



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

CNL-23-020

June 28, 2023

10 CFR 50.90

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

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Watts Bar Nuclear Plant, Units 1 and 2, Application to Revise Technical Specifications to Adopt TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (WBN-TS-22-06)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, Tennessee Valley Authority (TVA) is submitting a request for an amendment to the Technical Specifications (TS) for Watts Bar Nuclear Plant (WBN), Units 1 and 2.

TVA requests adoption of Nuclear Regulatory Commission (NRC) approved Technical Specifications Task Force (TSTF) Traveler TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," which is an approved change to the Standard Technical Specifications (STS), into the WBN Units 1 and 2, TS. The availability of this TS improvement was announced in the Federal Register on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIP).

The proposed changes revise WBN Units 1 and 2, 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 it may be modified under licensee control. The TS is 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. Condition A and Condition B in the Action table are revised and Surveillance Requirements (SR) 3.8.3.1 and 3.8.3.2 are revised to reflect the above change. In addition, the reference to Appendix B of American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," in the TS Bases is deleted. As a result, the only reference will be to ANSI N195-1976.

Additionally, TVA is requesting a proposed change that revises WBN Units 1 and 2, TS 3.8.1, "AC Sources - Operating," SR 3.8.1.4 following a similar approach to the TS 3.8.3 change required for this traveler. SR 3.8.1.4 requires verification that each skid-mounted day tank contains greater than or equal to 218.5 gallons of fuel oil. The proposed revision removes the skid-mounted day tank specific numerical volume requirement from the TS and replaces it with a requirement to maintain a minimum 1-hour supply of fuel oil. The specific numerical volume needed to support this requirement is relocated to the TS Bases.

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; the proposal merely swaps the current numerical volume requirements from the TS to the TS Bases and swaps the associated current 7-day basis from the TS Bases to the TS. In addition, no changes to any SR Frequency, Required Actions, or Completion Times are proposed in this application.

The current licensing basis for WBN Units 1 and 2, requires that a 7-day supply of stored diesel fuel oil and lube oil be available for full load operations of each diesel generator.

The enclosure provides a description and assessment of the proposed changes. Attachment 1 provides the existing WBN Units 1 and 2 TS pages marked-up to show the proposed changes. Attachment 2 provides the proposed WBN Units 1 and 2 TS Bases marked-up pages. Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program.

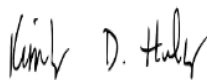
TVA has determined that there are no significant hazards considerations associated with the proposed changes and that the TS changes qualify for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). In accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosure to the Tennessee State Department of Environment and Conservation.

TVA requests that the amendment be reviewed under the CLIIP. Approval of the proposed amendment is requested within six months of completion of the NRC's acceptance review. Once approved, the amendment shall be implemented within 60 days.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Stuart L. Rymer, Senior Manager, Fleet Licensing, at slymer@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 28th day of June 2023.

Respectfully,



Digitally signed by Edmondson,
Carla
Date: 2023.06.28 07:53:49 -04'00'

Kimberly D. Hulvey
Director, Nuclear Regulatory Affairs

Enclosure: Description and Assessment of the Proposed Change

cc: See Page 3

U.S. Nuclear Regulatory Commission
CNL-23-020
Page 3
June 28, 2023

cc: (with Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
NRC Project Manager - Watts Bar Nuclear Plant
Division of Radiological Health - Tennessee Department of Environment and
Conservation

Enclosure

Description and Assessment of the Proposed Change

Subject: Watts Bar Nuclear Plant, Units 1 and 2, Application to Revise Technical Specifications to Adopt TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (WBN-TS-22-06)

Table of Contents

1.0 DESCRIPTION..... 2
2.0 PROPOSED CHANGES 2
3.0 BACKGROUND 4
4.0 TECHNICAL ANALYSIS 4
5.0 REGULATORY ANALYSIS 4
 5.1 No Significant Hazards Consideration Analysis..... 4
 5.2 Applicable Regulatory Requirements/Criteria..... 6
6.0 ENVIRONMENTAL CONSIDERATION 7

ATTACHMENTS

- 1. Proposed Technical Specification Changes (Mark-Up)
- 2. Proposed Technical Specification Bases Changes (Mark-Up)

1.0 DESCRIPTION

TVA requests adoption of Nuclear Regulatory Commission (NRC) approved WBN, Units 1 and 2, Application to Revise Technical Specifications to Adopt TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" which is an approved change to the Standard Technical Specifications (STS), into the WBN, Units 1 and 2 TS. The availability of this TS improvement was announced in the Federal Register on May 26, 2010 (75 FR 29588), as part of the consolidated line item improvement process (CLIP).

