



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379

May 16, 2000

TVA-SQN-TS-99-07

10 CFR 50.90

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

Gentlemen:

|                            |   |                    |
|----------------------------|---|--------------------|
| In the Matter of           | ) | Docket Nos. 50-327 |
| Tennessee Valley Authority | ) | 50-328             |

**SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - TECHNICAL  
SPECIFICATION (TS) CHANGE NO. 99-07, "DIESEL GENERATOR (D/G)  
FUEL OIL"**

In accordance with the provisions of 10 CFR 50.4 and 50.90, TVA is submitting a request for an amendment to SQN's Licenses DPR-77 and 79 to change the TSs for Units 1 and 2. The proposed change replaces the surveillance requirement (SR) for evaluating fuel oil for the D/Gs with a Diesel Fuel Oil Program, deletes the portion of the SR that specifies the use of sodium hypochlorite solution in cleaning of the fuel oil storage tanks, and deletes the SR to perform a pressure test on the diesel generator fuel oil system designed to American Society of Mechanical Engineers Section III requirements.

TVA has determined that there are no significant hazards considerations associated with the proposed change and that the change is exempt from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). The SQN Plant Operations Review Committee and the SQN Nuclear Safety Review Board have reviewed this proposed change and determined that operation of SQN Units 1 and 2, in accordance with the proposed change, will not endanger the health and safety of the public. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter to the Tennessee State Department of Public Health.

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U.S. Nuclear Regulatory Commission

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Enclosure 1 to this letter provides the description and evaluation of the proposed change. This includes TVA's determination that the proposed change does not involve a significant hazards consideration, and is exempt from environmental review. Enclosure 2 contains copies of the appropriate TS pages from Units 1 and 2 marked-up to show the proposed change.

TVA requests that the revised TS be made effective within 45 days of NRC approval. If you have any questions about this change, please telephone me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,



Pedro Salas

Licensing and Industry Affairs Manager

Subscribed and sworn to before me  
on this 16<sup>th</sup> day of May



Peggy M. Billingsley

Notary Public

My Commission Expires October 9, 2002

Enclosures

cc: See page 3

U.S. Nuclear Regulatory Commission  
Page 3  
May 16, 2000

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Regional Administrator  
U.S. Nuclear Regulatory Commission  
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## ENCLOSURE 1

### TENNESSEE VALLEY AUTHORITY SEQUOYAH NUCLEAR PLANT (SQN)

UNITS 1 AND 2  
DOCKET NOS. 327 AND 328

#### PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE TS-99-07 DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

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##### I. DESCRIPTION OF THE PROPOSED CHANGE

TVA proposes to modify the SQN Units 1 and 2 TSs by revising the following surveillance requirements (SR)..

1. SR 4.8.1.1.2.c - This change removes the current methodology for testing of the fuel oil and replaces it with a Diesel Fuel Oil Program in new TS Section 6.16. The American Society for Testing and Materials (ASTM) methodologies for testing of the fuel oil will be stated in the Bases section of the TSs. Also, ASTM D2274-70 will be replaced with a later approved revision ASTM D2274-94.
2. SR 4.8.1.1.2.f.1 - This change eliminates the use of sodium hypochlorite solution for cleaning of the fuel oil storage tanks contained within the SR.
3. SR 4.8.1.1.2.f.2 - This change deletes the SR to perform a pressure test of those portion of the diesel fuel oil system designed to Section III, subsection ND of the American Society of Mechanical Engineers (ASME) Code at a test pressure equal to 110 percent of the system design pressure.
4. SR 4.8.1.1.2.a.4 and Unit 1 Bases Sections 3/4.8.1 and 3/4.8.2 contain typographical errors that are being corrected.

##### II. REASON FOR THE PROPOSED CHANGE

The present SR specifies the ASTM methodologies and the parameters being tested. The ASME methodologies specified in the TS for testing of the fuel oil are not consistent with present day methodologies. This change will allow utilization of later revisions to ASTM standards that have been approved for testing. This change will continue to ensure the appropriate fuel oil is used in the D/G system.

