

October 27, 2016
L-16-236

10 CFR 50.90

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

SUBJECT:

Perry Nuclear Power Plant

Docket No. 50-440, License No. NPF-58

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

In accordance with the Provisions of Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), FirstEnergy Nuclear Operating Company (FENOC) is submitting a request for amendment of the Technical Specifications (TS) for the Perry Nuclear Power Plant (PNPP).

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 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 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. ANSI N195-1976 and Regulatory Guide 1.137, Revision 1, "Fuel-Oil Systems for Standby Diesel Generators," are the current Bases references.

Regarding stored diesel fuel oil and lube oil, no changes to the current plant configuration, current numerical volume requirements, or the 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.

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

The current licensing basis for PNPP requires that a 7-day supply of stored diesel fuel oil and lube oil be available for each diesel generator.

There are deviations between the enclosed "Evaluation of the Proposed Change" document and that provided by the model application and TSTF Traveler TSTF-501. Minor deviations to the proposed TS Bases changes were necessary to correct errors within the proposed TS Bases markup provided by TSTF-501. FENOC also provided clarification to some of the discussion within section 3.3 of the NRC staff's model safety evaluation (SE). This clarification and the aforementioned minor deviations to the proposed TS Bases changes are described in more detail within the enclosed document.

FENOC requests approval of the proposed license amendment by October 31, 2017, with the amendment being implemented within 90 days of approval.

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 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 designated Ohio Official.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 315-6810.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 27, 2016.

Sincerely,



David B. Hamilton

Perry Nuclear Power Plant
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Enclosure:
Evaluation of Proposed Change

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
Utility Radiological Safety Board

Enclosure
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Evaluation of Proposed Change
(27 pages, excluding this page)

**Evaluation of Proposed Change
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**License Amendment Request for Adoption of TSTF-501, "Relocate Stored Fuel Oil and
Lube Oil Volume Values to Licensee Control"**

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ATTACHMENTS

Attachment 1 – Proposed Technical Specification Changes (Mark-Up)

Attachment 2 – Proposed Technical Specification Changes (Re-Typed)

Attachment 3 – Proposed Technical Specification Bases Changes (Mark-Up)

1.0 DESCRIPTION

The proposed changes revise Technical Specification (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 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. This change is consistent with 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." Minor differences between the changes proposed by TSTF-501 are listed in Section 2.0. The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIP).

2.0 PROPOSED CHANGES

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by 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 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. As a result:

- Condition A and Condition B in the Action table are revised. Currently, Condition A and Condition B are entered when the stored diesel fuel oil and lube oil numerical volume requirements are not met. As discussed in the current TS Bases, the numerical volume requirements in Condition A and Condition B are based on volumes less than a 7-day supply and at least a 6-day supply. The revision relocates 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 or equal to a 6-day supply for one or more diesel generators.
- Surveillance Requirements (SR) 3.8.3.1 and 3.8.3.2 are revised. Currently, SR 3.8.3.1 and SR 3.8.3.2 verify that the stored diesel fuel oil and lube oil numerical volume requirements are met. As discussed in the current TS Bases, the numerical volume requirements in SR 3.8.3.1 and SR 3.8.3.2 are based on maintaining at least a 7-day supply. The revision relocates the volumetric requirements from the TS and places it 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.
- The reference to Appendix B of 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 Traveler-501, Revision 1, is an integral part of implementing this TS amendment. The changes to the affected TS Bases pages will be incorporated in accordance with the TS Bases Control Program.

The SR 3.8.3.1 Bases in TSTF Traveler-501, Revision 1, references Appendix B of ANSI-N195. At the Perry Nuclear Power Plant (PNPP), the current reference is Appendix B of ANSI-N195. This application modifies the current ANSI-N195, Appendix B, 1976 reference by deleting "Appendix B" from the reference.

FirstEnergy Nuclear Operating Company (FENOC) is proposing deviations from the TS changes described in TSTF-501, Revision 1, and 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.