The proposed changes revise WBN Units 1 and 2, 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 it may be modified under licensee control. The TS is 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. Condition A and Condition B in the Action table are revised and Surveillance Requirements (SR) 3.8.3.1 and 3.8.3.2 are revised to reflect the above change. In addition, the reference to Appendix B of American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," in the TS Bases is deleted. As a result, the only reference will be to ANSI N195-1976.

Additionally, TVA is requesting a proposed change that revises WBN Units 1 and 2, TS 3.8.1, "AC Sources - Operating," SR 3.8.1.4 following a similar approach to the TS 3.8.3 change required for this traveler. SR 3.8.1.4 requires verification that each skid-mounted day tank contains greater than or equal to 218.5 gallons of fuel oil. The proposed revision removes the skid-mounted day tank specific numerical volume requirement from the TS and replaces it with a requirement to maintain a minimum 1-hour supply of fuel oil. The specific numerical volume needed to support this requirement is relocated to the TS Bases.

2.0 PROPOSED CHANGES

Consistent with the NRC-approved Revision 1 of TSTF-501-A, 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 them with equivalent diesel generator operating time requirements. The numerical values will be placed 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 that a 7-day supply be available for each diesel generator. As a result:

- Condition A and Condition B in the TS 3.8.3 Action table are revised. Currently, Condition A and Condition B are entered when the stored diesel fuel oil and lube oil numerical volume requirements are not met. As discussed in the current TS Bases, the numerical volume requirements in Condition A and Condition B are based on volumes less than a 7-day supply, but greater than a 6-day supply. The revision removes the volumetric requirements from the TS and places it 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.
- Surveillance Requirements 3.8.3.1 and 3.8.3.2 are revised. Currently, SR 3.8.3.1 and SR 3.8.3.2 verify that the stored diesel fuel oil and lube oil numerical volume requirements are met. As discussed in the current TS Bases, the numerical volume requirements in SR 3.8.3.1 and SR 3.8.3.2 are based on maintaining at least a 7-day supply. The revision

Enclosure

removes the volumetric requirements from the TS and places it in the TS Bases. The TS are modified so that SR 3.8.3.1 verifies that the stored diesel fuel oil inventory is greater than or equal to a 7-day supply for each diesel generator. The TS are modified so that SR 3.8.3.2 verifies that the stored lube oil inventory is greater than or equal to a 7-day for each diesel generator.

- The reference to Appendix B of American National Standards Institute (ANSI) N195-1976 in the TS Bases is deleted. As a result, the only reference will be to ANSI N195-1976.

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

TVA is proposing two variations from the TS changes described in TSTF-501-A, Revision 1, and the NRC staff's model safety evaluation (SE) published in the Federal Register (FR) on May 26, 2010 (75 FR 29588), as part of the CLIP notice of availability. The variations are summarized below.

- WBN Units 1 and 2 TS contain TS 3.8.1, "AC Sources – Operating," and a proposed revision to SR 3.8.1.4 following a similar approach to the TS 3.8.3 change is also required for this traveler. SR 3.8.1.4 requires verification that each skid-mounted day tank contains greater than or equal to 218.5 gallons of fuel oil. The proposed revision removes the skid-mounted day tank specific numerical volume requirement from the TS and replaces it with a requirement to maintain a minimum 1-hour supply of fuel oil. The specific numerical volume needed to support this requirement is relocated to the TS Bases. Similar to the technical justification provided in TSTF-501-A, this proposed change is acceptable since it merely removes the current numerical volume requirement for the skid-mounted day tank and replaces it with the equivalent 1-hour supply requirement. The numerical value is placed in the TS Bases. This change is considered to be a technical variation, and is consistent with similar changes approved by the NRC in:
 - NRC License Amendment for Calvert Cliffs, "Issuance of Amendments Regarding the Adoption of Technical Specification Task Force 501-A, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control'," dated October 21, 2014 (ML14239A491); and
 - NRC License Amendment for Waterford Steam Electric Station, Unit 3, "Issuance of Amendment Re: Adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-501, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control'," dated April 26, 2018 (ML18026B053).
- TVA also reviewed the letter April 3, 2014 letter from the NRC to the TSTF ("Identification and Resolution of Issues Regarding Plant-Specific Adoption of Traveler TSTF-501-A, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control'," (ML14084A512) and determined a regulatory commitment is not needed because the WBN dual-unit Updated Final Safety Analysis Report (UFSAR) has been revised to identify the NRC-approved calculation methodology of Regulatory Guide 1.137, Revision 1 in Section 9.5.4 of the WBN UFSAR.

