



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-14-059

December 11, 2014

10 CFR 50.90

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

Browns Ferry Nuclear Plant, Units 1, 2, and 3  
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68  
NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: License Amendment Request for the Adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (BFN TS-493)

- References:
- 1) Transmittal of TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," dated February 20, 2009 [ADAMS Accession No. ML090510686]
  - 2) Federal Register Notice, Notice of Availability published on May 26, 2010, (75 FR 29588) [ADAMS Accession No. ML100850069]
  - 3) Letter from A. J. Mendiola (NRC) to the 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,'" dated April 3, 2014 [ADAMS Accession No. ML14084A512]
  - 4) NUREG-1433, Revision 4, "Standard Technical Specifications, General Electric BWR/4 Plants," dated April 2012 [ADAMS Accession No. ML12104A192]

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.90, "Application for amendment of license, construction permit, or early site permit," the Tennessee Valley Authority (TVA) is submitting a request for an amendment to the Technical Specifications (TS) for Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3.

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 replacing the volume requirements with the number of continuous days that the diesel generators are required to operate. The numerical volume requirements will be maintained in the TS Bases so that they may be modified under licensee control. The TS is modified so that the stored diesel fuel oil and lube oil inventory will require 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 SR 3.8.3.2 are revised to reflect the above change. In addition, American National Standards Institute N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," is being added as a reference and the version of Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators," is being specified as Revision 1, October 1979.

Regarding stored diesel fuel oil and lube oil, no changes to the current plant configuration, current numerical volume requirements, or current 7-day basis are proposed in this application. This request replaces the current numerical volume requirements with the associated current 7-day basis of the numerical volume requirements.

These proposed changes are consistent with Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (Reference 1), which was approved by the Nuclear Regulatory Commission (NRC). The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010 (75 FR 29588) (Reference 2) as part of the consolidated line item improvement process (CLIP).

As described in the Final Safety Analysis Report, Section 8.5.3.4, "Diesel Fuel Oil Storage and Transfer System," the current licensing basis for BFN Units 1, 2, and 3 requires a 7-day supply of stored diesel fuel oil and lube oil be available for each diesel generator.

The proposed license amendment request includes the following two changes in addition to the changes contained in TSTF-501, Revision 1, which are required to follow NRC guidance provided to the TSTF in the letter dated April 3, 2014 (Reference 3):

- The terminology such as "relocate" was replaced with terms such as "remove and replace" when discussing the fuel oil and lube oil volume values.
- A regulatory commitment to revise the BFN Units 1, 2, and 3 Final Safety Analysis Report (FSAR) with the following information and to submit the revised description with the next FSAR update following issuance of the License Amendment approving the BFN TS-493 request to adopt TSTF-501, Revision 1:

The specific Emergency Diesel Generator (EDG) fuel oil volumes contained in the diesel fuel oil storage tank(s) necessary to ensure that EDG run-duration requirements are calculated using Section 5.4 of American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," and are based on applying the conservative assumption that the EDG is operated continuously at rated capacity. This fuel oil calculation methodology is one of the two approved methods specified in Regulatory Guide (RG) 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators," Regulatory Position C.1.c.

The following four additional changes are included to support the adoption of TSTF-501, Revision 1. These changes are requirements related to new and stored fuel oil that are contained in NUREG-1433, Revision 4 (Reference 4), which was recently approved by the NRC.

- A change to TS 5.5.9, "Diesel Fuel Oil Testing Program," is proposed to revise the fuel oil testing program to be consistent with NUREG-1433, Revision 4. This proposed change adds requirements and limits for the testing of new fuel oil.
- A change to SR 3.8.3.3 is proposed to make it consistent with NUREG-1433, Revision 4 and with the proposed change to TS 5.5.9, "Diesel Fuel Oil Testing Program."
- A new Condition D is proposed to be added in TS 3.8.3. This is required to provide a condition with required action and completion time for new fuel oil properties not being within limits. This change is required as a result of the changes to TS 5.5.9 discussed above. The addition of a requirement to test new fuel oil must have a required action to follow when new fuel oil limits are not met.
- A new SR 3.8.3.5 is proposed to be added to check for and remove accumulated water from the fuel oil storage tanks. This change is consistent with NUREG-1433, Revision 4.

Enclosure 1 of this letter provides the description, proposed changes, technical analysis, regulatory analysis, and a discussion of environmental considerations. The attachments to Enclosure 1 provide the existing facility operating license pages and bases marked to show the proposed changes (Attachments 1 and 2) and revised (final typed) pages (Attachments 3 and 4).

In accordance with 10 CFR 50.91(a) (1), "Notice for Public Comment," the analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is being provided to the Commission in the regulatory analysis section of Enclosure 1.

In accordance with 10 CFR 50.91(b) (1), "Notice for Public Comment; State Consultation," a copy of this application and its reasoned analysis about no significant hazards considerations is being provided to the Alabama Department of Public Health.

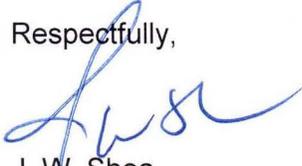
This submittal follows TSTF-501, Revision 1, and proposes additional changes that are consistent with the original intent on the TSTF traveler, follows the direction of the NRC letter to the TSTF, and incorporates the NRC guidance provided in NUREG-1433, Revision 4. Because this request exceeds the scope of the approved CLIP, TVA requests review and approval of the proposed license amendment within 12 months of the date of the submittal and requests the implementation date be specified as within 60 days of the approval date.

This letter contains one new regulatory commitment, as discussed above, and provided separately in Enclosure 2. Please direct any questions concerning this matter to Mr. Edward D. Schrull at (423) 751-3850.

December 11, 2014

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 11th day of December 2014.