Additionally, the TS specifies ASTM D2274-70 for determining the impurity level of the diesel fuel oil. ASTM D2274-70 requires the use of chromic acid in determining the accelerated stability. Chromic acid is now considered a hazardous waste. ASTM D2274-94 does not require the use of chromic acid. ASTM D2274-70 specifies the use of two glass filters in performance of the test. ASTM D2274-94 allows the use of a single polycarbonate filter. The polycarbonate filter is as good as two glass filters. Therefore, using a later revision of ASTM D2274 will eliminate use of the hazardous chemical and reduce the amount of waste.

The elimination of the use of a sodium hypochlorite solution in cleaning of the diesel fuel oil storage tanks will remove the potential for creating an explosive mixture in the fuel oil storage tanks. Sodium hypochlorite could react with the fuel oil creating a potentially explosive mixture. This is considered an unsafe work practice.

The deletion of performing a pressure test as required by SR 4.8.1.1.2.f.2 is a clarification. There are no portions of the diesel fuel oil system designed as Section III, subsection ND of the ASME Code.

### **III. SAFETY ANALYSIS**

The current SR for testing of the D/G fuel oil requires testing using ASTM D2274-70. Using a later revision of the ASTM will ensure that the fuel oil is properly analyzed and will reduce the handling of hazardous waste. Replacing the current SR with a Diesel Fuel Oil Program will allow the use of later approved revisions of the ASTM standards and will continue to ensure the reliability of the fuel oil for the D/Gs. This change is consistent with NUREG-1431, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors."

The deletion of the portion of the SR that specifies the use of sodium hypochlorite solution in cleaning of the fuel oil storage tanks does not change the requirement to clean the tanks. The TS does not need to specify the chemical for cleaning the fuel oil storage tanks. This change is consistent with NUREG-1431.

The deletion of the SR to perform a pressure test of those portions of the diesel fuel oil system designed as Section III, subsection ND of the ASME Code has no impact on safety or safety-related equipment. This is a documentation change only since no portions of the diesel

fuel oil system are designed as Section III, subsection ND of the ASME Code. The proposed change is consistent with NUREG-1431.

#### IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TVA has concluded that operation of SQN Units 1 and 2, in accordance with the proposed change to the technical specifications does not involve a significant hazards consideration. TVA's conclusion is based on its evaluation, in accordance with 10 CFR 50.91(a)(1), of the three standards set forth in 10 CFR 50.92(c).

A. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The probability of occurrence or the consequences for an accident is not increased by this request. The proposal to establish a Diesel Fuel Oil Program and specifying the ASTM standards in the TS Bases does not modify the manner in which the plant is operated. Deletion of the portion of the surveillance requirement (SR) that specifies the use of sodium hypochlorite solution in cleaning of the fuel oil storage tanks, and the deletion of the SR to perform a pressure test of those portions of the diesel fuel oil system designed as Section III, subsection ND of the ASME Code do not alter the way any structure, system, or component functions and does not modify the manner in which the plant is operated.

This request will ensure that the fuel oil continues to be properly evaluated to ensure that the fuel oil will not degrade the ability of the D/G to perform its intended function. The fuel oil storage tanks will be cleaned at the required frequency. The deletion of the SR to perform a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code, removes potential confusion about testing of the fuel oil system since no portion of the system is designed to Section III, subsection ND of the ASME Code. Therefore, these changes will not change or impact previously evaluated accidents and the D/Gs ability to perform their intended function.

**B. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed changes are procedural in nature concerning fuel oil testing, cleaning chemical to be used on the fuel oil storage tanks, and deletion of the pressure test of those portions of the diesel fuel oil system designed as Section III, subsection ND of the ASME Code. The possibility for an accident or malfunction of a different type than any evaluated previously in SQN's Final Safety Analysis Report are not created. The proposal does not alter the way any structure, system, or component functions and does not modify the manner in which the plant is operated. The fuel oil quality will not be reduced and will not result in a decrease in D/G operability. The fuel oil storage tanks will be cleaned at the required frequency. Therefore, the possibility of a new or different kind of accident previously evaluated is not created.

