



Energy Harbor Nuclear Corp.  
Beaver Valley Power Station  
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724-682-5234

March 30, 2022  
L-21-204

10 CFR 50.90

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

**SUBJECT:**

Beaver Valley Power Station, Unit 1 and Unit 2  
Docket No. 50-334, License No. DPR-66  
Docket No. 50-412, License No. NPF-73  
LICENSE AMENDMENT REQUEST FOR ADOPTION OF TECHNICAL  
SPECIFICATIONS TASK FORCE (TSTF) TRAVELER TSTF-501, REVISION 1,  
RELOCATE STORED FUEL OIL AND LUBE OIL VOLUME VALUES TO  
LICENSEE CONTROL

In accordance with the provisions of Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), Energy Harbor Nuclear Corp. is submitting a request for an amendment to the Technical Specifications (TS) for Beaver Valley Power Station, Unit 1 and Unit 2.

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and placing them in the TS Bases so that they may be modified under licensee control. The TS are modified so that the stored diesel fuel oil inventory will require that a 3 ½ day supply for Unit 1 or 7 day supply for Unit 2 be available for each diesel generator and that the stored lube oil inventory of a 7 day supply be available for each diesel generator. Condition A and Condition B in the Action table are revised and Surveillance Requirements (SR) 3.8.3.1 and 3.8.3.2 are revised to reflect the above change. The deletion of Appendix B of ANSI N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," in the TS Bases is not required as this is not listed as a reference. The current TS Bases references Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators." ANSI N195, is referenced in the Unit 2 Updated Final Safety Analysis Report (UFSAR) design bases and will be added to the Unit 1 UFSAR design basis.

Additionally, Energy Harbor Nuclear Corp. is proposing a similar change to TS 3.8.1, "AC Sources – Operating," to remove the specific numerical value for the fuel oil volume and replace it with the time requirement of greater than or equal to 1 hour supply of fuel oil in each day and engine mounted tank (Unit 1) and each day tank (Unit 2).

Regarding stored diesel fuel oil and lube oil, no changes to the current plant configuration, current numerical volume requirements, current 3 ½ day storage tank basis (Unit 1), current 7 day storage tank basis (Unit 2), or current 1 hour day tank basis are proposed in this application; the proposal merely swaps the current numerical volume requirements from the TS to the TS Bases and swaps the associated current 3 ½ day (Unit 1), 7 day (Unit 2), and 1 hour basis from the TS Bases to the TS. In addition, no changes to any SR Frequency, Required Actions, or Completion Times are proposed in this application.

These proposed changes are consistent with NRC-approved Revision 1 to TSTF Improved Standard Technical Specifications (STS) Change Traveler TSTF-501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control." The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIP).

The current licensing basis for Unit 1 and Unit 2 requires that a 3 ½ day (Unit 1) or a 7 day (Unit 2) supply of stored diesel fuel oil be available for each diesel generator, a 7 day supply of lube oil be available for each diesel generator, and a greater than or equal to 1 hour supply of fuel oil in each day and engine mounted tank (Unit 1) and each day tank (Unit 2).

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 provides the existing TS pages marked-up to show the proposed changes. Attachment 3 contains marked-up TS Bases pages, for information only.

Energy Harbor Nuclear Corp. requests approval of the proposed license amendment by March 31, 2023, with the amendment being implemented within 90 days of approval.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager - Fleet Licensing, at (330) 696-7208.

Beaver Valley Power Station, Unit Nos. 1 and 2  
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I declare under penalty of perjury that the foregoing is true and correct. Executed on  
March 30, 2022.