Respectfully,



J. W. Shea  
Vice President, Nuclear Licensing

Enclosures

- Enclosure 1 Evaluation of Proposed Change, Browns Ferry Nuclear Plant Units 1, 2, and 3 Application to Adopt TSTF-501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (BFN TS-493)
- Enclosure 2 License Amendment Request for Adoption of TSTF-501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (BFN TS-493) Regulatory Commitment

cc (w/Enclosures):

NRC Regional Administrator - Region II  
NRR Director - NRC Headquarters  
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant  
NRR Project Manager - Browns Ferry Nuclear Plant  
State Health Officer – Alabama Department of Public Health

Enclosure 1  
Evaluation of Proposed Change  
Browns Ferry Nuclear Plant Units 1, 2, and 3 Application to Adopt TSTF-501,  
"Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control"  
(BFN TS-493)

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## 1.0 SUMMARY DESCRIPTION

The proposed changes revise Technical Specification (TS) 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by replacing the volume requirements with the number of continuous days the diesel generators are required to run. The numerical volumes will be maintained in the TS Bases so that they may be modified under licensee control. The TS are modified so that the stored diesel fuel oil and lube oil inventory will require a 7-day supply be available for each diesel generator. This change is consistent with U.S. Nuclear Regulatory Commission (NRC) approved Technical Specifications 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" (Reference 1). The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010, (75 FR 29588), (Reference 2), as part of the consolidated line item improvement process (CLIP).

The Tennessee Valley Authority (TVA) is also following the NRC guidance to the TSTF in the April 3, 2014, letter (Reference 3). Furthermore, TVA is proposing additional changes to TS 5.5.9 "Diesel Fuel Oil Testing Program" and TS 3.8.3 to support the changes proposed by TSTF-501, Revision 1. These proposed changes will update TSs 5.5.9 and 3.8.3 to be consistent with NUREG-1433, Revision 4 (Reference 4) and are discussed in Section 2, below.

## 2.0 DETAILED DESCRIPTION

### 2.1 Proposed Changes

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by relocating the current stored diesel fuel oil and lube oil numerical volume requirements from the TS to the TS Bases so that they may be modified under licensee control. The TS are modified so that the stored diesel fuel oil and lube oil inventory will require a 7-day supply be available for each diesel generator. The TS 5.5.9, "Diesel Fuel Oil Testing Program," is also revised to be consistent with NUREG-1433, Revision 4. The following provides a summary description of the proposed changes that are provided in Attachments 1 and 3 of this enclosure:

1. TS 3.8.3 Conditions A and B are revised. Currently, Conditions A and B are entered when the stored diesel fuel oil and lube oil numerical volume requirements are not met. As described in the current TS Bases, the numerical volume requirements in Conditions A and B are based on volumes less than a 7-day supply, but greater than a 6-day supply. The revision removes the volumetric requirements from the TS and replaces them with the associated number of days. The numeric volumes will be maintained 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 7-day supply, but greater than a 6-day supply for one or more diesel generators.
2. A new Condition D is added to the TS 3.8.3 ACTIONS table and the current Conditions D and E are re-lettered as E and F. This is required to provide a condition with required action and completion time for new fuel oil properties not being within limits. This change is required as a result of the changes to SR 3.8.3.3 and TS 5.5.9 discussed below. The addition of a requirement to test new fuel oil must have a required action to follow when new fuel oil limits are not met. This change is consistent with NUREG-1433, Revision 4.

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3. Surveillance Requirements (SR) 3.8.3.1 and SR 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 described 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 7-day supply. The revision removes the volumetric requirements from the TS and replaces them with the associated number of days. The numeric volumes will be maintained 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 and lube oil inventory is greater than or equal to a 7-day supply for each diesel generator.
4. SR 3.8.3.3 is revised to make it consistent with NUREG-1433, Revision 4 and compatible with TSTF-501, Revision 1. This is necessary because the BFN current licensing basis does not require the level of testing that is contained in NUREG-1433, Revision 4. The proposed change to SR 3.8.3.3 reflects the changes to TS 5.5.9.
5. A new SR 3.8.3.5 is added to check for and remove accumulated water. This change is consistent with NUREG-1433, Revision 4.
6. TS 5.5.9 is revised to be consistent with NUREG-1433, Revision 4.

The following proposed revisions to the TS Bases are also included in this application (as shown in Attachments 2 and 4 to this enclosure) for your information. Adoption of the TS Bases associated with TSTF-501, Revision 1, is an integral part of implementing this TS amendment. The changes shown in Attachments 2 and 4 of this enclosure will be incorporated in accordance with the TS Bases Control Program.

- American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators" is being added as new reference.
- Revision 1 and the issue month and year (October 1979) is being added to the reference of Regulatory Guide 1.137 in the TS Bases.
- Bases changes associated with the addition of TS 3.8.3 Condition D, the new and revised surveillance requirements.

## **2.2 Discussion of Proposed Changes Exceeding the Scope of the CLIP**

Changes to the license amendment request discussion was submitted and approved in TSTF-501, Revision 1 are being proposed by TVA. These changes follow the NRC guidance provided in a letter to the TSTF dated April 3, 2014 (Reference 3). TVA is also proposing changes to the TS in addition to those described in 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 additional changes are proposed to be consistent with NUREG-1433, Revision 4 and are being incorporated to support the adoption of TSTF-501, Revision 1. These changes are discussed below:

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- Consistent with the April 3, 2014, letter from the NRC to the Technical Specifications Task Force (Reference 3), terminology such as “relocate” was replaced with terms such as “remove and replace” when discussing the proposed changes to the fuel oil and lube oil volume values.
- Also consistent with Reference 3, TVA is making a regulatory commitment (Enclosure 2) to revise the BFN Units 1, 2, and 3 Final Safety Analysis Report (FSAR) with the following information and to submit the revised description with the next FSAR update following issuance of the License Amendment approving the BFN TS-493 request to adopt TSTF-501, Revision 1:

The specific Emergency Diesel Generator (EDG) fuel oil volumes contained in the diesel fuel oil storage tank(s) necessary to ensure that EDG run-duration requirements, are calculated using Section 5.4 of American National Standards Institute (ANSI) N195-1976, “Fuel Oil Systems for Standby Diesel-Generators” and are based on applying the conservative assumption that the EDG is operated continuously at rated capacity. This fuel oil calculation methodology is one of the two approved methods specified in Regulatory Guide (RG) 1.137, Revision 1, “Fuel Oil Systems for Standby Diesel Generators,” Regulatory Position C.1.c.

