV emergency bus during the next periodic test. However, if the test is not performed on Unit 2, then the test shall be performed synchronized to the Unit 3 4 kV emergency bus. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2400 kW and ≤ 2800 kW.</p>	<p>31 days</p>
<p>SR 3.8.1.4 Verify each day tank contains ≥ 250 gal of fuel oil.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTES-----</p> <ol style="list-style-type: none"> 1. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.89. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 1.8 seconds following load rejection, the voltage is ≥ 3750 V and ≤ 4570 V, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. 	<p>24 months</p>
<p>SR 3.8.1.10 -----NOTE-----</p> <p>A single test at the specified Frequency will satisfy this Surveillance for both units.</p> <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 does not trip and voltage is maintained ≤ 5230 V during and following a load rejection of ≥ 2400 kW and ≤ 2800 kW.</p>	<p>24 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----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 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. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG operating at a power factor ≤ 0.89 operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. For ≥ 2 hours loaded ≥ 2800 kW and ≤ 3000 kW; and b. For the remaining hours of the test loaded ≥ 2400 kW and ≤ 2800 kW. 	<p>24 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 ≥ 2400 kW and ≤ 2800 kW. <p style="padding-left: 40px;">Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 4160 V and frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains voltage ≥ 4160 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>24 months</p>

(continued)

ATTACHMENT 5

License Amendment Request

**Peach Bottom Atomic Power Station
Units 2 and 3**

Docket Nos. 50-277 And 50-278

**Increase Emergency Diesel Generator Load During
Technical Specification Surveillance Testing;
SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15**

Retyped Technical Specification Bases Changes

Revised TS Bases Page

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BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.1.14

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph C.2.2.9, this Surveillance requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours. However, load values may deviate from the Regulatory Guide such that the DG operates for 22 hours at a load approximately equivalent to 92% to 108% of the continuous duty rating of the DG, and 2 hours of which is at a load approximately equivalent to 108% to 115% of the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube 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.

This Surveillance verifies, indirectly, that the DGs are capable of synchronizing and accepting loads equivalent to post accident loads. The DGs are tested at a load approximately equivalent to their continuous duty rating, even though the post accident loads exceed the continuous rating. This is acceptable because regular surveillance testing at post accident loads is injurious to the DG, and imprudent because the same level of assurance in the ability of the DG to provide post accident loads can be developed by monitoring engine parameters during surveillance testing. The values of the testing parameters can then be qualitatively compared to expected values at post accident engine loads. In making this comparison it is necessary to consider the engine parameters as interrelated indicators of remaining DG capacity, rather than independent indicators. The important engine parameters to be considered in making this comparison include, fuel rack position, scavenging air pressure, exhaust temperature and pressure, engine output, jacket water temperature, and lube oil temperature. With the DG operating at or near continuous rating and the observed values of the above parameters less than expected post accident values, a qualitative extrapolation which shows the DG is capable of accepting post accident loads can be made without requiring detrimental testing.

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 ≤ 0.89 . This power factor is chosen to be representative of the actual design basis inductive loading that the DG could

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BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.1.14

Consistent with Regulatory Guide 1.9 (Ref. 3), paragraph C.2.2.9, this Surveillance requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours. However, load values may deviate from the Regulatory Guide such that the DG operates for 22 hours at a load approximately equivalent to 92% to 108% of the continuous duty rating of the DG, and 2 hours of which is at a load approximately equivalent to 108% to 115% of the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube 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.

This Surveillance verifies, indirectly, that the DGs are capable of synchronizing and accepting loads equivalent to post accident loads. The DGs are tested at a load approximately equivalent to their continuous duty rating, even though the post accident loads exceed the continuous rating. This is acceptable because regular surveillance testing at post accident loads is injurious to the DG, and imprudent because the same level of assurance in the ability of the DG to provide post accident loads can be developed by monitoring engine parameters during surveillance testing. The values of the testing parameters can then be qualitatively compared to expected values at post accident engine loads. In making this comparison it is necessary to consider the engine parameters as interrelated indicators of remaining DG capacity, rather than independent indicators. The important engine parameters to be considered in making this comparison include, fuel rack position, scavenging air pressure, exhaust temperature and pressure, engine output, jacket water temperature, and lube oil temperature. With the DG operating at or near continuous rating and the observed values of the above parameters less than expected post accident values, a qualitative extrapolation which shows the DG is capable of accepting post accident loads can be made without requiring detrimental testing.

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 ≤ 0.89 . This power factor is chosen to be representative of the actual design basis inductive loading that the DG could

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