Sincerely,



John J. Grabnar

Attachments:

- 1 Evaluation of the Proposed Change
- 2 Technical Specification Page Markups
- 3 Technical Specification Pages Retyped
- 4 Technical Specification Bases Page Markups (for information only)

cc: NRC Region I Administrator  
NRC Resident Inspector  
NRR Project Manager  
Director BRP/DEP  
Site BRP/DEP Representative

Attachment 1  
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Evaluation of the Proposed Change  
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## **1.0 DESCRIPTION**

The proposed changes revise Technical Specification (TS) 3.8.3, “Diesel Fuel Oil, Lube Oil, and Starting Air,” by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and placing them in the TS Bases so that it may be modified under licensee control. The TS is modified so that the stored diesel fuel oil inventory will require that a 3 ½ day supply for Unit 1 or a 7 day supply for Unit 2 be available for each diesel generator and that the stored lube oil inventory of a 7 day supply be available for each diesel generator. This change is consistent with NRC-approved Technical Specification Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler TSTF-501, Revision 1, “Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control.”

Additionally, Energy Harbor Nuclear Corp. (EHN) is proposing a similar change to TS 3.8.1, “AC Sources – Operating,” to remove the specific numerical value for the fuel oil volume and replace it with the time requirement. This change is consistent with a change approved by the NRC in Reference 3.

Minor differences between the proposed plant-specific TS changes, and the changes proposed by TSTF-501 are listed in Section 2.0. The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIP).

## **2.0 PROPOSED CHANGES**

The proposed changes revise TS 3.8.3, “Diesel Fuel Oil, Lube Oil, and Starting Air,” by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and placing them in the TS Bases so that they may be modified under licensee control. The TS are modified so that the stored diesel fuel oil inventory will require that a 3 ½ day (Unit 1) or 7 day (Unit 2) supply be available for each diesel generator and that the stored lube oil inventory of a 7 day supply be available for each diesel generator. As a result:

- Condition A and Condition B in the Action table are revised. Currently, Condition A and Condition B are entered when the stored diesel fuel oil and lube oil numerical volume requirements are not met. As discussed in the current TS Bases, the numerical volume requirements in Condition A and Condition B are based on volumes less than a 3 ½ day (Unit 1) or 7 day (Unit 2) supply, but greater than or equal to a 3 day (Unit 1) or 6 day (Unit 2) supply of diesel fuel oil and greater than or equal to a 6 day supply of lube oil. The revision removes the volumetric requirements from the TS and places them in the TS Bases. The TS are modified so that Condition A and Condition B are entered when the stored diesel fuel oil and lube oil inventory is less than a 3 ½ day (Unit 1) or 7 day (Unit 2) supply, but greater than or equal to a 3 day (Unit 1) or 6 day (Unit 2) supply for one or more diesel generators.

- Surveillance Requirements (SR) 3.8.3.1 and 3.8.3.2 are revised. Currently, SR 3.8.3.1 and SR 3.8.3.2 verify that the stored diesel fuel oil and lube oil numerical volume requirements are met. As discussed in the current TS Bases, the numerical volume requirements in SR 3.8.3.1 and SR 3.8.3.2 are based on maintaining at least a 3 ½ day (Unit 1) or 7 day (Unit 2) supply of fuel oil and at least a 7 day supply of lube oil. The revision removes the volumetric requirements from the TS and places them in the TS Bases. The TS are modified so that SR 3.8.3.1 and SR 3.8.3.2 verify that the stored diesel fuel oil inventory is greater than or equal to a 3 ½ day (Unit 1) or 7 day (Unit 2) supply and a lube oil inventory of greater than or equal to a 7 day supply for each diesel generator.

Proposed revisions to the TS Bases are also included in this application. Adoption of the TS Bases associated with TSTF Traveler-501, Revision 1, is an integral part of implementing this TS amendment. The changes to the affected TS Bases pages will be incorporated in accordance with the TS Bases Control Program.

EHN is proposing variations or deviations from the TS changes described in TSTF-501, Revision 1, or the NRC staff's model safety evaluation (SE) published in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the CLIP Notice of Availability. The following are the proposed changes:

This application also proposes a revision to TS 3.8.1, "AC Sources-Operating," following a similar approach to the TS 3.8.3 change discussed above. The proposed revision to SR 3.8.1.4.1 (Unit 1) and SR 3.8.1.4.2 (Unit 2) replaces the specific numerical volume requirement with the requirement to maintain greater than or equal to a 1 hour supply of fuel oil in each day and engine mounted tank (Unit 1) and each day tank (Unit 2). The specific numerical volume needed to support this requirement is placed in the TS Bases. Similar to the technical justification provided in the model SE as part of the CLIP, this proposed change is acceptable since it merely swaps the current numerical volume requirement from the TS to the TS Bases and swaps the greater than or equal to a 1 hour supply requirement from the TS Bases to the TS. This change is consistent with a similar change approved by the NRC in Reference 3.