- A new Condition D, from NUREG-1433, Revision 4, is added as Condition D to the TS 3.8.3 ACTIONS table in the BFN Technical Specifications. This is required to provide a condition with required action and completion time for new fuel oil properties not being within limits. This change is required as a result of the changes to SR 3.8.3.3 and TS 5.5.9 as discussed above. The addition of a requirement to test new fuel oil needs to have a required action to follow when new fuel oil limits are not met. This is a more restrictive change to support of the adoption of TSTF-501, Revision 1.
- A change to SR 3.8.3.3 is proposed to make it consistent with the current NUREG-1433, Revision 4 and to reflect the proposed change to Section 5.5.9 “Diesel Generator Fuel Oil Testing Program.” This proposed change adds the requirement to test new fuel oil to SR 3.8.3.3. This is a more restrictive change to support the adoption of TSTF-501, Revision 1.
- A new SR 3.8.3.5 is added to check for and remove accumulated water. This change is consistent with NUREG-1433, Revision 4 and is a more restrictive change to support of the adoption of TSTF-501, Revision 1.
- A change to TS 5.5.9 “Diesel Fuel Oil Testing Program” is proposed to adopt the testing of new fuel oil consistent with NUREG-1433, Revision 4. This change adds a requirement to test new fuel oil to a set of standards and limits and is a more restrictive change to support the adoption of TSTF-501, Revision 1. The periodicity of testing the 7-day storage tank fuel oil particulate concentration has been retained from the BFN Current Licensing Basis as every 92 days, consistent with ASTM D-2276, Method A-2 or A-3.

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### 2.3 Need for Proposed Changes

The BFN Units 1, 2, and 3 current Technical Specifications contain numerical volume requirements for stored diesel fuel oil and lube oil. Any changes to the TS numerical volume requirements require prior approval from the NRC. As an example, diesel fuel oil numerical volume requirements may need to be modified in order to take into account changes to the energy content (BTU/gallon) of available fuels in the market. Fluctuations in energy content could be caused by a variety of factors, including changes to regulatory requirements. By adopting TSTF-501, Revision 1, the numerical volume requirements for stored diesel fuel oil and lube oil are removed and replaced from the TS to a licensee-controlled document. As a result, the numerical volume requirements for stored diesel fuel oil and lube oil may be modified under licensee control without submitting a license amendment request to the NRC.

The BFN Units 1, 2, and 3 TS were converted to the Improved Standard Technical Specifications in 1998. The current BFN Diesel Fuel Oil Testing Program does not contain a requirement for testing of new fuel oil and the current Surveillance Requirements do not require testing of new fuel oil or checking for water in the stored oil. The proposed changes adding these requirements support the receipt and maintenance of quality fuel oil needed for the diesel generators to perform their required functions. The new Condition provides the appropriate allowed time, consistent with NRC approved Industry Standards, to restore a condition when new fuel oil properties are not met.

### 3.0 TECHNICAL EVALUATION

During the review of the model SE published in the Federal Register on May 26, 2010 (75 FR 29588) (Reference 2), TVA concluded that the technical justifications presented in the SE prepared by the NRC staff are applicable to BFN Units 1, 2, and 3, and therefore justify this amendment for the incorporation of the proposed changes to the BFN Units 1, 2, and 3 TS.

However, TVA has also identified additional changes following subsequent receipt of the NRC guidance provided to the TSTF in the April 3, 2014 letter (Reference 3), and issuance of NUREG-1433, Revision 4, Standard Technical Specifications, General Electric BWR/4 Plants.

The additional changes update TS Sections 3.8.3 and 5.5.9 with requirements related to the testing of new and stored fuel oil. Because these fuel oil testing requirements are part of NUREG-1433, Revision 4, issued April 2012, they are consistent with the intent of TSTF-501, Revision 1. The proposed additional changes verify new and stored fuel oil acceptability consistent with ASTM Standards prior to use or transfer. Therefore, these additional changes improve the current technical specification requirements and support the adoption of TSTF-501, Revision 1.

## 4.0 REGULATORY EVALUATION

### 4.1 Applicable Regulatory Requirements and Criteria

In Federal Register Notice of Availability on May 26, 2010, (75 FR 29588) (Reference 2), the NRC announced, as part of the consolidated line item improvement process (CLIIP), the availability of the model application (with model no significant hazards consideration determination) and model safety evaluation (SE) for the plant-specific adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control." TSTF-501, Revision 1 (Reference 1), is available in the Agencywide Document Access and Management System (ADAMS) under Accession Number ML090510686. The proposed changes would 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 they may be modified under licensee control. This CLIIP model SE facilitates expedited approval of plant-specific adoption of TSTF-501, Revision 1.

TSTF-501, Revision 1, is applicable to all nuclear power reactors. Licensees opting to apply for this TS change are responsible for reviewing the NRC staff's model SE, referencing the applicable technical justifications, and providing any necessary plant-specific information. The NRC would process each amendment application responding to this notice of availability according to applicable NRC rules and procedures. The model does not prevent licensees from requesting an alternate approach or proposing changes other than those proposed in TSTF-501, Revision 1. However, significant deviations from the approach recommended in this notice or the inclusion of additional changes to the license would require additional NRC staff review and would not be reviewed as a part of the CLIIP. This may increase the time and resources needed for the review or result in NRC staff rejection of the license amendment request (LAR). Licensees desiring significant deviations or additional changes should instead submit an LAR that does not claim to adopt TSTF-501, Revision 1. The NRC staff requests that each licensee applying for the changes proposed in TSTF-501, Revision 1, include their current licensing basis for fuel and lube oil storage requirements in their LAR.

BFN Units 1, 2, and 3 current licensing basis for EDG fuel oil and lube oil is a 7-day storage requirement. TVA has reviewed the NRC staff's model SE referenced in the CLIIP Notice of Availability and concluded that the regulatory evaluation section is applicable to BFN Units 1, 2, and 3.

During the review to determine applicability, TVA determined additional changes were required to support the adoption of TSTF-501, Revision 1. The BFN Units 1, 2, and 3 TS were converted to the Improved Standard Technical Specifications in 1998. The current BFN Diesel Fuel Oil Testing Program does not contain a requirement for testing of new fuel oil and the current Surveillance Requirements do not require testing of new fuel oil or checking for water in the storage oil.