Deviations from TSTF Traveler-501, Revision 1:

Two minor deviations from TSTF Traveler TSTF-501 are provided in Attachment 3 of this amendment request. The two deviations were necessary to correct errors within the proposed TS Bases markup provided by TSTF-501. The added words to SR 3.8.3.2 on page B 3.8-46 are being corrected to identify "lube oil..." instead of "fuel oil..." and "Appendix B" is identified as being deleted from Reference 3 on page B-3.8-50 when the proposed markup in TSTF-501 indicated no such deletion. The subject TS Bases changes presented in TSTF-501 do not align with the intended changes of the traveler. The respective corrections within the proposed TS Bases changes align with what was originally intended. These minor deviations have no effect on the NRC staff model SE, since the changes align with all of the other related information provided within TSTF-501.

One additional deviation from TSTF-501 is included within this amendment request. In lieu of using "greater than a 6-day supply" or "(> 6 days)," as presented in TSTF-501, FENOC is using "greater than or equal to a 6-day supply" and "(≥ 6 days)." This deviation aligns the proposed TS and TS Bases changes with the current TS and TS Bases and avoids potential confusion when fuel oil volumes equal a 6-day supply.

NRC model SE and FENOC clarification:

FENOC is also providing clarification to a statement within Section 3.3 of the NRC staff's model SE. The following statement is not applicable to the PNPP TS 7-day fuel oil supply requirement:

Both calculation methods shall include explicit allowance for fuel consumption required by periodic testing.

To clarify, the PNPP calculations that determine fuel oil volumes required to support operation of the standby diesel generators for a 7-day event do not include

an explicit allowance for fuel oil consumption due to periodic testing. Instead, FENOC administratively controls fuel oil volumes in support of required periodic testing, such that the TS required volumes are maintained above the 7-day supply requirement. As described in ANSI N195-1976, including an allowance for fuel consumption required by periodic testing is a consideration in determining the size of the fuel oil storage tank. The PNPP 7-day supply requirement also aligns with NUREG-1434, Revision 4, "Standard Technical Specifications – General Electric Plants (BWR/6): Bases," which does not require additional volume to support periodic testing.

3.0 BACKGROUND

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

4.0 TECHNICAL ANALYSIS

FENOC has reviewed the model SE published in the *Federal Register* on May 26, 2010 (75 FR 29588) as part of the CLIP Notice of Availability. FENOC has concluded that the technical justifications presented in the SE prepared by the NRC staff, with consideration of the discussion provided in Section 2.0 above, are applicable to PNPP and therefore justify this amendment for the incorporation of the proposed changes to the PNPP TS.

5.0 REGULATORY SAFETY ANALYSIS

5.1 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

FirstEnergy Nuclear Operating Company (FENOC) has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Description of Amendment Request: The proposed changes revise TS by 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 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 FENOC analysis of the issue of no significant hazards consideration is presented below:

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

Response: No

The proposed change relocates 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, to 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 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.

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 proposed 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 diesel generator operates as assumed in the accident analysis. The proposed change is consistent with the safety analysis assumptions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

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

5.2 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

A description of the proposed TS change and its relationship to applicable regulatory requirements were published in the *Federal Register* Notice of Availability on May 26, 2010 (75 FR 29588). FENOC 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 PNPP.

6.0 ENVIRONMENTAL CONSIDERATION

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

7.0 REFERENCES

1. *Federal Register*, Notice of Availability of the Models for Plant-Specific Adoption of Technical Specifications Task Force Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," published on May 26, 2010, 75 FR 29588.
2. TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," dated May 28, 2010.

