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50.90

NLS2018010
June 11, 2018

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

Subject: 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"
Cooper Nuclear Station, Docket No. 50-298, License No. DPR-46

Dear Sir or Madam:

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Nebraska Public Power District (NPPD) is submitting a request for an amendment to the Technical Specifications (TS) for Cooper Nuclear Station (CNS).

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 places it in the TS Bases so that it may be modified under licensee control. The TS is modified so that the stored diesel fuel and lube oil inventory will require that a 7-day supply be available for a 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.

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.

These proposed changes are consistent with the Nuclear Regulatory Commission (NRC) approved Revision 1 to TSTF Improved Standard Technical Specifications 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.

A001
NRR

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

NPPD is also proposing a similar change to SR 3.8.1.4 in TS 3.8.1, "AC Sources - Operating," to remove the specific numerical value for the day tank fuel oil volume and place it in the TS Bases.

- Attachment 1 provides an evaluation of the proposed changes.
- Attachment 2 provides markup pages of existing TS to show the proposed change.
- Attachment 3 provides revised (clean) TS pages.
- Attachment 4 provides markup pages of the existing TS Bases to show the proposed changes.

NPPD requests approval of the proposed license amendment by June 11, 2019, with the amendment being implemented within 60 days.

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 State of Nebraska Official.

This letter does not contain any new regulatory commitments. The commitment suggested in the NRC April 3, 2014 letter is not needed, as the requested information related to the NRC-approved calculation methodology is already contained in the CNS Updated Safety Analysis Report.

If you should have any questions about this submittal please contact Jim Shaw, Licensing Manager, at (402) 825-2788.

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

Executed On: 6/11/2018
Date

Sincerely,

John Dent, Jr.
Vice President - Nuclear and
Chief Nuclear Officer

/dv

Attachments:
1. Description and Assessment of Technical Specifications Changes
2. Proposed Technical Specifications Changes (Mark-up)
3. Revised Technical Specifications Pages
4. Proposed Technical Specifications Bases Changes (Mark-up) - Information Only

cc: Regional Administrator w/ attachments
USNRC - Region IV

Cooper Project Manager w/ attachments
USNRC - NRR Plant Licensing Branch IV

Senior Resident Inspector w/ attachments
USNRC - CNS

Nebraska Health and Human Services w/ attachments
Department of Regulation and Licensure

NPG Distribution w/o attachments

CNS Records w/ attachments

Attachment 1

Description and Assessment of Technical Specifications Changes

Cooper Nuclear Station, Docket No. 50-298, License No. DPR-46

1.0 DESCRIPTION

The proposed changes revise Technical Specification (TS) 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and places it in 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 a diesel generator. This change is consistent with Nuclear Regulatory Commission (NRC) approved Technical Specifications Task Force (TSTF) Improved Standard Technical Specifications Change Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" (Reference 1). The availability of this TS improvement was announced in the *Federal Register* on May 26, 2010 (75 FR 29588) (Reference 2), as part of the consolidated line item improvement process (CLIIP).

2.0 PROPOSED CHANGES

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by removing the current stored diesel fuel and lube oil numerical volume requirements from the TS and placing them in the TS Bases so that it may be modified under licensee control. The TS are modified so that the stored diesel fuel oil and lube oil inventory will require that a 7-day supply be available for a 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, 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 (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 3.8.3.2 are based on maintaining at least a 7-day supply. The revision 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 and 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 a diesel generator.

- The reference to Appendix B of ANSI N195-1976 (Reference 3) 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.

Nebraska Public Power District (NPPD), is proposing the following variations from the TS changes described in TSTF-501, Revision 1, and the NRC staff's model Safety Evaluation (SE) referenced in the Notice of Availability published in the *Federal Register* on May 26, 2010 (75 FR 29588)), as part of the CLIIP Notice of Availability.

- A revision to TS 3.8.1, "AC Sources-Operating," following a similar approach to the TS 3.8.3 changes discussed above is proposed. The proposed revision to SR 3.8.1.4 replaces the specific day tank numerical volume requirement with the requirement to maintain greater than or equal to 3.9 hour supply of fuel oil. The 3.9 hours is based on the post-fire repair time for a diesel generator fuel oil transfer pump. The specific volume needed to support this requirement is moved to the TS Bases. Similar to the technical justification provided in the model SE as part of the CLIIP, this proposed change is acceptable since it merely removes the current numerical volume requirement for the day tank from the TS and replaces it with the 3.9 hour supply requirement from the TS Bases. Corresponding changes are made to the TS Bases and No Significant Hazards Consideration Analysis. This variation is similar to the variation described in the license amendment request for the Fermi 2 facility (Reference 5).

- Section 3.3 of the NRC Staff's model SE contains the following statement:

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

  The Cooper Nuclear Station (CNS) calculations that determine fuel oil volumes required to support operation of the diesel generators for the 7-day TS requirement do not include an explicit allowance for fuel oil consumption due to periodic testing. Instead, NPPD administratively controls fuel oil in support of required periodic testing, such that the TS required volumes for the fuel oil tanks are maintained. This variation is similar to the variation described in the license amendment request for Perry Nuclear Power Plant (Reference 6).