**C. The proposed amendment does not involve a significant reduction in a margin of safety.**

The proposed changes are procedural in nature concerning fuel oil testing, cleaning chemical to be used on the fuel oil storage tanks, and deletion of the pressure test of the diesel fuel oil system. The margin of safety has not been reduced since the change in test methodologies are NRC approved and will continue to ensure the quality of the fuel oil. Also, deletion of the portion of the SR that specifies the use of sodium hypochlorite does not change the requirement to clean the fuel oil storage tanks. ASME Code requirements will continue to be met. Therefore, the proposed changes do not involve a reduction in the margin of safety.

**V. ENVIRONMENTAL IMPACT CONSIDERATION**

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT (SQN)  
UNITS 1 AND 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE TS-99-07  
MARKED PAGES

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I. AFFECTED PAGE LIST

Unit 1

3/4 8-3  
3/4 8-5  
B3/4 8-1a

ADDED pages  
B3/4 8-4  
B3/4 8-5  
6-18

Unit 2

3/4 8-3  
3/4 8-5

ADDED pages  
B3/4 8-4  
B3/4 8-5  
6-19

II. MARKED PAGES

See attached.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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#### 4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. At least once per 31 days on a staggered test basis by:
1. Verifying the fuel level in the engine-mounted day tanks.
  2. Verifying the fuel level in the 7 day tank.
  3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine mounted fuel tanks.
  4. \*Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds voltage and frequency of  $\geq 6800$  volts and  $\geq 58.8$  Hz and achieves a steady state voltage and frequency of  $\geq 6800$  volts and  $\leq 7260$  volts and  $\geq 58.8$  Hz and  $\leq 61.2$  Hz. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:
    - a) Manual.
    - b) Simulated loss of offsite power by itself.
    - c) An ESF actuation test signal by itself.
  5. \*Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and
  6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks.
- c. 

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~~At least once per 92 days and from new fuel oil prior to addition to the 7-day tanks by verifying that a sample obtained in accordance with ASTM D270-1975 has a water and sediment content of less than or equal to .05 volume percent, and a kinematic viscosity @ 100°F of greater than or equal to 1.8 but less than or equal to 5.8 centi-stokes when tested in accordance with ASTM D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM D2274-70.~~

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\*The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (approximately 900 rpm), synchronization, and gradual loading. In this latter case, 10 second requirements do not apply.

**INSERT A**

- C. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kW.
9. Verifying the diesel generator's capability to:
  - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
  - b) Transfer its loads to the offsite power source, and
  - c) Be restored to its shutdown status.
10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within  $\pm 5$  percent of its design setpoint.#
11. This surveillance is deleted.
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds,  $\geq 6800$  volts and  $\geq 58.8$  Hz.
- f. At least once per 10 years by:
  1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank. ~~using a sodium hypochlorite solution, and~~
  2. ~~Performing a pressure test of those portions of the diesel fuel oil system design to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.~~

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- g. At least once per 18 months by:
  1. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at within  $\pm 10$  percent of the initial pretest voltage and frequency at  $60 \pm 1.2$  Hz. At no time shall the transient voltage exceed 8276V.
  2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection.

#May be performed in Modes 1, 2, 3 & 4 if the associated equipment is out of service for maintenance or testing.

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

#### 3/4.8.1 and 3/4.8.2 A.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The requirements of Specification 3.8.2.1 provide those actions to be taken for the inoperability of A.C. Distribution Systems. Action a of this specification provides an 8-hour action for the inoperability of one or more A.C. boards. Action b of this specification provides a relaxation of the 8-hour action to 24-hours provided the Vital Instrument Power Board is inoperable solely as a result of one inoperable inverter and the board has been energized within 8 hours. In this condition the requirements of Action a do not have to be applied. Action b is not intended to provide actions for inoperable inverters, which is addressed by the operability requirements for the boards, and is included only for relief from the 8-hour action of Action a when only one inverter is affected. More than one inverter inoperable will result in the inoperability of the associated 120 Volt A.C. Vital Instrument Power Board(s) in accordance with Action a. With more than one inverter inoperable entry into the actions of TS 3.0.3 is not applicable because Action a includes provisions for multiple inoperable inverters as attendant equipment to the boards.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137 "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979. The surveillance requirements for the diesel generator load-run test and the 24-hour endurance and margin test are in accordance with Regulatory Guide 1.9, Revision 3, July 1993, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants." During the diesel generator endurance and margin surveillance test, momentary transients outside the kw and kvar load ranges do not invalidate the test results. Similarly, during the diesel generator load-run test, momentary transients outside the kw load range do not invalidate the test results.