To improve the BFN Units 1, 2, and 3 TS in support of adopting TSTF-501, Revision 1, TVA determined that the Section 5.5.9 "Diesel Fuel Oil Testing Program" and the Section 3.8.3 Surveillance Requirements needed to be updated to reflect the more comprehensive testing requirements that are contained in NUREG-1433, Revision 4. These requirements were part of NUREG-1433 when the NRC approved TSTF-501, Revision 1. These are more restrictive changes, which help ensure the properties of the new and stored fuel oil support a 7-day supply,

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and thus are needed to support the NRC's model SE. The No Significant Hazards Consideration Determination, Section 4.3 below, has been revised from the one provided in the model SE to discuss the additional changes.

#### 4.2 Precedents

While additional precedent exists, the following examples of NRC approval to adopt TSTF-501, Revision 1, were issued within the past few years.

1. Letter dated January 28, 2014; Subject: "Monticello Nuclear Generating Plant - Issuance of Amendment to Adopt Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control' (TAC No. ME9601)" [ADAMS Accession No. ML13218A061]
2. Letter dated May 9, 2013; Subject: "Prairie Island Nuclear Generating Plant, Units 1 and 2 – Issuance of Amendments Re: Addition of Fuel Oil License Bases and Revision of Technical Specifications (TS) 3.7.8, 'Cooling Water System' AND TS 3.8.3, 'Diesel Fuel Oil' (TAC Nos. ME6849 and ME6850)" [ADAMS Accession No. ML13093A344]
3. Letter dated February 24, 2012; Subject: "Fermi 2 - Issuance of Amendment Re: TSTF-501, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control' (TAC No. ME6861)" [ADAMS Accession No. ML113500433]

#### 4.3 No Significant Hazards Consideration Determination

The Tennessee Valley Authority (TVA) has evaluated the proposed changes to the Technical Specifications (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 7-day supply. The TS are modified so that the stored diesel fuel oil and lube oil inventory will require that a 7-day supply be available for each diesel generator.

Basis for proposed no significant hazards determination: As required by 10 CFR 50.91(a), the TVA 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 changes to TS Section 3.8.3, Conditions A and B, and to SR 3.8.3.1 and SR 3.8.3.2 remove the volume of diesel fuel oil and lube oil required to support 7-day operation of each onsite diesel generator, and the volume equivalent to a 6-day supply, from the TS and replace them with the associated number of days. The numerical volumes will be maintained under licensee control. The specific volume of fuel oil equivalent to a 7 and 6-day supply is calculated using the NRC-approved methodology

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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." 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 7-day supply of diesel fuel oil and 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 and lube oil are less than a 6-day supply have not changed, neither the probability nor the consequences of any accident previously evaluated will be affected.

The addition of a new Condition D provides a required action and completion time if new fuel oil properties are not within limits. The new SR 3.8.3.5 requires checking for and removing water from the 7-day storage tank every 31 days. The revised Section 5.5.9 adds testing requirements for new fuel oil to be completed prior to the addition of the new fuel oil to the 7-day storage tank, as well as additional testing to be completed prior or within 31 days of the addition. These requirements are more restrictive testing requirements and provide corrective action to be taken if the testing limits are not met. They are taken from the current NRC approved NUREG-1433, Revision 4, "Standard Technical Specifications, General Electric BWR/4 Plants." Improved, more restrictive testing standards will neither change the probability or the consequences of any accident previously evaluated 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 changes do not involve a physical alteration of the plant (i.e., 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 changes to Section 3.8.3, Conditions A and B, and to SR 3.8.3.1 and SR 3.8.3.2 remove the numerical volume of diesel fuel oil and lube oil required to support 7-day operation of each onsite diesel generator, and the numerical volume equivalent to a 6-day supply from the TS and replaces them with the associated number of days. The numerical volumes will be maintained under licensee control. As the bases for the existing limits on diesel fuel oil volume and lube oil volume are not

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changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change.

The new, more restrictive, testing requirements, and the provision for corrective action to be taken if the testing limits are not met, are taken from the current NRC approved NUREG-1433, Revision 4, "Standard Technical Specifications, General Electric BWR/4 Plants." These changes do not revise the accident analysis assumptions and no margin of safety is reduced as part of these changes.

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

Based on the above, TVA concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

#### **4.4 Conclusions**

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

#### **5.0 ENVIRONMENTAL CONSIDERATION**

TVA 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." 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(b) and (c)(9), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

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**6.0 REFERENCES**

1. Technical Specifications 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," dated February 20, 2009 [ADAMS Accession No. ML090510686]
2. Federal Register Notice, Notice of Availability published on May 26, 2010, (75 FR 29588) [ADAMS Accession No. ML100850069]
3. Letter from A. J. Mendiola (NRC) to the 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,'" dated April 3, 2014 [ADAMS Accession No. ML14084A512]
4. NUREG-1433, Revision 4, "Standard Technical Specifications, General Electric BWR/4 Plants," dated April 2012 [ADAMS Accession No. ML12104A192]

Enclosure 1  
Evaluation of Proposed Change

ATTACHMENT 1

Marked up Proposed Technical Specification Pages

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. ~~284~~, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 234 to Facility Operating License DPR-33, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 234. For SRs that existed prior to Amendment 234, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 234.

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 oil level <del>&lt; 35,280 gal</del> and <del>&gt; 30,240 gal</del> in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory <del>&lt; 175 gal</del> and <del>&gt; 150 gal</del> .	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limits.	C.1 Restore fuel oil total particulates to within limit.	7 days

less than a 7-day supply and greater than a 6-day supply

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><del>E</del> <del>D</del>. One or more DGs with the required starting air receiver unit pressure &lt; 165 psig.</p>	<p><del>E</del> <del>D</del>.1 Declare associated DG inoperable.</p>	<p>Immediately</p>
<p><del>F</del> <del>E</del>. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs with diesel fuel oil, lube oil, or starting air subsystem inoperable for reasons other than Condition A, B, C or <del>D</del>. <span style="border: 1px solid red; padding: 2px;">C, D, or E.</span></p>	<p><del>F</del> <del>E</del>.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains <del>≥ 35,280 gal</del> of fuel.	31 days
SR 3.8.3.2	Verify lube oil inventory is <del>≥ 175 gal.</del>	31 days
SR 3.8.3.3	Verify fuel oil <del>total particulate concentration in stored fuel oil is</del> tested in accordance with, <del>and maintained within the limits of, the Diesel Fuel Oil Testing Program.</del>	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is <del>≥ 165 psig.</del>	31 days

SR 3.8.3.5

Check for and remove accumulated water from each fuel oil storage tank.