TS 3.8.3, Conditions A and B in TSTF Traveler-501, Revision 1 uses "greater than a 6 day supply." For Condition A, EHN proposes using "greater than or equal to" a 3 day supply (Unit 1) or a 6 day supply (Unit 2). For Condition B, EHN proposes using "greater than or equal to" a 6 day supply. This deviation aligns the proposed TS and TS Bases changes with the current TS and TS Bases and avoids potential confusion when fuel oil volumes equal a 3 day or 6 day supply.

The SR 3.8.3.1 Bases in TSTF Traveler-501, Revision 1, references ANSI N195. At Beaver Valley Power Station, Unit 1 and Unit 2, the current references are Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators" and the Updated Final

Safety Analysis Report (UFSAR). The Unit 2 UFSAR includes ANSI N195 as a design basis reference and ANSI N195 will be added to the Unit 1 UFSAR design basis.

Finally, EHN is providing clarification to a statement within Section 3.3 of the NRC staff's model SE. The following statement is not applicable to the Beaver Valley Power Station TS 3 ½ day (Unit 1) or 7 day (Unit 2) fuel oil supply requirement: "Both calculation methods shall include an explicit allowance for fuel consumption required by periodic testing." To clarify, the Unit 2 calculation determines the fuel oil volume required to support 7 day operation of each diesel generator and does explicitly include analysis that shows adequate capacity for testing purposes is available. The Unit 1 calculation determines the fuel oil volume required to support 3 ½ day operation of each diesel generator but does not include an explicit allowance for fuel oil consumption due to periodic testing. Instead, Unit 1 administratively controls fuel oil volumes in support of required periodic testing, such that the TS required volumes are maintained above the requirement for a 3 ½ day supply for each storage tank.

### **3.0 BACKGROUND**

The background for this application is addressed by the model safety evaluation referenced in the NRC's Notice of Availability published on May 26, 2010 (75 FR 29588) and TSTF-501, Revision 1. Additional information is provided in NRC Letter to Technical Specifications Task Force, Identification and Resolution of Issues Regarding Plant Specific Adoption of Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," April 3, 2014 [ADAMS Accession No. ML14084A512].

### **4.0 TECHNICAL ANALYSIS**

EHN has reviewed the model SE published in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the CLIP Notice of Availability and the NRC letter to TSTF on April 3, 2014 [ADAMS Accession No. ML14084A512]. EHN has concluded that the technical justifications presented in the SE prepared by the NRC staff are applicable to Beaver Valley Power Station and, therefore, justify this amendment for the incorporation of the proposed changes to the Unit 1 and Unit 2 TS.

### **5.0 REGULATORY SAFETY ANALYSIS**

#### **5.1 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION**

EHN has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Description of Amendment Request: The proposed changes revise TS by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS

and placing them in the TS Bases so that they may be modified under licensee control. The current stored diesel fuel oil and lube oil numerical volume requirements are based on a 3 ½ day supply (Unit 1) or 7 day supply (Unit 2) of diesel fuel oil, a 7 day supply of lube oil, and a greater than or equal to 1 hour supply of fuel oil in each day and engine mounted tank (Unit 1) and each day tank (Unit 2). The TS is modified so that the stored diesel fuel oil inventory will require that a 3 ½ day (Unit 1) or 7 day (Unit 2) supply be available for each diesel generator and that the stored lube oil inventory of a 7 day supply be available for each diesel generator. The TS will also require that a greater than or equal to a 1 hour supply of fuel oil be available in each day and engine mounted tank (Unit 1) and each day tank (Unit 2).