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Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. 6800 volts is the minimum steady state output voltage and the 10 second transient value. 6800 volts is 98.6% of nominal bus voltage of 6900 volts and is based on the minimum voltage required for the diesel generator supply breaker to close on the 6.9 kV shutdown board. The specified maximum steady state output voltage of 7260 volts is based on the degraded over voltage relay setpoint and is equivalent to 110% of the nameplate rating of the 6600 volt motors. The specified minimum and maximum frequencies of the diesel generator are 58.8 Hz and 61.2 Hz, respectively. These values are equal to  $\pm 2\%$  of the 60 Hz nominal frequency and are derived from the recommendations given in regulatory Guide 1.9.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage batteries for Generating Stations and Substations."

## ADDED PAGE

The test listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If the results from these test 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 test are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the test to exceed 31 days. The test, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel in accordance with D4057-1988 (ref.);
- b. Verify in accordance with the test specified in ASTM D975-1990 (Ref.) that the sample has an absolute specific gravity at 60/60 degrees F of  $\geq 0.83$  and  $\leq 0.89$  or an API gravity at 60 degrees F of  $\geq 27$  degrees and  $\leq 39$  degrees, a kinematic viscosity at 40 degrees C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125$  degrees F; and
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-1986 (Ref.).

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

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-1990 (Ref.) are met, except that the analysis for sulfur may be performed in accordance with ASTM D1552-1990 (Ref.) or ASTM D2622-1987 (Ref.). 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 D/G operation. This surveillance ensures availability of high quality fuel oil for the D/Gs.

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean 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 ASATM D2276-94, Method A (Ref.). This method involves a gravimatic 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. Each of the four interconnected tanks which comprise a 7-day tank must be considered and tested separately.

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.

**ADDED PAGE**

**Reference.**

**ASTM Standards**

D4057-1888, "Practice for manual sampling of petroleum and petroleum Products."

D975-1990, "Standard Specifications for Diesel Fuel oils."

D4176-1986, "Free Water and Particulate Contamination in Distillate Fuels."

D1552-1990, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)."

D2622-1987, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)."

D2276-1994, "Standard Test Method for Particulate Containment in Aviation Turbine Fuels."

D1298-1985, "Standard Test Method for Density, Specific Gravity, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method."

## ADDED PAGE

### ADMINISTRATIVE CONTROLS

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#### 6.16 DIESEL FUEL OIL TESTING PROGRAM

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

- a. Acceptability of new fuel oil prior to addition to storage tanks by determining that the fuel oil has:
  - 1. an API gravity or absolute specific gravity within limits,
  - 2. a flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  - 3. a clear and bright appearance with proper color;
- b. Other properties for ASTM 2D fuel oil are within limits within 31 days following sampling and addition to storage tanks; and
- c. Total particulate concentration of the fuel oil is  $\leq 10$  mg/l.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. At least once per 31 days on a staggered test basis by:
  1. Verifying the fuel level in the engine-mounted day tanks.
  2. Verifying the fuel level in the 7 day tank.
  3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the engine mounted fuel tanks.
  4. \*Verifying the diesel starts from ambient condition and achieves in less than or equal to 10 seconds generator voltage and frequency of  $\geq 6800$  volts and  $\geq 58.8$  Hz and achieves a steady state voltage and frequency of  $\geq 6800$  volts and  $\leq 7260$  volts and  $\geq 58.8$  Hz and  $\leq 61.2$  Hz. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:
    - a) Manual.
    - b) Simulated loss of offsite power by itself.
    - c) An ESF actuation test signal by itself.
  5. \*Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and
  6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks.
- c. 