31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

~~A diesel fuel oil testing program to implement required testing of the fuel oil in each 7-day fuel oil tank shall be established. The purpose of the program is to establish the following:~~

INSERT FROM  
FOLLOWING  
PAGE

- ~~a. The quality of the fuel oil in each 7-day fuel oil tank is within the acceptable limits specified in Table 1 of ASTM D-975-1989 when tested every 92 days; and~~
- ~~b. Total particulate concentration of the fuel oil in each 7-day fuel oil tank is  $\leq 10$  mg/l when tested every 92 days in accordance with ASTM D-2276, Method A-2 or A-3.~~

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

**INSERT**

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in the 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to the 7-day storage tanks by determining that the fuel oil has:
  1. An API gravity or an absolute specific gravity within limits,
  2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  3. A clear and bright appearance with proper color or a water and sediment content within limits,
- b. Within 31 days following addition of the new fuel oil to the 7-day storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and
- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when tested every 92 days.

sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. ~~310~~, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 253 to Facility Operating License DPR-52, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 253. For SRs that existed prior to Amendment 253, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 253.

- 3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's

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 oil level <del>&lt; 35,280 gal</del> and <del>&gt; 30,240 gal</del> in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory <del>&lt; 175 gal</del> and <del>&gt; 150 gal</del> .	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limits.	C.1 Restore fuel oil total particulates to within limit.	7 days

less than a 7-day supply and greater than a 6-day supply

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><del>E</del> <del>D.</del> One or more DGs with the required starting air receiver unit pressure &lt; 165 psig.</p>	<p><del>E</del> <del>D.1</del> Declare associated DG inoperable.</p>	<p>Immediately</p>
<p><del>F</del> <del>E.</del> Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs with diesel fuel oil, lube oil, or starting air subsystem inoperable for reasons other than Condition A, B, C or <del>D.</del> <span style="border: 1px solid red; padding: 2px;">C, D, or E.</span></p>	<p><del>F</del> <del>E.1</del> Declare associated DG inoperable.</p>	<p>Immediately</p>

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains <del>≥ 35,280 gal</del> of fuel.	31 days
SR 3.8.3.2	Verify lube oil inventory is <del>≥ 175 gal.</del>	31 days
SR 3.8.3.3	Verify fuel oil <del>total particulate concentration in</del> stored fuel oil <del>is</del> tested in accordance with, <del>and</del> maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is $\geq 165$ psig.	31 days

a 7-day supply

are

properties of new and

SR 3.8.3.5

Check for and remove accumulated water from each fuel oil storage tank.

31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

~~A diesel fuel oil testing program to implement required testing of the fuel oil in each 7 day fuel oil tank shall be established. The purpose of the program is to establish the following:~~

INSERT FROM  
FOLLOWING  
PAGE

- ~~a. The quality of the fuel oil in each 7-day fuel oil tank is within the acceptable limits specified in Table 1 of ASTM D-975-1989 when tested every 92 days; and~~
- ~~b. Total particulate concentration of the fuel oil in each 7-day fuel oil tank is  $\leq 10$  mg/l when tested every 92 days in accordance with ASTM D-2276, Method A-2 or A-3.~~

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

**INSERT**

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in the 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to the 7-day storage tanks by determining that the fuel oil has:
  1. An API gravity or an absolute specific gravity within limits,
  2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  3. A clear and bright appearance with proper color or a water and sediment content within limits,
- b. Within 31 days following addition of the new fuel oil to the 7-day storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and
- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when tested every 92 days.

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. ~~269~~, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 212 to Facility Operating License DPR-68, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 212. For SRs that existed prior to Amendment 212, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 212.

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 oil level <del>&lt; 35,280 gal and &gt; 30,240 gal</del> in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory <del>&lt; 175 gal and &gt; 150 gal</del> .	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limits.	C.1 Restore fuel oil total particulates to within limit.	7 days

less than a 7-day supply and greater than a 6-day supply

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><del>E</del> <del>D</del>. One or more DGs with the required starting air receiver unit pressure &lt; 165 psig.</p>	<p><del>E</del> <del>D</del>.1 Declare associated DG inoperable.</p>	<p>Immediately</p>
<p><del>F</del> <del>E</del>. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs with diesel fuel oil, lube oil, or starting air subsystem inoperable for reasons other than Condition A, B, C or <del>D</del>. <span style="border: 1px solid red; padding: 2px;">C, D, or E.</span></p>	<p><del>F</del> <del>E</del>.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains <del>≥ 35,280 gal</del> of fuel.	31 days
SR 3.8.3.2	Verify lube oil inventory is <del>≥ 175 gal.</del>	31 days
SR 3.8.3.3	Verify fuel oil <del>total particulate concentration in</del> stored fuel oil is tested in accordance with, <del>and maintained within the limits of,</del> the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is $\geq 165$ psig.	31 days

a 7-day supply

properties of new and

are

SR 3.8.3.5

Check for and remove accumulated water from each fuel oil storage tank.

31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

~~A diesel fuel oil testing program to implement required testing of the fuel oil in each 7-day fuel oil tank shall be established. The purpose of the program is to establish the following:~~

INSERT FROM  
FOLLOWING  
PAGE

- ~~a. The quality of the fuel oil in each 7-day fuel oil tank is within the acceptable limits specified in Table 1 of ASTM D-975-1989 when tested every 92 days; and~~
- ~~b. Total particulate concentration of the fuel oil in each 7-day fuel oil tank is  $\leq 10$  mg/l when tested every 92 days in accordance with ASTM D-2276, Method A-2 or A-3.~~

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in the 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to the 7-day storage tanks by determining that the fuel oil has:
  1. An API gravity or an absolute specific gravity within limits,
  2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  3. A clear and bright appearance with proper color or a water and sediment content within limits,
- b. Within 31 days following addition of the new fuel oil to the 7-day storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and
- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when tested every 92 days.

