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DTE Energy

August 12, 2011 10 CFR 50.90
NRC-11-0030

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

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

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"

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Detroit Edison is submitting a request for an amendment to the Technical Specifications (TS) for Fermi 2.

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil and Starting Air," by relocating the current stored diesel fuel 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 inventory will require that a 7 day supply be available for each diesel generator. Condition A in the Action table and Surveillance Requirement (SR) 3.8.3.1 are revised to reflect the above change.

Regarding stored diesel fuel 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 relocates the current numerical volume requirements from the TS to the TS Bases and relocates 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 (Vol. 75 FR No. 101) as part of the consolidated line item improvement process (CLIIP).

TSTF Traveler-501, Revision 1, assumes that the current licensing basis requires that a 7 day supply of stored diesel fuel oil be available for "each" diesel generator. This is the current licensing basis for Fermi 2. The Fermi 2 TS does not include similar requirements for lube oil inventory.

At Fermi 2, direct energy content measurement is used to verify that the energy content of diesel fuel oil is equal or greater than the most limiting energy content required by the design basis. This approach provides an equivalent assurance of energy content as using the correlation between specific gravity or API gravity and energy content.

Detroit Edison is also proposing a similar change to SR 3.8.1.4 in TS 3.8.1, "AC Sources - Operating," to relocate the specific numerical value for the day tank fuel oil volume from the TS to 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 TS Bases to show proposed changes (for information only)

Detroit Edison requests approval of the proposed license amendment by February 29, 2012, with the amendment being implemented within 60 days.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Michigan Official.

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,

Joseph H. Plona

Attachments:

1. Evaluation of Proposed Change
2. Marked-up pages of Fermi 2's Existing TS
3. Revised (clean) Fermi 2 TS pages
4. Marked-up pages of Fermi 2 TS Bases (for information only)

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, Joseph H. Plona, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Joseph H. Plona
Site Vice President, Nuclear Generation

On this 12th day of August, 2011 before me personally appeared Joseph H. Plona, being first duly sworn and says that he executed the foregoing as his free act and deed.

Notary Public

STACY OAKES
NOTARY PUBLIC, STATE OF MI
COUNTY OF MONROE
MY COMMISSION EXPIRES Jul 28, 2012
ACTING IN COUNTY OF Washtenaw

Attachment 1 to
NRC-11-0030

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

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"

Evaluation of Proposed Change

Evaluation of Proposed Change

Subject: License Amendment Request for Adoption of TSTF-501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control"

TABLE OF CONTENTS

1.0 DESCRIPTION

The proposed changes revise Technical Specifications (TS) 3.8.3, "Diesel Fuel Oil and Starting Air," by relocating the current stored diesel fuel 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 inventory will require that a 7 day supply be available for each diesel generator. This change is consistent with NRC-approved Technical Specification Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control." Minor differences between the proposed Fermi 2 specific TS changes, and the changes proposed by TSTF-501 are listed in Section 2.0. The availability of this TS improvement was announced in the Federal Register on May 26, 2010 (Vol. 75 FR No. 101) as part of the consolidated line item improvement process (CLIIP).

2.0 PROPOSED CHANGE

The proposed changes revise TS 3.8.3, "Diesel Fuel Oil and Starting Air," by relocating the current stored diesel fuel oil numerical volume requirement 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 inventory will require that a 7 day supply be available for each diesel generator. As a result:

- Condition A in the Action table is revised. Currently, Condition A is entered when the stored diesel fuel oil numerical volume requirements are not met. As discussed in the current TS Bases, the numerical volume requirement in Condition A is based on volumes less than a 7 day supply, but greater than a 6 day supply. The revision relocates the volumetric requirements from the TS and places it in the TS Bases. The TS is modified so that Condition A is entered when the stored diesel fuel oil inventory is less than a 7 day supply, but greater than a 6 day supply for one or more diesel generators.

- Surveillance Requirement (SR) 3.8.3.1 is revised. Currently, SR 3.8.3.1 verifies that the stored diesel fuel oil-numerical volume requirements are met. As discussed in the current TS Bases, the numerical volume requirements in SR 3.8.3.1 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 is 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.

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 ANSI-N195. At Fermi 2, the current reference is ANSI-N195. This application does not propose to modify the current ANSI-N195 reference.

Detroit Edison is proposing the following variations 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 (Vol. 75 FR No. 101) as part of the CLIIP Notice of Availability:

- No changes associated with lube oil inventory are included since the Fermi 2 TS does not include the requirements for lube oil inventory.

- Direct energy content measurement of the diesel fuel oil is used to verify compliance with the most limiting energy content assumed in the determination of the required fuel oil volume. This direct measurement of the energy content is an alternative to using the correlation between absolute gravity or API gravity to energy content that provides an equivalent assurance of meeting energy content limits.

- 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 one hour supply of fuel oil. The specific volume needed to support this requirement is relocated 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 relocates the current numerical volume requirement for the day tank from the TS to the TS Bases and relocates the one hour supply requirement from the TS Bases to the TS.