Basis for proposed no significant hazards determination: As required by 10 CFR 50.91(a), the EHN analysis of the issue of no significant hazards consideration is presented below:

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

Response: No

The proposed change removes the volume of diesel fuel oil required to support 3 ½ day (Unit 1) or 7 day (Unit 2) operation of each onsite diesel generator, and the volume equivalent to a 3 day (Unit 1) or 6 day (Unit 2) supply and replaces them with diesel operating time requirements. The specific volume of fuel oil equivalent to the required supply is calculated using the NRC-approved methodology described in Regulatory Guide 1.137, Revision 1, "Fuel-Oil Systems for Standby Diesel Generators" and ANSI N195 1976, "Fuel Oil Systems for Standby Diesel-Generators." Also, the proposed change removes the volume of lube oil required to support 7 day operation of each onsite diesel generator and the volume equivalent to a 6 day supply and replaces them with diesel operating time requirements. The specific volume of lube oil equivalent to a 7 day and 6 day supply is based on the diesel generator manufacturer's consumption values for the run time of the diesel generator. Because the requirement to maintain a 3 ½ day supply (Unit 1) or 7 day supply (Unit 2) of diesel fuel oil and a 7 day supply of lube oil is not changed and is consistent with the assumptions in the accident analyses, and the actions taken when the volume of fuel oil is less than a 3 day supply (Unit 1) or 6 day supply (Unit 2) and when the volume of lube oil is less than a 6 day supply have not changed, neither the probability nor the consequences of any accident previously evaluated will be affected.

The proposed change also removes the numerical volume of diesel fuel oil required to support a minimum of 1 hour of diesel generator operation at full load and replaces them with the time requirements. The specific volume and time are not changed and is consistent with the existing plant design basis to support the diesel generator under accident loading conditions. Because the requirement to maintain a 1 hour supply of diesel fuel oil is not changed and is consistent with the assumptions in the accident

analyses, and the actions taken when the volume of fuel oil is less than a 1 hour supply have not changed, neither the probability nor the consequences of any accident previously evaluated will be affected.

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

The change does not involve a physical alteration of the plant (that is, no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The change does not alter assumptions made in the safety analysis but ensures that the diesel generator operates as assumed in the accident analysis. The proposed change is consistent with the safety analysis assumptions. 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 removes the numerical volume of diesel fuel oil required to support 3 ½ day (Unit 1) or 7 day (Unit 2) operation of each onsite diesel generator, and the volume equivalent to a 3 day (Unit 1) or 6 day (Unit 2) supply and replaces them with operating time requirements. The proposed change removes the numerical volume of lube oil required to support 7 day operation of each onsite diesel generator, and the volume equivalent to a 6 day supply, and replaces them with operating time requirements. As the bases for the existing limits on diesel fuel oil and lube oil are not changed, no change is made to the accident analysis assumptions, and no margin of safety is reduced as part of this change.

The proposed change also removes the numerical volume of diesel fuel oil required to support a minimum of 1 hour of diesel generator operation at full load and replaces them with the time requirements. As the bases for the existing limits on diesel fuel oil are not changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change.

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

## 5.2 Applicable Regulatory Requirements/Criteria

A description of the proposed TS change and its relationship to applicable regulatory requirements were published in the *Federal Register* Notice of Availability on May 26, 2010 (75 FR 29588). EHN has reviewed the NRC staff's model SE referenced in the CLIP Notice of Availability and concluded that the regulatory evaluation section is applicable to Beaver Valley Power Station, Unit 1 and Unit 2.

## 6.0 ENVIRONMENTAL CONSIDERATION

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 Part 20, and 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 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.

## 7.0 REFERENCES

1. *Federal Register*, Notice of Availability of the Models for Plant-Specific Adoption of Technical Specifications Task Force Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," published on May 26, 2010, 75 FR 2958.
2. NRC Letter to Technical Specifications Task Force, Identification and Resolution of Issues Regarding Plant Specific Adoption of Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," April 3, 2014 [ADAMS Accession No. ML14084A512].
3. Waterford, Unit 3 - License Amendment Request for Adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," March 28, 2017 [ADAMS Accession No. ML17087A551].