Enclosure 1  
Evaluation of Proposed Change

ATTACHMENT 2

Marked up Proposed Technical Specification Bases Pages

## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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##### BACKGROUND

and Regulatory  
Guide 1.137 (Ref. 2)

Only the 7-day  
storage tanks are  
subject to this  
LCO, the  
Actions, and the  
surveillance  
requirements.

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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**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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. These circumstances may be caused by events such as:

The fuel oil level equivalent to a 6-day supply is 30,240 gallons.

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

(continued)

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BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), 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-day

The lube oil inventory equivalent to a 6-day supply is 150 gallons.

With lube oil inventory ~~< 175 gal,~~ <sup>i.e.,</sup> sufficient lube oil to support 7 days of continuous DG operation at full load conditions ~~may not be~~ <sup>, is</sup> available. However, the Condition is restricted to lube oil volume reductions that maintain at least a ~~6-~~ <sup>6-</sup> day supply. This restriction allows sufficient time for obtaining 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 (> 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 for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

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(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, 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 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E ~~D.1~~

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

F ~~E.1~~

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

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(continued)

BASES (continued)

SURVEILLANCE  
REQUIREMENTS

INSERT

The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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 on site 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.

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

INSERT

SR 3.8.3.2

The lube oil inventory equivalent to a 7-day supply is 175 gallons and

This Surveillance ensures that sufficient lubricating oil inventory is available to support at least 7 days of full load operation for each DG. ~~The 175 gal requirement~~ is based on the DG manufacturer's consumption values for the run time of the DG.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

(continued)

BASES

SURVEILLANCE  
REQUIREMENTS  
(continued)

INSERT  
NEXT PAGE

SR 3.8.3.3

~~This SR verifies that the required fuel oil testing is performed in accordance with the Diesel Fuel Oil Testing Program. Tests are a means of monitoring the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels. Specific sampling requirements, frequencies, and additional information are discussed in detail in the Diesel Fuel Oil Testing 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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

1. FSAR, Section 8.5.3.4. , Revision 1, October 1979
2. Regulatory Guide 1.137.
3. FSAR, Chapter 6.
4. FSAR, Chapter 14.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," April 1976, Section 5.4
7. ASTM Standards: D4057-12; D4176-04; D2709-96; D1298-12b; D975-14a; D4294-10; D6217-11.

INSERT

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tank.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the 7-day storage tanks, 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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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.

## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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##### BACKGROUND

and Regulatory  
Guide 1.137 (Ref. 2)

Only the 7-day  
storage tanks are  
subject to this  
LCO, the  
Actions, and the  
surveillance  
requirements.

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

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(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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**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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. These circumstances may be caused by events such as:

The fuel oil level equivalent to a 6-day supply is 30,240 gallons.

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

(continued)

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BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), 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-day

The lube oil inventory equivalent to a 6-day supply is 150 gallons.

With lube oil inventory ~~< 175 gal,~~ <sup>i.e.,</sup> sufficient lube oil to support 7 days of continuous DG operation at full load conditions ~~may not be~~ <sup>, is</sup> available. However, the Condition is restricted to lube oil volume reductions that maintain at least a ~~6-~~ <sup>6-</sup> day supply. This restriction allows sufficient time for obtaining 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 (> 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 for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

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(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, 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 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E ~~D.1~~

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

F ~~E.1~~

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

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(continued)

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.2

The lube oil inventory equivalent to a 7-day supply is 175 gallons and

This Surveillance ensures that sufficient lubricating oil inventory is available to support at least 7 days of full load operation for each DG. ~~The 175 gal requirement~~ is based on the DG manufacturer's consumption values for the run time of the DG.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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 on site 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.

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(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

INSERT  
NEXT PAGE

SR 3.8.3.3

~~This SR verifies that the required fuel oil testing is performed in accordance with the Diesel Fuel Oil Testing Program. Tests are a means of monitoring the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels. Specific sampling requirements, frequencies, and additional information are discussed in detail in the Diesel Fuel Oil Testing 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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

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1. FSAR, Section 8.5.3.4. , Revision 1, October 1979
  2. Regulatory Guide 1.137.
  3. FSAR, Chapter 6.
  4. FSAR, Chapter 14.
  5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," April 1976, Section 5.4
7. ASTM Standards: D4057-12; D4176-04; D2709-96; D1298-12b; D975-14a; D4294-10; D6217-11.

INSERT

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tank.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the the 7-day storage tanks, 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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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.

## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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##### BACKGROUND

and Regulatory  
Guide 1.137 (Ref. 2)

Only the 7-day  
storage tanks are  
subject to this  
LCO, the  
Actions, and the  
surveillance  
requirements.

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

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(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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**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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. These circumstances may be caused by events such as:

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

**INSERT**  
The fuel oil level equivalent to a 6-day supply is 30,240 gallons.

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(continued)

BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

B.1

INSERT

INSERT

i.e.,

, is

INSERT

In this Condition, the 7-day

With lube oil inventory < 175 gal, sufficient lube oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6-day supply. This restriction allows sufficient time for obtaining 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 (> 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.

INSERT

The lube oil inventory equivalent to a 6-day supply is 150 gallons.

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, 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 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E ~~D.1~~

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

F ~~E.1~~

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

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(continued)

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.2

The lube oil inventory equivalent to a 7-day supply is 175 gallons and

This Surveillance ensures that sufficient lubricating oil inventory is available to support at least 7 days of full load operation for each DG. ~~The 175 gal requirement is based on the DG manufacturer's consumption values for the run time of the DG.~~

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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 on site 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.

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(continued)

BASES

SURVEILLANCE  
REQUIREMENTS  
(continued)

INSERT  
NEXT PAGE

SR 3.8.3.3

~~This SR verifies that the required fuel oil testing is performed in accordance with the Diesel Fuel Oil Testing Program. Tests are a means of monitoring the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels. Specific sampling requirements, frequencies, and additional information are discussed in detail in the Diesel Fuel Oil Testing Program.~~

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

1. FSAR, Section 8.5.3.4. , Revision 1, October 1979
2. Regulatory Guide 1.137.
3. FSAR, Chapter 6.
4. FSAR, Chapter 14.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

**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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," April 1976, Section 5.4
7. ASTM Standards: D4057-12; D4176-04; D2709-96; D1298-12b; D975-14a; D4294-10; D6217-11.

INSERT

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tank.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the the 7-day storage tanks, 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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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.