Other TS Changes

The following TS changes were made consistent with the Westinghouse Standard TS and TSTF-501-A:

- In WBN Units 1 and 2 TS 3.8.3 Condition B, “diesel engines” was abbreviated to “DG.”
- In WBN Units 1 and 2 SR 3.8.3.1, “Verify each 7 day fuel oil storage tank” was changed to “Verify each fuel oil storage tank.”
- In WBN Units 1 and 2 SR 3.8.3.2, “per engine” was deleted.

3.0 BACKGROUND

The background for this application is addressed by the model SE referenced in the NRC Notice of Availability published on May 26, 2010 (75 FR 29588), and TSTF-501-A, Revision 1.

4.0 TECHNICAL ANALYSIS

TVA has reviewed the model SE published in the Federal Register on May 26, 2010 (75 FR 29588), as part of the CLIIP Notice of Availability. TVA has concluded that the technical justifications presented in the SE prepared by the NRC staff are applicable to WBN and therefore, justify this amendment for the incorporation of the proposed changes to the WBN, Unit 1 and 2 TS.

Additionally, TVA has reviewed the April 3, 2014, NRC letter to the TSTF, “Identification and Resolution of Issues Regarding Plant-Specific Adoption of Traveler TSTF-501-A, Revision 1, ‘Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control’,” (ML14084A512) regarding the resolution of issues related to the plant-specific adoption of TSTF-501. Because implementation of TSTF-501-A relies on the use of an NRC-approved diesel generator fuel oil calculation methodology to determine the run-duration equivalent diesel fuel oil volume, the NRC determined that the NRC-approved calculation methodology must be described in the plant’s FSAR. The WBN UFSAR, Section 9.5, states that the methods described in Regulatory Guide 1.137, Revision 1, “Fuel Oil Systems for Standby Diesel Generators,” Regulatory Position C.1.c, and ANSI N195-1976, “Fuel Oil Systems for Standby Diesel-Generators,” Section 5.4, are used to calculate required fuel oil volumes. Therefore, the WBN UFSAR complies with the NRC position in the referenced 2014 letter.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration Analysis

Tennessee Valley Authority (TVA) has evaluated the proposed changes to the Watts Bar Nuclear Plant, Units 1 and 2 Technical Specifications (TS) using the criteria in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

The proposed changes revise the TS by removing the current stored diesel fuel oil and lubricating (lube) oil numerical volume requirements from the TS and replacing them with equivalent diesel generator operating time requirements. The numerical values will be placed 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

Enclosure

modified so that the stored diesel fuel oil inventory will require that a 7-day supply be available for each diesel generator, and a 1-hour skid-mounted fuel oil day tank supply be available for each diesel generator.

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below.

1. *Does the proposed amendment involve a significant increase in the probability or consequence of an accident previously evaluated?*

Response: No.

The proposed change revises the TS by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and replacing them with equivalent diesel generator operating time requirements. The numerical values will be placed in the TS Bases so that they may be modified under licensee control. The specific volume of fuel oil equivalent to a 7 and 6-day supply is calculated using the NRC-approved methodology described in Regulatory Guide 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators," and American National Standards Institute (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 proposed change also removes the current diesel generator skid-mounted fuel oil day tank volume from the TS and replaces it with an equivalent diesel generator operating time requirement. The numerical value will be placed in the TS Bases so that it may be modified under licensee control. The specific volume of fuel oil equivalent to a 1-hour supply is calculated using the NRC-approved methodology described in Regulatory Guide 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators," and ANSI-N195-1976, "Fuel Oil Systems for Standby Diesel-Generators." Since the specific volume and operating time are not changed and are consistent with the existing plant design basis to support a diesel generator under accident load conditions, neither the probability nor the consequences of any accident previously evaluated will be affected.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?*

Response: No.