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~~At least once per 92 days and from new fuel oil prior to addition to the 7 day tanks by verifying that a sample obtained in accordance with ASTM D270-1975 has a water and sediment content of less than or equal to .05 volume percent, and a kinematic viscosity @ 100°F of greater than or equal to 1.8 but less than or equal to 5.8 centi-stokes when tested in accordance with ASTM D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM D2274-70.~~

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\*The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (approximately 900 rpm), synchronization, and gradual loading. In this latter case, 10 second requirements do not apply.



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- C. At a frequency in accordance with the Diesel Fuel Oil Testing Program, verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits specified in the Diesel Fuel Oil Testing Program.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kw.
  9. Verifying the diesel generator's capability to:
    - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
    - b) Transfer its loads to the offsite power source, and
    - c) Be restored to its shutdown status.
  10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within  $\pm 5$  percent of its design setpoint.#
  11. This surveillance is deleted.
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously and verifying that each diesel generator achieves in less than or equal to 10 seconds,  $\geq 6800$  volts and  $\geq 58.8$  Hz.
- f. At least once per 10 years by:
1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank. ~~using a sodium hypochlorite solution, and~~
  2. ~~Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.~~
- Deleted
- g. At least once per 18 months by:
1. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at within  $\pm 10$  percent of the initial pretest voltage and frequency at  $60 \pm 1.2$  Hz. At no time shall the transient voltage exceed 8276V.
  2. Verifying the generator capability to reject a load of 4400 kw without tripping. The generator voltage shall not exceed 8880V during and following the load rejection.

#May be performed in Modes 1, 2, 3 & 4 if the associated equipment is out of service for maintenance or testing.

## ADDED PAGE

The test listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If the results from these test 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 test are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the test to exceed 31 days. The test, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel in accordance with D4057-1988 (ref.);
- b. Verify in accordance with the test specified in ASTM D975-1990 (Ref.) that the sample has an absolute specific gravity at 60/60 degrees F of  $\geq 0.83$  and  $\leq 0.89$  or an API gravity at 60 degrees F of  $\geq 27$  degrees and  $\leq 39$  degrees, a kinematic viscosity at 40 degrees C of  $\geq 1.9$  centistokes and  $\leq 4.1$  centistokes, and a flash point of  $\geq 125$  degrees F; and
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-1986 (Ref.).

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

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-1990 (Ref.) are met, except that the analysis for sulfur may be performed in accordance with ASTM D1552-1990 (Ref.) or ASTM D2622-1987 (Ref.). 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 D/G operation. This surveillance ensures availability of high quality fuel oil for the D/Gs.

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean 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 ASATM D2276-94, Method A (Ref.). This method involves a gravimatic 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. Each of the four interconnected tanks which comprise a 7-day tank must be considered and tested separately.

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.

## **ADDED PAGE**

### **References:**

#### **ASTM Standards**

D4057-1888, "Practice for manual sampling of petroleum and petroleum Products."

D975-1990, "Standard Specifications for Diesel Fuel oils."

D4176-1986, "Free Water and Particulate Contamination in Distillate Fuels."

D1552-1990, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)."

D2622-1987, "Standard Test Method for Sulfur in Petroleum Products (X-Ray Spectrographic Method)."

D2276-1994, "Standard Test Method for Particulate Containment in Aviation Turbine Fuels."

D1298-1985, "Standard Test Method for Density, Specific Gravity, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method."

**ADDED PAGE**

**ADMINISTRATIVE CONTROLS**

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**6.16 DIESEL FUEL OIL TESTING PROGRAM**

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

- a. Acceptability of new fuel oil prior to addition to storage tanks by determining that the fuel oil has:
  - 1. An API gravity or absolute specific gravity within limits,
  - 2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  - 3. A clear and bright appearance with proper color;
- b. Within 31 days following addition of new fuel oil to storage tanks verify that the properties of the new fuel oil, other than those addressed in a., above, are within the limits for ASTM 2D fuel oil.
- c. Total particulate concentration of the fuel oil is  $\leq 10$  mg/l when tested every 31 days in accordance with ASTM D-2276, Method A.