Corresponding changes are made to the TS Bases and No Significant Hazards Consideration Determination to reflect the deviations above.

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 (Vol. 75 FR No. 101) and TSTF-501, Revision 1.

4.0 TECHNICAL ANALYSIS

Detroit Edison has reviewed the model SE published in the Federal Register on May 26, 2010 (Vol. 75 FR No. 101) as part of the CLIIP Notice of Availability. Detroit Edison has concluded that the technical justifications presented in the SE prepared by the NRC staff are applicable to Fermi 2 and therefore justify this amendment for the incorporation of the proposed changes to the Fermi 2 TS.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration Determination

Detroit Edison 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 numerical volume requirements from the TS to the TS Bases so that it may be modified under licensee control. The current numerical volume requirements are based on a 7 day supply in the storage tank and a one hour supply in the day tank. The TS is modified so that the stored diesel fuel oil inventory will require that a 7 day storage tank supply and a one hour day tank supply be available for each diesel generator.

Basis for proposed no significant hazards determination: As required by 10 CFR 50.91(a), the Detroit Edison 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 required to support 7 day operation of the onsite diesel generators, 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" based on the diesel generator manufacturer's consumption values including consideration of minimum required energy content. Because the requirement to maintain a 7 day supply of diesel fuel oil is not changed and is consistent with the assumptions in the accident analyses, and the actions taken when the volume of fuel oil 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 one hour 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 change does 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 required to support 7 day operation of the onsite diesel generators, and the volume equivalent to a 6 day supply, and one hour day tank supply to licensee control. As the bases for the existing limits on diesel fuel oil are not changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

1.2 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 (Vol. 75 FR No. 101). Detroit Edison has reviewed the NRC staff's model SE referenced in the CLIIP Notice of Availability and concluded that the regulatory evaluation section is applicable to Fermi 2.

6. 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. REFERENCES

1. Federal Register Notice, Notice of Availability published on May 26, 2010, (Vol.75 FR No. 101)

2. TSTF Traveler-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control." (ADAMS Accession No. ML090510686)

Attachment 2 to
NRC-11-0030

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

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"

Marked-up pages of Fermi 2 Existing TS

Affected pages:

3.8-4
3.8-13
3.8-14

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ ~~210 gal~~ one hour supply of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify each fuel oil transfer system operates to automatically transfer fuel oil from storage tanks to the day tanks.	31 days
SR 3.8.~~1~~.7	----------NOTE---------- All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ----------	
	Verify each EDG starts from standby condition and achieves:	184 days
	a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and	
	b. Steady state voltage ≥ 3950 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	
SR 3.8.1.8	Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and following load rejection, the frequency is ≤ 66.75 Hz.	18 months

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

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

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each EDG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required EDGs with fuel oil level ~~< 35,280 gal and > 30,240 gal~~ in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more required EDGs with stored fuel oil total particulates not within limit.	B.1 Restore fuel oil total particulates to within limit.	7 days
C. One or more required EDGs with new fuel oil properties not within limits.	C.1 Restore stored fuel oil properties to within limits.	30 days

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met. OR One or more required EDGs with diesel fuel oil, or starting air subsystem not within limits for reasons other than Condition A, B, or C.	D.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each required EDG fuel oil storage tank contains ≥ ~~35,280 gal~~ of fuel. a 7 day supply	31 days
SR 3.8.3.2	Verify each required EDG fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Emergency Diesel Generator Fuel Oil Testing Program.	In accordance with the Emergency Diesel Generator Fuel Oil Testing Program

(continued)

Attachment 3 to
NRC-11-0030

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

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"

Revised (clean) Fermi 2 TS pages

Affected pages:

3.8-4
3.8-13
3.8-14

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ one hour supply of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify each fuel oil transfer system operates to automatically transfer fuel oil from storage tanks to the day tanks.	31 days
SR 3.8.1.7	----------NOTE---------- All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each EDG starts from standby condition and achieves: a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3740 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and following load rejection, the frequency is ≤ 66.75 Hz.	18 months

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

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

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each EDG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required EDGs with fuel oil level less than a 7 day supply and greater than a 6 day supply in storage tank.	A.1 Restore fuel oil level to within limits.	48 hours
B. One or more required EDGs with stored fuel oil total particulates not within limit.	B.1 Restore fuel oil total particulates to within limit.	7 days
C. One or more required EDGs with new fuel oil properties not within limits.	C.1 Restore stored fuel oil properties to within limits.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met. OR One or more required EDGs with diesel fuel oil, or starting air subsystem not within limits for reasons other than Condition A, B, or C.	D.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each required EDG fuel oil storage tank contains ≥ a 7 day supply of fuel.	31 days
SR 3.8.3.2	Verify each required EDG fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Emergency Diesel Generator Fuel Oil Testing Program.	In accordance with the Emergency Diesel Generator Fuel Oil Testing Program

(continued)

Attachment 4 to
NRC-11-0030

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

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"

Marked-up pages of Fermi 2 TS Bases (for information only)

Affected pages:

B 3.8.1-12
B 3.8.3-1
B 3.8.3-3
B 3.8.3-4

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.4

Insert 1 →

~~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 a minimum of 1 hour of EDG operation at full load~~.