The change does not involve a physical alteration of the plant (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

Enclosure

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 amendment involve a significant reduction in a margin of safety?*

Response: No.

The proposed change revises the TS by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and replacing them with equivalent diesel generator operating time requirements. The numerical values will be placed in the TS Bases so that they may be modified under licensee control. As the bases for the existing limits on diesel fuel oil and lube oil are not changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change.

The proposed change also removes the current diesel generator skid-mounted fuel oil day tank volume from the TS and replaces it with an equivalent diesel generator operating time requirement. The numerical value will be placed in the TS Bases so that it may be modified under licensee control. As the basis for the existing limits on the diesel generator skid-mounted fuel oil day tank volume requirement is not changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change.

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

Based on the above, TVA concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

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

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 1

Proposed Technical Specification Changes (Mark-Up)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3960 kW and ≤ 4400 kW.</p>	As specified in Table 3.8.1-1
SR 3.8.1.4	Verify each skid mounted day tank contains \geq a one hour supply 218.5 gal of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each skid mounted day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from 7 day storage tank to the skid mounted day tank.	In accordance with the Surveillance Frequency Control Program

(continued)

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 level less than a 7 day supply and greater than a 6 day supply < 56,754 gal and > 48,648 gal in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B.	One or more DGdiesel engines with lube oil inventory less than a 7 day supply and greater than a 6 day supply < 287 gal and > 267 gal .	B.1 Restore lube oil inventory to within limits.	48 hours
C.	One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates 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 starting air receiver pressure < 190 psig and ≥ 170 psig.	E.1 Restore starting air receiver pressure to ≥ 190 psig.	48 hours
F.	Required Action and associated Completion Time not met. <u>OR</u> One or more DGs diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each 7-day fuel oil storage tank contains ≥ a 7 day supply 56,754 gal of fuel.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.2	Verify lubricating oil inventory is \geq a 7 day supply- 287 gal per engine.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG air start receiver pressure is \geq 190 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each of the four interconnected tanks which constitute the 7 day fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.6	Perform a visual inspection for leaks in the exposed fuel oil system piping while the DG is running.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.7	For each of the four interconnected tanks which constitute the 7 day fuel oil storage tank: <ul style="list-style-type: none"> a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank. 	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each skid mounted day tank contains \geq a one hour supply 218.5 gal of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each skid mounted day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from 7 day storage tank to the skid mounted day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	Verify each DG starts from standby condition and achieves in \leq 10 seconds, voltage \geq 6800 V, and frequency \geq 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage \geq 6800 V and \leq 7260 V, and frequency \geq 59.8 Hz and \leq 60.1 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

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 level less than a 7 day supply and greater than a 6 day supply < 56,754 gal and > 48,648 gal in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more diesel engine DGs with lube oil inventory less than a 7 day supply and greater than a 6 day supply < 287 gal and > 267 gal.	B.1 Restore lube oil inventory to within limits.	48 hours
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates within limit.	7 days
D. One or more DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more DGs with starting air receiver pressure < 190 psig and ≥ 170 psig.	E.1 Restore starting air receiver pressure to ≥ 190 psig.	48 hours
F. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each 7 day fuel oil storage tank contains ≥ a 7 day supply 56,754 gal of fuel.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2 Verify lubricating oil inventory is ≥ a 7 day supply 287 gal per engine .	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

(continued)

Attachment 2

Proposed Technical Specification Bases Changes (Mark-Up)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.3 (continued)

time that the DG is connected to the offsite source.

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while the 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 31 day Frequency for this Surveillance (Table 3.8.1-1) is consistent with Regulatory Guide 1.9 (Ref. 3).