Attachment 1

**Proposed Technical Specification Changes (Mark-Up)
(3 pages follow)**

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
<p>A. One or more DGs with fuel oil level <u>less than a 7 day supply and greater than or equal to a 6 day supply</u>:-</p> <p>1. For Div 1 and Div 2, _____ < 73,700 gal and _____ ≥ 65,100 gal; and</p> <p>2. For Div 3, _____ < 36,700 gal and _____ ≥ 32,000 gal.</p>	<p>A.1 Restore fuel oil level to within limits.</p>	<p>48 hours</p>
<p>B. One or more DGs with lube oil inventory <u>less than a 7 day supply and greater than or equal to a 6 day supply</u>:-</p> <p>1. For Div 1 and Div 2, _____ < 374 gal and _____ ≥ 350 gal; and</p> <p>2. For Div 3, _____ < 260 gal and _____ ≥ 236 gal.</p>	<p>B.1 Restore lube oil inventory to within limits.</p>	<p>48 hours</p>

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Diesel Fuel Oil, Lube Oil, and Starting Air
3.8.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to 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
E. One or more DGs with required starting air receiver pressure < 210 psig and ≥ 165 psig.	E.1 Restore starting air receiver pressure to ≥ 210 psig.	48 hours
F. Required Actions and associated Completion Time not met. <u>OR</u> One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	<p>Verify each fuel oil storage tank contains: <u>≥ a 7 day supply of fuel.</u></p> <p>a. ≥ 73,700 gal of fuel for Div 1 DG and Div 2 DG; and</p> <p>b. ≥ 36,700 gal of fuel for Div 3 DG.</p>	In accordance with the Surveillance Frequency Program
SR 3.8.3.2	<p>Verify lube oil inventory is: <u>≥ a 7 day supply.</u></p> <p>a. ≥ 374 gal for Div 1 DG and Div 2 DG; and</p> <p>b. ≥ 260 gal for Div 3 DG.</p>	In accordance with the Surveillance Frequency Program
SR 3.8.3.3	<p>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.</p>	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	<p>Verify each required DG air start receiver pressure is ≥ 210 psig.</p>	In accordance with the Surveillance Frequency Program
SR 3.8.3.5	<p>Check for and remove accumulated water from each fuel oil storage tank.</p>	In accordance with the Surveillance Frequency Program
SR 3.8.3.6	<p>For each fuel oil storage tank:</p> <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 Program

Attachment 2

**Proposed Technical Specification Changes (Re-Typed)
(3 pages follow)**

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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 or equal to a 6 day supply.	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 or equal to a 6 day supply.	B.1 Restore lube oil inventory to within limits.	48 hours

(continued)

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Diesel Fuel Oil, Lube Oil, and Starting Air
3.8.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates to 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
E. One or more DGs with required starting air receiver pressure < 210 psig and ≥ 165 psig.	E.1 Restore starting air receiver pressure to ≥ 210 psig.	48 hours
F. Required Actions and associated Completion Time not met. <u>OR</u> One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains \geq a 7 day supply of fuel.	In accordance with the Surveillance Frequency Program
SR 3.8.3.2	Verify lube oil inventory is \geq a 7 day supply.	In accordance with the Surveillance Frequency 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 required DG air start receiver pressure is \geq 210 psig.	In accordance with the Surveillance Frequency Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Program
SR 3.8.3.6	For each 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 Program

Attachment 3

Proposed Technical Specification Bases Changes (Mark-Up)
(12 pages follow)

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 a storage tank having a fuel oil capacity sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand (Ref. 1 and Ref. 2). The maximum load demand is calculated using the assumption that at least two DGs are 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.

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

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) and ANSI N195 (Ref. 3) address recommended fuel oil practices, as modified by 1) the ACTIONS and Surveillance Requirements (SRs) of Specification 3.8.3, and 2) the Bases for SR 3.8.3.3, which specifies the current fuel oil testing Standards. The fuel oil properties governed by these SRs include the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level, among others.

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

Each DG has a separate air start system. Each system has two subsystems, each with adequate capacity for five successive starts on the DG without recharging the air start receiver(s).