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

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 day tanks once every 31 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during EDG 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 Frequencies are established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during 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 day tank. It 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

Insert 1 (SR 3.8.1.4)

This SR provides verification that there is an adequate inventory of fuel oil in the day tank to support the EDG operation for one hour at full load. The volume of fuel oil equivalent to one hour supply is 210 gallons.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil and Starting Air

BASES

BACKGROUND

Each emergency diesel generator (EDG) is provided with a storage tank having a fuel oil capacity sufficient to operate that EDG for a period of 7 days while the EDG is supplying maximum continuous load discussed in UFSAR, Section 9.5.4 (Ref. 1). This onsite fuel oil capacity is sufficient to operate the EDGs 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 tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve, or tank to result in the loss of more than one EDG.

For proper operation of the standby EDGs, 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), and impurity level.

Each EDG has an air start system with adequate capacity for five successive start attempts on the EDG without recharging the air start receiver(s).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in UFSAR, Chapter 6 (Ref. 4), and Chapter 15 (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The EDGs 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.

BASES

APPLICABLE SAFETY ANALYSES (continued)

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

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of EDGs 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. EDG day tank fuel oil requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources – Operating," and LCO 3.8.2, "AC Sources – Shutdown."

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

APPLICABILITY

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

ACTIONS

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

BASES

ACTIONS (continued)

A.1

In this Condition, the 7 day fuel oil supply for a required EDG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. These circumstances may be caused by events such as:

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

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

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

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 EDG 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

This Condition is entered as a result of a failure to meet the acceptance criterion for particulates in one or more required EDG storage tanks. 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, 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 EDG inoperable. The 7 day Completion Time allows for further evaluation, resampling, and re-analysis of the EDG fuel oil.

BASES

ACTIONS (continued)

C.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.2 for new fuel that has already been added to a required EDG storage tank not within the required limits, a period of 30 days from the time of obtaining new fuel oil sample results is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combination of these procedures. Even if a EDG start and load was required during this time interval and the fuel oil properties were outside limits, there is high likelihood that the EDG would still be capable of performing its intended function.

D.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil or starting air subsystem not within limits for reasons other than addressed by Conditions A through C, the associated EDG 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 of each required EDG to support each EDG'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.

Insert 2

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

Insert 2 (SR 3.8.3.1)

The fuel oil level equivalent to a 7 day supply is 35,280 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 that meets the plant design basis requirements. Using the most limiting energy content as verified by direct energy content measurement or 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.2

The tests of fuel oil prior to addition to the storage tank are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between sampling (and associated results) of new fuel and addition of new fuel oil to the storage tank to exceed 31 days. The tests, limits, and applicable ASTM Standards for the new fuel oil tests listed in the Emergency Diesel Generator Fuel Oil Testing Program of Specification 5.5 are as follows:

a. Sample the new fuel oil in accordance with ASTM D975-07B (Ref. 6);

b. Verify that the sample has an API Gravity of within 0.3 degrees at 60°F or a specific gravity of within 0.0016 at 60/60°F, when compared to the suppliers certificate, or an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of ≥ 27° and ≤ 39° when tested in accordance with ASTM D1298-85 (Ref. 6). Also, verify in accordance with the tests specified in ASTM D975-07B (Ref. 6) a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F; and

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-86 or a water and sediment content within limits when tested in accordance with ASTM D975-07B (Ref. 6).

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

Following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-07B (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-07B (Ref. 6), with one exception: consistent with Reference 2 and the EDG manufacture specification (Ref. 7), which is more restrictive than specified in ASTM D975-07B (Ref. 6),

BASES

SURVEILLANCE REQUIREMENTS (continued)

the fuel is tested to ensure it meets a minimum cetane number of 45.

These additional analyses are required by Specification 5.5.9, "Emergency Diesel Generator Fuel Oil Testing Program," to be performed within 31 days following sampling and addition. This 31 days is 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 they were not within stated limits, would not have an immediate effect on EDG operation. This Surveillance ensures the availability of high quality fuel oil for the required EDGs.

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. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D5452-00 (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 test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.3

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each EDG is available. The system design requirements provide for a minimum of five engine start cycles without recharging. The pressure specified in this SR is intended to reflect the lowest value at which the five starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and

BASES

SURVEILLANCE REQUIREMENTS (continued)

other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.4

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 required EDG fuel storage tanks once every 31 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during EDG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.

REFERENCES

1. UFSAR, Section 9.5.4.
2. Regulatory Guide 1.137.
3. ANSI N195, 1976.
4. UFSAR, Chapter 6.
5. UFSAR, Chapter 15.
6. ASTM Standards: D975-07B; D1298-85; D4176-86; D5452-00.
7. C2 010 US 1, Fairbanks Morse Skidded Heat Exchanger Cooled Diesel Generator Sets