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

A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in each DG skid mounted day tank is sufficient to support DG operation for 1 hour at full load. The fuel oil volume equivalent to a 1 hour supply at full load plus 10% is 218.5 gallons when calculated in accordance with References 9 and 13, which does not account for instrument error (Ref. 10). The required fuel 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 fuel oil volume required for 1 hour of full load operation can be determined at or above the level (≥ 218.5 gallons, value does not account for instrument error, Ref. 10) at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.

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

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.1.5 ~~(continued)~~

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 oil skid mounted day tanks eliminates the necessary environment for bacterial survival.

This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated skid mounted day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

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

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each 6.9 kV shutdown board power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This SR is modified by two Notes. The reason for the first Note is that, during operation with the reactor critical, performance of this SR for the 1A-A or 1B-B Shutdown Board could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant

(continued)

BASES

- REFERENCES
1. Title 10, Code of Federal Regulations, Part 50, Appendix A, General Design Criterion (GDC) 17, "Electrical Power Systems."
 2. Watts Bar FSAR, Section 8.2, "Offsite Power System," and Tables 8.3-1 to 8.3-3, "Safety-Related Standby Power Sources and Distribution Boards," "Shutdown Board Loads Automatically Tripped Following a Loss of Nuclear Unit and Preferred Power," and "Diesel Generator Load Sequentially Applied Following a Loss of Nuclear Unit and Preferred Power."
 3. Regulatory Guide 1.9, Rev. 3, "Selection, Design, Qualification and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," July 1993.
 4. Watts Bar FSAR Section 6, "Engineered Safety Features."
 5. Watts Bar FSAR, Section 15.4, "Condition IV-Limiting Faults."
 6. Regulatory Guide 1.93, Rev. 0, "Availability of Electric Power Sources," December 1974.
 7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.
 8. Title 10, Code of Federal Regulations, Part 50, Appendix A, GDC 18, "Inspection and Testing of Electric Power Systems."
 9. Regulatory Guide 1.137, Rev. 1, "Fuel Oil Systems for Standby Diesel Generators," October 1979.
 10. Watts Bar Drawing 1-47W605-242, "Electrical Tech Spec Compliance Tables."
 11. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," dated July 2, 1984.
 12. Letter from Kimberly J. Green (NRC) to Mr. James Barstow (TVA) dated November 26, 2019, with Enclosures: (1) Amendment No. 129 to Facility Operating License No. NPF-90, (2) Amendment No. 32 to Facility Operating License No. NPF-96, and (3) NRC Safety Evaluation.
 13. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators."

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

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

BASES

BACKGROUND

Each diesel generator (DG) is provided with four interconnected storage tanks embedded in the building foundation having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section 9.5.4.3 (Ref. 1) and Regulatory Guide 1.137 (Ref. 2). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

An approximately 550 gal skid-mounted day tank is provided for each diesel engine. Each DG incorporates two diesel engines operating in tandem and directly coupled to the generator. Each skid-mounted day tank has fuel capacity for approximately 2 hours of full-load operations (Ref. 1). Fuel oil is transferred from 7 day storage tanks to the skid mounted day tank by a pump located on each skid mounted 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 diesel engine. In the event that the piping between the last isolation valve and the skid-mounted day tank breaks, the use of one DG can be lost. This occurs only after the two hour supply of fuel in the skid-mounted day tank has been used.

During operation of the DGs, fuel oil pumps driven by the diesel engines transfer fuel from the skid mounted day tanks to the skid-mounted diesel engine fuel manifolds. Level controls mounted on the skid-mounted day tanks automatically start and stop the 7 day storage tank transfer pumps.

In addition, alarms both locally and in the control room annunciate low level and high level in any skid-mounted day tank.

In the unlikely event of a failure in one of the supply trains, the associated skid-mounted day tank low-level alarm annunciates when the fuel oil remaining in the tank provides approximately 1 hour of full-load operation, thus allowing the operator to take corrective action to prevent the loss of the diesel.