Attachment 2  
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Technical Specification Page Markups  
(4 pages follow)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.4.1 -----</p> <p style="text-align: center;"><b>- NOTE -</b></p> <p>Only applicable to Unit 1.</p> <p>-----</p> <p>Verify each DG's day and engine mounted tanks contain a combined total of <del>≥ 900 gal</del> <u>≥ 1 hour supply</u> of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.4.2 -----</p> <p style="text-align: center;"><b>- NOTE -</b></p> <p>Only applicable to Unit 2.</p> <p>-----</p> <p>Verify each DG's day tank contains <del>≥ 350 gal</del> <u>≥ 1 hour supply</u> of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5.1 -----</p> <p style="text-align: center;"><b>- NOTE -</b></p> <p>Only applicable to Unit 1.</p> <p>-----</p> <p>Check and remove accumulated water from each day tank and engine mounted tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5.2 -----</p> <p style="text-align: center;"><b>- NOTE -</b></p> <p>Only applicable to Unit 2.</p> <p>-----</p> <p>Check and remove accumulated water from each day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.6</p> <p>Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with fuel inventory <u>less than a 3 ½ day supply (Unit 1) 7 day supply (Unit 2) and greater than or equal to a 3 day supply (Unit 1) 6 day supply (Unit 2)</u> <17,500 gal and ≥ 15,000 gal (Unit 1), < 53,225 gal and ≥ 45,625 gal (Unit 2) in storage tank.	A.1 Restore fuel oil inventory to within limits.	48 hours
B. One or more DGs with lube oil inventory <u>less than a 7 day supply and greater than or equal to a 6 day supply</u> < 330 gal and ≥ 283 gal.	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to within limits.	7 days
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more DGs with starting air receiver pressure < 165 psig and ≥ 125 psig (Unit 1) < 380 psig and ≥ 285 psig (Unit 2).	E.1 Restore starting air receiver pressure to ≥ 165 psig (Unit 1) ≥ 380 psig (Unit 2).	48 hours
F. Required Action and associated Completion Time not met.  <u>OR</u>  One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each fuel oil storage tank contains ≥ <u>a 3 ½ day supply</u> 17,500 gal of fuel oil (Unit 1) ≥ <u>a 7 day supply</u> 53,225 gal of fuel oil (Unit 2).	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2 Verify lubricating oil inventory is ≥ <u>a 7 day supply</u> 330 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

SURVEILLANCE REQUIREMENTS (continued)

<u>SURVEILLANCE</u>		<u>FREQUENCY</u>
SR 3.8.3.4	Verify DG air start receiver pressure is ≥ 165 psig (Unit 1) ≥ 380 psig (Unit 2).	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

Attachment 3  
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Technical Specification Pages Retyped  
(4 pages follow)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.4.1 -----  <b>- NOTE -</b>  Only applicable to Unit 1.  -----  Verify each DG's day and engine mounted tanks contain a combined total of <math>\geq 1</math> hour supply of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.4.2 -----  <b>- NOTE -</b>  Only applicable to Unit 2.  -----  Verify each DG's day tank contains <math>\geq 1</math> hour supply of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5.1 -----  <b>- NOTE -</b>  Only applicable to Unit 1.  -----  Check and remove accumulated water from each day tank and engine mounted tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5.2 -----  <b>- NOTE -</b>  Only applicable to Unit 2.  -----  Check and remove accumulated water from each day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.6      Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with fuel inventory less than a 3 ½ day supply (Unit 1) 7 day supply (Unit 2) and greater than or equal to a 3 day supply (Unit 1) 6 day supply (Unit 2) in storage tank.	A.1 Restore fuel oil inventory to within limits.	48 hours
B. One or more DGs with lube oil inventory less than a 7 day supply and greater than or equal to a 6 day supply.	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to within limits.	7 days
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more DGs with starting air receiver pressure < 165 psig and ≥ 125 psig (Unit 1) < 380 psig and ≥ 285 psig (Unit 2).	E.1 Restore starting air receiver pressure to ≥ 165 psig (Unit 1) ≥ 380 psig (Unit 2).	48 hours
F. Required Action and associated Completion Time not met.  <u>OR</u>  One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each fuel oil storage tank contains ≥ a 3 ½ day supply of fuel oil (Unit 1) ≥ a 7 day supply of fuel oil (Unit 2).	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2 Verify lubricating oil inventory is ≥ a 7 day supply.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.4	Verify DG air start receiver pressure is ≥ 165 psig (Unit 1) ≥ 380 psig (Unit 2).	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