(continued)

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BASES

BACKGROUND
(continued) The Division 1 and 2 DG air start systems have demonstrated sufficient margin during testing such that only one subsystem is required to be OPERABLE in order for the associated DG to be considered OPERABLE. However, testing on the Division 3 DG has demonstrated that one air start subsystem can only marginally provide the necessary motive force to start the DG within the specified start time. Based on these marginal test results, both subsystems are required to be OPERABLE for the Division 3 DG to be considered OPERABLE.

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

BASES (continued)

APPLICABLE SAFETY ANALYSES	The initial conditions of Design Basis Accident (DBA) and transient analysis in USAR, Chapter 6 (Ref. 4) and Chapter 15 (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, reactor coolant system, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.
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Since diesel fuel oil, lube oil, and starting air subsystems support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132).

LCO	Stored diesel fuel oil is required to have sufficient supply for 7 days of full load, i.e., maximum expected post LOCA load, operation. It is also required to meet specific standards for quality. Additionally, sufficient lube oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources-Operating," and LCO 3.8.2, "AC Sources-Shutdown."
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The starting air system is required to have a minimum capacity for five successive DG starts without recharging the air start receivers. Division 1, 2, and 3 have two independent air start subsystems per DG. For Division 1 and 2 DGs, one air start subsystem for an engine is required for OPERABILITY of each DG. For the Division 3 DG, two air start subsystems are required for OPERABILITY.

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
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(continued)

BASES

APPLICABILITY (continued) after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and starting air subsystems 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.

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 for Division 1 and Division 2 is 65,100 gallons each and for Division 3 is 32,000 gallons. These circumstances may be caused by events such as:

- a. Full load operation required after 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.

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., less than required sufficient lube oil to support 7 days of continuous DG operation at full load conditions, is may not be available. However, the

(continued)

BASES

ACTIONS

B.1 (continued)

Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. The lube oil level equivalent to a 6 day supply for Division 1 and Division 2 is 350 gallons each and for Division 3 is 236 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 (\geq 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

C.1

This Condition is entered as a result of a failure to meet the acceptance criterion 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 of particulate 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, 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, 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.

(continued)

BASES

ACTIONS
(continued)

E.1

With the required starting air receiver pressure < 210 psig, sufficient capacity for five successive DG start attempts may not exist. However, as long as the receiver pressure is \geq 165 psig for Division 1, 2, and 3, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit.

A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

F.1

With a Required Action and associated Completion Time not met, or the stored diesel 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 of fuel oil in the storage tanks to support each DG's operation for 7 days at maximum expected post LOCA loading. The fuel oil level equivalent to a 7 day supply for Division 1 and 2 is 73,700 gallons each and for Division 3 is 36,700 gallons when calculated in accordance with References 2 and 3. The required fuel storage volume is determined using the most limiting energy content of the stored fuel. Using the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, and the corresponding fuel consumption rate, the onsite fuel storage volume required for 7 days of operation can be determined. SR 3.8.3.3 requires new fuel to be tested to verify that the absolute specific gravity or API gravity is within the range assumed in the diesel fuel oil consumption calculations. 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 Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

INFORMATION ONLY.

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

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of maximum expected post LOCA load operation for each DG. The lube oil level equivalent to a 7 day supply for Division 1 and Division 2 is 374 gallons each and for Division 3 is 260 gallons and ~~This requirement~~ is based on the DG manufacturer's consumption values for the run time of the DG. The 7 day lube oil inventory for the Division 1 and 2 diesel engines represents the minimum volume of lube oil required to safely sustain engine operation (sump tank oil level above the lube oil pump suction foot valve) plus the volume of lube oil that would be consumed during 7 days of continuous operation. The 7 day lube oil inventory limit for the Division 3 diesel engine represents the minimum volume of lube oil required to safely sustain engine operation (sump tank oil level at dipstick low level) plus the volume of lube oil that would be consumed during 7 days of continuous operation.