Enclosure 1  
Evaluation of Proposed Change

ATTACHMENT 3

Final Typed Revised Technical Specification Pages

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
  - (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level  
The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.
  - (2) Technical Specifications  
The Technical Specifications contained in Appendices A and B, as revised through Amendment No. , are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.  
  
For Surveillance Requirements (SRs) that are new in Amendment 234 to Facility Operating License DPR-33, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 234. For SRs that existed prior to Amendment 234, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 234.

### 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 oil level less than a 7-day supply and greater than a 6-day supply in storage tank.	A.1    Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory less than a 7-day supply and greater than 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 limits.	C.1    Restore fuel oil total particulates to within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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
E. One or more DGs with the required starting air receiver unit pressure < 165 psig.	E.1 Declare associated DG inoperable.	Immediately
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 inoperable 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 $\geq$ a 7-day supply.	31 days
SR 3.8.3.2	Verify lube oil inventory is $\geq$ a 7-day supply.	31 days
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
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is $\geq$ 165 psig.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition of the 7-day storage tanks by determining that the fuel oil has:
  - 1. An API gravity or an absolute specific gravity within limits,
  - 2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  - 3. A clear and bright appearance with proper color or a water and sediment content within limits,
- b. Within 31 days following addition of the new fuel oil to the 7-day tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and

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(continued)

5.5 Programs and Manuals

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5.5.9 Diesel Fuel Oil Testing Program  
(continued)

- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when testing every 92 days.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. , are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 253 to Facility Operating License DPR-52, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 253. For SRs that existed prior to Amendment 253, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 253.

- (3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's

### 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 oil level less than a 7-day supply and greater than a 6-day supply in storage tank.	A.1    Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory less than a 7-day supply and greater than 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 limits.	C.1    Restore fuel oil total particulates to within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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
E. One or more DGs with the required starting air receiver unit pressure < 165 psig.	E.1 Declare associated DG inoperable.	Immediately
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 inoperable 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 $\geq$ a 7-day supply of fuel.	31 days
SR 3.8.3.2	Verify lube oil inventory is $\geq$ a 7-day supply.	31 days
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
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is $\geq$ 165 psig.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in the 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to the 7-day storage tanks by determining that the fuel oil has:
1. An API gravity or an absolute specific gravity within limits,
  2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  3. A clear and bright appearance with proper color or a water and sediment content within limits,

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(continued)

5.5 Programs and Manuals

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5.5.9 Diesel Fuel Oil Testing Program  
(continued)

- b. Within 31 days following addition of the new fuel oil to the 7-day storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and
- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when tested every 92 days.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. , are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 212 to Facility Operating License DPR-68, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 212. For SRs that existed prior to Amendment 212, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 212.

### 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.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with fuel oil level less than a 7-day supply and greater than a 6-day supply in storage tank.	A.1    Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory less than a 7-day supply and greater than 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 limits.	C.1    Restore fuel oil total particulates to within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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
E. One or more DGs with the required starting air receiver unit pressure < 165 psig.	E.1 Declare associated DG inoperable.	Immediately
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 inoperable 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 $\geq$ a 7-day supply of fuel.	31 days
SR 3.8.3.2	Verify lube oil inventory is $\geq$ a 7-day supply.	31 days
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
SR 3.8.3.4	Verify each required DG air start receiver unit pressure is $\geq$ 165 psig.	31 days
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	31 days

5.5 Programs and Manuals

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5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program  
(continued)

- b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

5.5.9 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and fuel oil stored in the 7-day tanks shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to the 7-day storage tanks by determining that the fuel oil has:
  - 1. An API gravity or an absolute specific gravity within limits,
  - 2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  - 3. A clear and bright appearance with proper color or a water and sediment content within limits,
- b. Within 31 days following addition of the new fuel oil to the 7-day storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and

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(continued)

5.5 Programs and Manuals

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5.5.9 Diesel Fuel Oil Testing Program  
(continued)

- c. Total particulate concentration of the fuel oil in the 7-day storage tank is  $\leq 10$  mg/l when tested every 92 days.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

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(continued)

Enclosure 1  
Evaluation of Proposed Change

ATTACHMENT 4

Final Typed Revised Technical Specification Bases Pages

## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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#### BACKGROUND

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1) and Regulatory Guide 1.137 (Ref. 2). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. Only the 7-day storage tanks are subject to this LCO, the Actions, and the Surveillance Requirements. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

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(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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**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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. The fuel oil level equivalent to a 6-day supply is 30,240 gallons. These circumstances may be caused by events such as:

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

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(continued)

BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), 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-day lube oil inventory, i.e., sufficient lube oil to support 7 days of continuous DG operation at full load conditions, is not 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 150 gallons. This restriction allows sufficient time for obtaining 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 (> 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 for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

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(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E.1

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

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(continued)

BASES

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ACTIONS

F.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil, lube oil, or starting air subsystem inoperable 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.

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(continued)

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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 on site 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. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.2

This Surveillance ensures that sufficient lubricating 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 175 gallons and is based on the DG manufacturer's consumption values for the run time of the DG.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

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(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tanks.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the 7-day storage tanks, the 31 day period is acceptable because the fuel oil properties of interest, even if they

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

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REFERENCES

1. FSAR, Section 8.5.3.4.
  2. Regulatory Guide 1.137, Revision 1, October 1979.
  3. FSAR, Chapter 6.
  4. FSAR, Chapter 14.
  5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
  6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," Section 5.4, April 1976.
  7. ASTM Standards, D4057-12; D4176-04; D2709-96, D1298-12b, D975-14a, D4294-10, D6217-11.
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## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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#### BACKGROUND

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1) and Regulatory Guide 1.137 (Ref. 2). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. Only the 7-day storage tanks are subject to this LCO, the Actions, and the Surveillance Requirements. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

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(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. The fuel oil level equivalent to a 6-day supply is 30,240 gallons. These circumstances may be caused by events such as:

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

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(continued)

BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), 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-day lube oil inventory, i.e., sufficient lube oil to support 7 days of continuous DG operation at full load conditions is not 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 150 gallons. This restriction allows sufficient time for obtaining 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 (> 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 for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

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(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, and re-analysis of the DG fuel oil.