NRC letter to the TSTF, dated April 3, 2014 (Reference 4), provided resolution of issues regarding plant-specific adoption of TSTF-501, Revision 1. In this letter, the NRC staff determined that the licensee must identify the NRC-approved calculation methodology in the Final Safety Analysis Report. The CNS Updated Safety Analysis Report currently contains the information requested, specifically stating:

> "The specific Emergency Diesel Generator (EDG) fuel oil volumes contained in the diesel fuel oil storage tanks, necessary to ensure that EDG run-duration requirements are met, are calculated using Section 5.4 of American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel Generators," and are based on applying the conservative assumption that the EDG is operated continuously for 7 days at its rated

capacity. This fuel oil calculation methodology is one of two approved methods specified in Regulatory Guide (RG) 1.137, Revision 1, 'Fuel Oil Systems for Standby Diesel Generators,' Regulatory Position C.1.c."

This provides adequate controls to future changes, as any deviation from the NRC-approved diesel generator fuel oil calculation methodology that affects the diesel generator TS duration-based requirements, requires CNS to perform an evaluation pursuant to the provisions of 10 CFR 50.59 to determine whether the calculation methodology change requires prior NRC approval.

3.0 BACKGROUND

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

4.0 TECHNICAL ANALYSIS

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

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration Analysis

Nebraska Public Power District (NPPD) has evaluated the proposed changes to the Technical Specifications (TS) using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Description of Amendment Request: The proposed changes revise TS by removing the current stored diesel fuel oil and lube oil numerical volume requirements from the TS and place them in 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 with a 3.9 hour fuel oil supply in the day tank. The TS are modified so that the stored diesel fuel oil and lube oil inventory will require that a 7-day storage supply be available for a diesel generator and a 3.9 hour fuel oil supply be available in each day tank.

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

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

Response: No.

The proposed change removes the volume of diesel fuel oil and lube oil required to support 7-day operation of an 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 Nuclear Regulatory Commission (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 a conservative consumption value of 3 gallons/hour 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 relocates the volume of diesel fuel oil required to support 3.9 hours of diesel generator operation at full load in the day tank. The specific volume and time is not changed and is consistent with the existing plant design basis to support the emergency diesel generator under accident loading conditions.

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

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

Response: No.

The change does not involve a physical alteration of the plant (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 an onsite diesel generator, the volume equivalent to a 6-day supply, and 3.9 hour day tank 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.

Based on the above analysis, NPPD concludes that the requested change does not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), "Issuance of Amendment."

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). NPPD has reviewed the NRC staff's model Safety Evaluation referenced in the Consolidated Line Item Improvement Process Notice of Availability and concluded that the regulatory evaluation section is applicable to Cooper Nuclear Station.

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. TSTF-501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," dated May 28, 2010

2. 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

3. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," dated April 12, 1976

4. Letter from U.S. Nuclear Regulatory Commission to Technical Specifications Task Force members, dated April 3, 2014, "Identification and Resolution of Issues

Regarding Plant-Specific Adoption of Traveler TSTF-501, Revision 1, 'Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control,'" (ML14084A512)

5. Letter from Joseph H. Plona, Detroit Edison, to the U.S. Nuclear Regulatory Commission, dated August 12, 2011, "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'" (ML112270114)

6. Letter from David B. Hamilton, FirstEnergy Nuclear Operating Company, to the U.S. Nuclear Regulatory Commission, dated October 27, 2016, "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'" (ML16302A055)

Attachment 2

Proposed Technical Specifications Changes (Mark-up)

Cooper Nuclear Station, Docket No. 50-298, License No. DPR-46

Revised Pages

3.8-6
3.8-13
3.8-15

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	----------NOTES---------- 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. ---------- Verify each DG is synchronized and loaded and operates for ≥ 2 hours at a load ≥ 3600 kW and ≤ 4000 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ ~~1500 gal~~ of fuel oil. 3.9 hour supply	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each 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 storage tanks to the day tanks.	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, except for Conditions A, C, and D.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel oil level ~~< 49,500 gal and > 42,800 gal~~ in storage tanks.	A.1 Restore fuel oil level to within limits. less than a 7 day supply and greater than a 6 day supply	48 hours
B. One or more DGs with lube oil inventory ~~< 504 gal and > 432 gal.~~	B.1 Restore lube oil inventory to within limits. less than a 7 day supply and greater than a 6 day supply	48 hours
C. Stored fuel oil total particulates not within limit.	C.1 Restore stored fuel oil total particulates to within limit.	7 days

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.3.1	Verify the fuel oil storage tanks contain a combined volume of ≥ ~~49,500 gal~~ a 7 day supply of fuel.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2	Verify lube oil inventory is ≥ ~~504 gal.~~ a 7 day supply	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG has a minimum of one air start receiver with a pressure ≥ 200 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