The lube oil sump inventories identified herein correspond to the following lube oil sump tank dipstick readings:

Division 1 and 2

374 Gallons – 3 1/2" above the dipstick LOW mark
350 Gallons – 1 1/2" above the dipstick LOW mark

Division 3

260 Gallons – 4 3/8" below dipstick HIGH mark
236 Gallons – 5 1/2" below dipstick HIGH mark

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

SR 3.8.3.3

The tests of fuel oil prior to addition to the storage tanks 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 and operation. 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.

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

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.3 (continued)

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 the sample (and corresponding results) of new fuel, and addition of new fuel oil to the storage tanks to exceed 31 days. The limits and applicable ASTM Standards for the tests listed in the Diesel Fuel Oil Testing Program of Specification 5.5.9 are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-95 (Reapproved 2000) (Ref. 6);
- b. Verify in accordance with the tests specified in ASTM D1298-85 (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 ; an API gravity at 60°F of $\geq 26^\circ$ and $\leq 39^\circ$; or an API gravity of within 0.3° at 60°F, or a specific gravity within 0.0016 at 60/60°F when compared to the supplier's certificate;
- c. Verify in accordance with the tests specified in ASTM D975-89 (Ref. 6), a flash point of $\geq 125^\circ\text{F}$;
- d. Verify in accordance with the tests specified in ASTM D975-89 (Ref. 6), if gravity was not determined by comparison with the supplier's certification, a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes; and
- e. Verify that the new fuel oil has no visible free water or particulate contamination when tested in accordance with ASTM D4176-86 (Ref. 6). TS 5.5.9.a.3 also includes an option to perform a laboratory test to verify water and sediment are within limits, however, this option is not currently used; and appropriate lab test method for water and sediment can be specified herein if this option is to be utilized.

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 since the fuel oil is not added to the storage tanks.

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

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**SURVEILLANCE
REQUIREMENTS**

SR 3.8.3.3 (continued)

Following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-89 (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-89 (Ref. 6). These additional analyses are required by Specification 5.5.9, Diesel Fuel Oil Testing Program, to be performed within 31 days following sampling and addition. This 31 days is

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SR 3.8.3.3 (continued)

intended to assure: 1) that the sample taken is not more than 31 days old at the time of adding the fuel oil to the storage tank, and 2) that the results of a new fuel oil sample (sample obtained prior to addition but not more than 31 days prior to) are obtained within 31 days after addition. The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

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

Particulate concentration should be determined in accordance with ASTM D2276-88, Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

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

SR 3.8.3.4

This Surveillance ensures that, without the aid of the air compressor, sufficient air start capacity for each DG is available. The system design provides for a minimum of five engine starts without recharging. The pressure specified in this SR reflects the value at which the five starts can be accomplished, but is not so high as to result in failing the limit due to normal cycling of the air compressor. Division 1, 2, and 3 DGs have two independent air start subsystems per DG. For Division 1 and 2 DGs, this Surveillance is met provided one air start receiver for an engine is pressurized

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REQUIREMENTS

SR 3.8.3.4 (continued)

≥ 210 psig. For Division 3 DG, this Surveillance is met provided two air start receivers are pressurized ≥ 210 psig. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.8.3.5

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

SR 3.8.3.6

Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. This SR is typically performed in conjunction with the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 7), examinations of the tanks. At this time, a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section 11 Article IWD-5000 will be performed. 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

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B 3.8.3

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SR 3.8.3.6 (continued)

preventative 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.

REFERENCES

1. USAR, Section 9.5.4.
 2. Regulatory Guide 1.137.
 3. ANSI N195.1, Appendix B, 1976.
 4. USAR, Chapter 6.
 5. USAR, Chapter 15.
 7. ASTM Standards: D4057-95 (Reapproved 2000); D1298-85; D975-89; D4176-86; D2276-88.
 8. ASME, Boiler and Pressure Vessel Code, Section XI.
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