(continued)

BASES

ACTIONS
(continued)

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 48,648 gallons.** These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 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 ~~With~~ lube oil inventory ~~< 287 gal per diesel engine,~~ i.e., sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions ~~is may not be~~ available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. **The lube oil inventory equivalent to a 6 day supply is 267 gallons per diesel engine. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.**

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.3. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated, it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

D.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This

(continued)

BASES

ACTIONS

D.1 (continued)

restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

E.1

With starting air receiver pressure < 190 psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as the receiver pressure is \geq 170 psig (value does not account for instrument error, Ref. 7), there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit of \geq 190 psig (value does not account for instrument error, Ref. 7). A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

F.1

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

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory (~~\geq 56,754 gallons, value does not account for instrument error, Ref. 7)~~ 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 56,754 gallons when calculated in accordance with References 2 and 3, and does not account for instrument error (Ref. 7). 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 plant in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.1 (continued)

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

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load operation for each DG. The lube oil inventory equivalent to a 7 day supply is 287 gallons and ~~requirement~~ is based on the DG manufacturer consumption values for the run time of the DG. The DG lube oil sump is designed to hold adequate oil for 7 days of full-load operation without the level reaching the manufacturer's recommended minimum level.

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

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. For the purpose of this SR, only fuel oil that is transferred from the yard fuel oil storage tanks to the 7 day fuel oil storage tank for each DG or fuel oil added to the 7 day fuel oil storage tank through the storage tank fill lines is considered new fuel consistent with the Diesel Fuel Oil Testing Program, Specification 5.7.2.16. 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 storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-1988 (Ref. 6);

(continued)

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.3.6

This SR performs visual inspection, in lieu of the 10 year hydrostatic test indicated in Regulatory Guide 1.137 Position C.1.e(1), of all exposed fuel oil piping while the diesel is running. Identified leakage does not constitute failure of this surveillance. Upon discovery, leakage is entered into the corrective action program and evaluated for impact on diesel generator operability and corrected as appropriate. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.8.3.7

Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. Watts Bar FSAR, Section 9.5.4.3, "Safety Evaluation".
2. Regulatory Guide 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October, 1979.
3. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators;"-
~~Appendix B-~~
4. Watts Bar FSAR, Section 9.5.7, "Diesel Engine Lubrication System."

(continued)

BASES

REFERENCES
(continued)

5. Watts Bar FSAR, Section 15, "Accident Analysis" and Section 6 "Engineered Safety Features."
 6. ASTM Standards:
D4057-1988, "Practice for Manual Sampling of Petroleum and Petroleum Products."
D975-1990, "Standard Specification for Diesel Fuel Oils."
D4176-1986, "Free Water and Particulate Contamination in Distillate Fuels."
D1552-1990, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)."
D2622-1987, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)."
D2276-1989, "Standard Test Method for Particulate Contamination in Aviation Fuel."
D1298-1985, "Standard Test Method for Density, Specific Gravity, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method."
 7. Watts Bar Drawing 1-47W605-242, "Electrical Tech Spec Compliance Tables."
-
-

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.1.4

This SR provides verification that the level of fuel oil in each DG skid-mounted day tank is sufficient to support DG operation for 1 hour at full load. The fuel oil volume equivalent to a 1 hour supply at full load plus 10% is 218.5 gallons when calculated in accordance with References 9 and 12, which does not account for instrument error (Ref. 13). The required fuel 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 fuel oil volume required for 1 hour of full load operation can be determined. ~~at or above the level (\geq 218.5 gallons, value does not account for instrument error) at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.~~

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

SR 3.8.1.5

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 oil skid-mounted day tanks eliminates the necessary environment for bacterial survival.

This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. This SR is for preventative maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated skid-mounted day tank. This is required to support continuous operation of standby power sources. This Surveillance provides

(continued)

BASES

REFERENCES
(continued)

3. Regulatory Guide 1.9, Rev. 3, "Selection, Design, Qualification and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," July 1993.
4. Watts Bar FSAR Section 6, "Engineered Safety Features."
5. Watts Bar FSAR, Section 15.4, "Condition IV-Limiting Faults."
6. Regulatory Guide 1.93, Rev. 0, "Availability of Electric Power Sources," December 1974.
7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.
8. Title 10, Code of Federal Regulations, Part 50, Appendix A, GDC 18, "Inspection and Testing of Electric Power Systems."
9. Regulatory Guide 1.137, Rev. 1, "Fuel Oil Systems for Standby Diesel Generators," October 1979.
10. IEEE-308-1971, "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations," Institute of Electrical and Electronic Engineers.
11. Letter from Kimberly J. Green (NRC) to Mr. James Barstow (TVA) dated November 26, 2019, with Enclosures: (1) Amendment No. 129 to Facility Operating License No. NPF-90, (2) Amendment No. 32 to Facility Operating License No. NPF-96, and (3) NRC Safety Evaluation.
12. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators."
13. Watts Bar Drawing 2-47W605-242, "Electrical Tech Spec Compliance Tables."