Attachment 4  
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Technical Specification Bases Page Markups (for information only)  
(9 pages follow)

## BASES

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**SURVEILLANCE REQUIREMENTS (continued)**

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus loads, do not invalidate this test. Similarly, momentary power factor transients outside the normal operating range do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4.1 and SR 3.8.1.4.2

For Unit 1, this SR provides verification that the inventory of fuel oil in the day tank in combination with the engine mounted tank is greater than or equal to the required fuel oil inventory of 900 gallons. The required Unit 1 inventory is expressed as an equivalent usable volume in gallons and is selected to ensure the DG can operate for more than 1 hour at full load plus 10%. For Unit 2, this SR provides verification that the inventory of fuel oil in the day tank is greater than or equal to the required fuel oil inventory of 350 gallons. The required Unit 2 inventory is expressed as an equivalent usable volume in gallons and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The SRs are modified by Notes that specify the applicable unit.

SR 3.8.1.5.1 and SR 3.8.1.5.2

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from these fuel oil tanks eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. This SR is for

## B 3.8 ELECTRICAL POWER SYSTEMS

## B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

## BASES

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**BACKGROUND** A required Unit 2 diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in Reference 1 and Regulatory Guide 1.137 (Ref. 2). Unit 1's fuel oil requirement provides three and one-half days of inventory for the associated storage tank. The maximum load demand is calculated using the assumption one DG is operated at full load for 7 days. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks and piping are located underground.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by Reference 3. The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. The required lube oil inventory for each DG is sufficient to ensure 7 days of continuous operation. This supply is sufficient to allow the operator to replenish lube oil from outside sources.

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver(s). For Unit 1, the required air start capacity for each DG is met with two out of three air tanks in one of the two air banks at the specified air pressure. For Unit 2, one out of the two air banks (consisting of a single air tank) supplies sufficient volume at the specified pressure to meet the required capacity for each DG.

## BASES

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### APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 4), and in Reference 5, assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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### LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation for Unit 2 DGs. Unit 1 DGs have a three and one-half day supply at a full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for the required days. This requirement, in conjunction with an ability to obtain replacement supplies within the required days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank and (engine mounted tank for Unit 1 only) fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

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### APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, lube oil, and starting air are required to be within limits when the associated DG is required to be OPERABLE.

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BASES

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## ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1

In this Condition, the 7 day fuel oil supply for a DG is not available for Unit 2. In this condition, the three and one-half day fuel oil supply for a DG is not available for Unit 1. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply for Unit 2 and a three day supply for Unit 1. The fuel oil inventory equivalent to a 6 day supply is 45,625 gallons for Unit 2 and a 3 day supply is 15,000 gallons for Unit 1. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity ( $\geq 6$  days for Unit 2 and a three day supply for Unit 1), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

B.1

In this Condition, the 7 dayWith lube oil inventory ~~< 330 gal,~~ that is, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions ~~may is not be~~ available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. The lube oil inventory equivalent to a 6 day supply is 283 gallons. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity ( $\geq 6$  days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.3. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling),

## BASES

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### ACTIONS (continued)

contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 92 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