D.1

With the new fuel oil properties 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E.1

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

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(continued)

BASES

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ACTIONS

F.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil, lube oil, or starting air subsystem inoperable 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.

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(continued)

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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 on site 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. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.2

This Surveillance ensures that sufficient lubricating 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 175 gallons and is based on the DG manufacturer's consumption values for the run time of the DG.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

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(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tank.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the 7-day storage tanks, the 31 day period is acceptable

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

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REFERENCES

1. FSAR, Section 8.5.3.4.
  2. Regulatory Guide 1.137, Revision 1, October 1979.
  3. FSAR, Chapter 6.
  4. FSAR, Chapter 14.
  5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
  6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," Section 5.4, April 1976.
  7. ASTM Standards: D4057-12; D4176-04; D2709-96; D1298-12b; D975-14a; D4294-10; D6217-11.
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## B 3.8 ELECTRICAL POWER SYSTEMS

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

#### BASES

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#### BACKGROUND

Each diesel generator (DG) is provided with three interconnected storage tanks having a minimum usable fuel oil volume (35,280 gallons) sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section 8.5.3.4 (Ref. 1) and Regulatory Guide 1.137 (Ref. 2). A transfer pump is located at the fuel oil storage tanks which can supply fuel oil from two 71,000-gallon fuel oil storage tanks to the 7-day storage tanks. Only the 7-day storage tanks are subject to this LCO, the Actions, and the Surveillance Requirements. In addition, it is possible to transfer fuel from one 7-day storage tank to any other by using transfer pumps. 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 the 7-day storage tank to the day tank by either of two transfer pumps associated with each diesel generator. This is accomplished automatically by level switches on the day 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 7-day tanks are embedded in the substructure of the Standby Diesel Generator Building.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the stored fuel oil. The fuel oil property monitored is the total particulate concentration. Periodic testing of the stored fuel oil total particulate concentration is a method to monitor the potential degradation related to long term storage and the potential impact to fuel filter plugging as a result of high particulate levels.

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(continued)

BASES (continued)

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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 abnormal operational transient or a postulated DBA. Because stored diesel fuel oil, lube oil, and 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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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) 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. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6-day supply. The fuel oil level equivalent to a 6-day supply is 30,240 gallons. These circumstances may be caused by events such as:

- a. Full load operation required for an inadvertent start while at minimum required level; or
- b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

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(continued)

BASES

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ACTIONS

A.1 (continued)

This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the 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 (> 6 days), 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-day lube oil inventory, i.e., sufficient lube oil to support 7 days of continuous DG operation at full load conditions, is not 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 150 gallons. This restriction allows sufficient time for obtaining 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 (> 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 for particulates. 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), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence

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(continued)

BASES

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ACTIONS

C.1 (continued)

of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 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, re-sampling, 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 a combination 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 high likelihood that the DG would still be capable of performing its intended function.

E.1

Only one of the two redundant air starting systems is required to support associated DG operability. With the starting air receiver pressure < 165 psig in the required starting air system, sufficient capacity to start the associated DG may not exist. The associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources - Operating."

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(continued)

BASES

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ACTIONS

F.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil, lube oil, or starting air subsystem inoperable 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.

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(continued)

BASES (continued)

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The fuel oil level equivalent to a 7-day supply is 35,280 gallons when calculated in accordance with References 2 and 6. 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. The 7-day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.2

This Surveillance ensures that sufficient lubricating 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 175 gallons and is based on the DG manufacturer's consumption values for the run time of the DG.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.

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(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

The tests 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 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 7-day storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days following addition to the 7-day storage tanks. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-12 (Ref. 7)
- b. Verify in accordance with the tests specified in ASTM D975-14a (Ref. 7) 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  $\geq 27^\circ$  and  $\leq 39^\circ$  when tested in accordance with ASTM D1298-12b (Ref. 7), a kinematic viscosity at 40°C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125^\circ\text{F}$
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 7)

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 because the fuel oil is not added to the 7-day storage tank.

Either prior to adding new fuel oil to the 7-day storage tanks or 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 D975-14a (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-14a (Ref. 7), except that the analysis

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.8.3.3

for sulfur may be performed in accordance with ASTM D4294-10 (Ref. 7). If these tests are not completed prior to adding new fuel oil to the 7-day storage tanks, 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 particulates, mostly due to oxidation. The presence of particulates does not mean that the fuel oil will not burn properly in a diesel engine. The particulates can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D6217-11 (Ref. 7). 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. Because the 7-day tank consists of three interconnected tanks, samples are drawn from each tank.

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 at least one start cycle from one of two redundant air start systems 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 the lowest pressure at which at least one start attempt can be accomplished using one of two redundant air start systems.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

BASES

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SURVEILLANCE  
REQUIREMENTS

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 once every 31 days 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 from 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. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

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REFERENCES

1. FSAR, Section 8.5.3.4.
  2. Regulatory Guide 1.137, Revision 1, October 1979.
  3. FSAR, Chapter 6.
  4. FSAR, Chapter 14.
  5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
  6. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," Section 5.4, April 1976
  7. ASTM Standards: D4057-12; D4176-04; D2709-96; D1298-12b; D975-14a; D4294-10; D6217-11.
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Enclosure 2

License Amendment Request for Adoption of TSTF-501,  
"Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control"  
(BFN TS-493)

**Regulatory Commitment**

<b>COMMITMENT</b>	<b>COMPLETION DATE</b>
<p>Tennessee Valley Authority will revise the BFN Units 1, 2, and 3 Final Safety Analysis Report (FSAR) Chapter 8.5.3.4, "Diesel Fuel Oil Storage and Transfer System," with the following information and submit the revised description with the next FSAR update following issuance of the License Amendment approving the BFN TS-493 request to adopt TSTF-501, Revision 1:</p> <p>The specific Emergency Diesel Generator (EDG) fuel oil volumes contained in the diesel fuel oil storage tank(s) necessary to ensure that EDG run-duration requirements are calculated using Section 5.4 of American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," and are based on applying the conservative assumption that the EDG is operated continuously at rated capacity. This fuel oil calculation methodology is one of the two approved methods specified in Regulatory Guide (RG) 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators," Regulatory Position C.1.c.</p>	<p>The first FSAR Update following issuance of License Amendment approving the BFN TS-493 request to adopt TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control"</p>