B 3.8 ELECTRICAL POWER SYSTEMS

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

BASES

BACKGROUND

Each diesel generator (DG) is provided with four interconnected storage tanks embedded in the building foundation having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section 9.5.4.3 (Ref. 1) and **Regulatory Guide 1.137 (Ref. 2)**. The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

An approximately 550-gal skid-mounted day tank is provided for each diesel engine. Each DG incorporates two diesel engines operating in tandem and directly coupled to the generator. Each skid-mounted day tank has fuel capacity for approximately 2 hours of full-load operations (Ref. 1). Fuel oil is transferred from 7 day storage tanks to the skid-mounted day tank by a pump located on each skid-mounted 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 diesel engine. In the event that the piping between the last isolation valve and the skid-mounted day tank breaks, the use of one DG can be lost. This occurs only after the two hour supply of fuel in the skid-mounted day tank has been used.

During operation of the DGs, fuel oil pumps driven by the diesel engines transfer fuel from the skid-mounted day tanks to the skid-mounted diesel engine fuel manifolds. Level controls mounted on the skid-mounted day tanks automatically start and stop the 7 day storage tank transfer pumps.

In addition, alarms both locally and in the control room annunciate low level and high level in any skid-mounted day tank.

In the unlikely event of a failure in one of the supply trains, the associated skid-mounted day tank low-level alarm annunciates when the fuel oil remaining in the tank provides approximately 1 hour of full-load operation, thus allowing the operator to take corrective action to prevent the loss of the diesel.

(continued)

BASES (continued)

ACTIONS

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

A.1

In this Condition, the 7 day fuel oil supply for a DG is not available. 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 48,648 gallons.** These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 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 ~~With~~ lube oil inventory ~~< 287 gal per diesel engine~~, i.e., sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions is ~~may not be~~ available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. **The lube oil inventory equivalent to a 6 day supply is 267 gallons per diesel engine.** This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 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.

BASES

ACTIONS
(continued)

F.1

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

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory (~~≥ 56,754 gallons, value does not account for instrument error~~) 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 56,754 gallons when calculated in accordance with References 2 and 3, and does not account for instrument error (Ref. 7). 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 plant in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

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

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load operation for each DG. ~~The lube oil inventory equivalent to a 7 day supply is 287 gallons and requirement is~~ based on the DG manufacturer consumption values for the run time of the DG. The DG lube oil sump is designed to hold adequate oil for 7 days of full-load operation without the level reaching the manufacturer's recommended minimum level.

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

(continued)

BASES

- REFERENCES
1. Watts Bar FSAR, Section 9.5.4.3, "Safety Evaluation".
 2. Regulatory Guide 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October, 1979.
 3. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," ~~Appendix B.~~
 4. Watts Bar FSAR, Section 9.5.7, "Diesel Engine Lubrication System."
 5. Watts Bar FSAR, Section 15, "Accident Analysis" and Section 6 "Engineered Safety Features."
 6. ASTM Standards:
 - D4057-1988, "Practice for Manual Sampling of Petroleum and Petroleum Products."
 - D975-1990, "Standard Specification for Diesel Fuel Oils."
 - D4176-1986, "Free Water and Particulate Contamination in Distillate Fuels."
 - D1552-1990, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)."
 - D2622-1987, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)."
 - D2276-1989, "Standard Test Method for Particulate Contamination in Aviation Fuel."
 - D1298-1985, "Standard Test Method for Density, Specific Gravity, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method."
 7. ~~Watts Bar Drawing 2-47W605-242, "Electrical Tech Spec Compliance Tables."~~
-