Attachment 3

Revised Technical Specifications Pages

Cooper Nuclear Station, Docket No. 50-298, License No. DPR-46

Revised Pages

3.8-6
3.8-13
3.8-15

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	----------NOTES---------- 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. ---------- Verify each DG is synchronized and loaded and operates for ≥ 2 hours at a load ≥ 3600 kW and ≤ 4000 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ 3.9 hour supply of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each 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 storage tanks to the day tanks.	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, except for Conditions A, C, and D.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Fuel oil level less than a 7 day supply and greater than a 6 day supply in storage tanks.	A.1	Restore fuel oil level to within limits.	48 hours
B. One or more DGs with lube oil inventory less than a 7 day supply and greater than a 6 day supply.	B.1	Restore lube oil inventory to within limits.	48 hours
C. Stored fuel oil total particulates not within limit.	C.1	Restore stored fuel oil total particulates to within limit.	7 days

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.3.1	Verify the fuel oil storage tanks contain a combined volume of ≥ a 7 day supply of fuel.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2	Verify lube oil inventory is ≥ a 7 day supply.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each DG has a minimum of one air start receiver with a pressure ≥ 200 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

Attachment 4

Proposed Technical Specifications Bases Changes (Mark-up) - Information Only

Cooper Nuclear Station, Docket No. 50-298, License No. DPR-46

Revised Pages

B 3.8-17
B 3.8-29
B 3.8-31
B 3.8-33
B 3.8-36

BASES

SURVEILLANCE REQUIREMENTS (continued)

Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

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

Note 1 modifies this Surveillance to indicate 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 modifies this Surveillance by stating 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 the day tank is at or above the level 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 approximately 3.9 hours of DG operation at full load.

The volume of fuel oil equivalent to 3.9 hours supply is 1500 gallons.

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. Periodic removal of water from the fuel oil 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

B 3.8 ELECTRICAL POWER SYSTEMS

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

BASES

BACKGROUND

The two diesel generators (DGs) are provided with two storage tanks having a fuel oil capacity sufficient to operate a single DG for a period of 7 days while that DG is operating at full load which bounds post loss of coolant accident (LOCA) load demand discussed in USAR, Section VIII-5.2 (Ref. 1). The maximum load demand is calculated using the assumption that only one DG 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.

and Regulatory Guide 1.137 (Ref. 2).

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

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity or absolute specific gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. The useable volume in each engine oil sump and onsite lube oil storage contain an inventory capable of supporting a minimum of 7 days of operation. The onsite storage in addition to the useable volume in the engine oil sump is sufficient to ensure 7 days' continuous operation. This supply is sufficient to allow the operator to replenish lube oil from outside sources.

Each DG has an air start subsystem that includes two starting air receivers, each with adequate capacity for multiple start attempts on the DG without recharging the air start receiver(s).

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG except for Conditions A, C, and D. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) governed by separate Condition entry and application of associated Required Actions. The Note does not apply to Conditions A, C and D since the CNS design has two fuel oil storage tanks that supply fuel oil to both DGs.

In this Condition,

A.1

~~With the combined fuel level < 49,500 gallons in the storage tanks;~~ the 7 day fuel oil supply for both DGs is not available. The 49,500 gallon limit is a conservative estimate of the required fuel oil based on worst case fuel consumption. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply ~~(42,800 gallons).~~ These circumstances may be caused by events ~~such as:~~

The fuel oil level equivalent to a 6 day supply is 42,800 gallons.

~~a.~~ Full load operation required for an inadvertent start while at minimum required level; or

b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

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 DGs inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that action will be initiated to obtain replenishment, and the low probability of an event during this brief period.

B.1

i.e.,

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is

In this Condition, the 7 day

~~With~~ lube oil inventory ~~< 504 gal~~, sufficient lube oil to support 7 days of continuous DG operation at full load conditions ~~may~~ not ~~be~~ available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time for obtaining the ~~requisite~~ replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that action

The lube oil inventory equivalent to a 6 day supply is 432 gallons.

BASES

ACTIONS (continued)

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 of Condition A, B, C, D, or E 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, B, C, D, or E, the associated DG(s) may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

The fuel oil level equivalent to a 7 day supply is 49,500 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.

SR 3.8.3.1

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

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

SR 3.8.3.2

This Surveillance ensures that sufficient lubricating oil inventory (combined inventory in the DG lube oil sump and in the warehouse) is available to support at least 7 days of operation for one DG. ~~The 504 gal requirement~~ is based on a 3 gallon per hour consumption value for the run time of the DG. Implicit in this SR is the requirement to verify that adequate DG lube oil is stored onsite to ensure that sump level does not drop below the manufacturer's recommended minimum level.

The lube oil inventory equivalent to a 7 day supply is 504 gallons and

BASES

SURVEILLANCE REQUIREMENTS (continued)

requirements provide for multiple engine start cycles without recharging. The pressure specified in this SR is intended to reflect the lowest value at which the requirements of Reference 7 can be satisfied.

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 fuel storage tanks eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, 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. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed to the extent possible during performance of the Surveillance.

REFERENCES

1. USAR, Section VIII-5.2.
2. Regulatory Guide 1.137, Revision 1, October 1979.
3. ANSI N195, ~~Appendix B,~~ 1976.
4. USAR, Chapter VI.
5. USAR, Chapter XIV.
6. 10 CFR 50.36(c)(2)(ii).
7. USAR, Section VIII-5.3.3.