#### D.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

#### E.1

With starting air receiver pressure < 165 psig for Unit 1 and < 380 psig for Unit 2, sufficient capacity for five successive DG start attempts does not exist. However, as long as the receiver pressure is  $\geq 125$  psig for Unit 1 and  $\geq 285$  psig for Unit 2, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

#### F.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through E, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

## BASES

SURVEILLANCE  
REQUIREMENTSSR 3.8.3.1

This SR provides verification that there is an adequate usable inventory of fuel oil in the storage tanks to support a DG's operation for three and one-half days for Unit 1 and 7 days for Unit 2. The fuel oil inventory equivalent to a three and one-half day supply is 17,500 gallons for Unit 1 and a 7 day supply is 53,225 gallons for Unit 2 when calculated in accordance with References 2 and 3. The required fuel storage volume is determined using the most limiting energy content of the stored fuel. Using the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, and the corresponding fuel consumption rate, the onsite fuel storage volume required for 7 days of operation can be determined. SR 3.8.3.3 requires new fuel to be tested to verify that the absolute specific gravity or API gravity is within the range assumed in the diesel fuel oil consumption calculations. This is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load operation for each DG. The lube oil inventory equivalent to a 7 day supply is 330 gallons. The required inventory for each DG is confirmed by verifying that a lube oil volume of 330 gallons (six 55 gallon oil drums) is available, in storage, for each DG. This required inventory is in addition to the lube oil in the DG sump required to maintain the manufacturer's recommended minimum sump level. If necessary to meet the required inventory, credit may be taken for lube oil in the DG sump above the manufacturer's recommended minimum sump level to supplement the required storage volume. The 330 gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.8.3.3

The tests of fuel oil prior to addition to the storage tanks (listed below) are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to

## BASES

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### SURVEILLANCE REQUIREMENTS (continued)

the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards for the tests identified in TS 5.5.9, "Diesel Fuel Oil Testing Program," are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-81 (Ref. 6),
- b. Verify in accordance with the tests specified in ASTM D1298-80 (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of  $\geq 0.83$  and  $\leq 0.89$  or an API gravity at 60°F of  $\geq 27$  degrees and  $\leq 39$  degrees or an API gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F when compared to the supplier's certificate,
- c. Verify in accordance with the tests specified in ASTM D975-81 (Ref. 6), a flash point of  $\geq 125^\circ\text{F}$ ; and, if gravity was not determined by a comparison with the supplier's certification, a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes;
- d. Verify that the new fuel oil has water and sediment content of less than or equal to 0.05% when tested in accordance with ASTM D1796-83 (Ref. 6).

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the storage tanks.

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-81 (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-81 (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-79 (Ref. 6) or ASTM D2622-82 (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

## BASES

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### SURVEILLANCE REQUIREMENTS (continued)

Particulate concentrations should be determined in accordance with ASTM D2276-78, Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. Stored fuel oil volume is contained in more than one tank (i.e., day tanks and storage tanks); each tank is considered and tested separately.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

#### SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of five engine start cycles without recharging. A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed. The pressure specified in this SR is intended to reflect the lowest value at which the five starts can be accomplished. The air receiver volume that ensures the required air start capacity is met, at the specified pressures, consists of the following:

For Unit 1, two out of three air tanks in one of the two air banks for each DG, and

For Unit 2, one out of the two air banks (consisting of a single air tank) for each DG.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

#### SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria.

## BASES

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### SURVEILLANCE REQUIREMENTS (continued)

Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. This SR is for preventative maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

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### REFERENCES

1. UFSAR, Section 9.14.4 for Unit 1 and Section 9.5.4 for Unit 2.
  2. Regulatory Guide 1.137.
  3. UFSAR Section 9.14.6 for Unit 1 and UFSAR Section 9.5.4 for Unit 2.
  4. UFSAR, Chapter 6.
  5. UFSAR, Chapter 14 for Unit 1 and Chapter 15 for Unit 2.
  6. ASTM Standards: D4057-81, D1298-80, D975-81, D1796-83, D1552-79, D2622-82, and D2276-78, Method A.
  7. ASTM Standards, D975-81, Table 1.
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