

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

8) Verifying that the auto-connected loads to each diesel generator do not exceed 6201 kW.

6) Verifying full-load carrying capability of the diesel generator at a power factor between 0.8 and 0.9 for an interval of not less than 24 hours at 5580 to 6201 kW (indicated)*. The generator voltage and frequency shall be maintained within $4160 + 160 - 420$ volts and 60 ± 1.2 Hz during this test; ****

7) Verifying the diesel generator's hot restart capability by operating the diesel generator for greater than or equal to 2 hours at an indicated load of 5580 to 6201 kW, shutting down the diesel generator and restarting it within 5 minutes. On restart, the diesel generator voltage and frequency shall be $4160 + 160 - 420$ volts and 60 ± 1.2 Hz within 12 seconds after the start signal;

Verify the diesel generator operates for 2 hours loaded to an indicated 6600 to 6821 kW if auto connected loads increase above 6201 kW.

8) 9) Verifying the diesel generator's capability to:

- Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
- Transfer its loads to the offsite power source, and
- Be restored to its standby status.

9) 10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power;

10) 11) Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines; and

11) 12) Verifying that the automatic LOCA and Shutdown sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.

h. ~~At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting** both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 514 rpm in less than or equal to 12 seconds, and~~

h. At least once per 10 years verify that when started simultaneously from standby conditions,** each diesel generator achieves in less than or equal to 12 seconds, a voltage of $4160 + 160 - 420$ volts and a frequency of 60 ± 1.2 Hz.

or after any modification which could affect diesel generator interdependence

*If Specification 4.8.1.1.2g.6b is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 6201 kW for 1 hour or until operating temperature has stabilized.

*This surveillance shall not be performed in Modes 1, or 2 and credit may be taken for unplanned events that satisfy this requirement.

**This test shall be preceded by an engine pre-lube period and/or other warmup procedures recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

***This surveillance shall not be performed in Modes 1, 2, 3, or 4 and credit may be taken for unplanned events that satisfy this requirement.

**** This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of momentary variations due to changing bus loads shall not invalidate this test.

ADMINISTRATIVE CONTROLS

MEETING FREQUENCY

6.5.1.4 The PSRC shall meet at least once per calendar month and as convened by the PSRC Chairman or his designated alternate.

QUORUM

6.5.1.5 The quorum of the PSRC necessary for the performance of the PSRC responsibility and authority provisions of these Technical Specifications shall consist of the Chairman or his designated alternate and four members including alternates.

RESPONSIBILITIES

6.5.1.6 The PSRC shall be responsible for:

- a. Review of: (1) Administrative Control Procedures and changes thereto, and (2) procedures and changes thereto required by Specification 6.8.1 and requiring a 10 CFR 50.59 safety evaluation.
- b. Review of all proposed changes, tests and experiments which may involve an unreviewed safety question as defined in Section 50.59, 10 CFR.
- c. Review of all proposed changes to Technical Specifications or the Operating License;
- d. Review of all safety evaluations performed under the provision of Section 50.59(a)(1), 10 CFR, for changes, tests and experiments;
- e. Investigation of all violations of the Technical Specifications including the preparation and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Vice President Plant Operations, and to the Nuclear Safety Review Committee (NSRC);
- f. Review of all REPORTABLE EVENTS;
- g. Review of reports of operating abnormalities, deviations from expected performance of plant equipment and of unanticipated deficiencies in the design or operation of structures, systems or components that affect nuclear safety;
- h. Performance of special reviews, investigations or analyses and reports thereon as requested by the Chairman, NSRC;
- i. ~~Not used.~~
~~Review of the Diesel Fuel Oil Testing Program;~~
- j. Not used.

Not used

ADMINISTRATIVE CONTROLS

AUDITS (Continued)

- d. The performance of activities required by the Operational Quality Assurance Program to meet the criteria of Appendix B, 10 CFR Part 50, at least once per 24 months;
- e. The fire protection programmatic controls including the implementing procedures at least once per 24 months by qualified licensee QA or ISEG personnel;
- f. The fire protection equipment and program implementation at least once per 12 months utilizing either a qualified offsite licensee fire protection engineer or an outside independent fire protection consultant. An outside independent fire protection consultant shall be used at least every third year;
- g. The Radiological Environmental Monitoring Program and the results thereof at least once per 12 months;
- h. The ODCM and implementing procedures at least once per 24 months;
- i. The PROCESS CONTROL PROGRAM and implementing procedures for processing and packaging of radioactive wastes at least once per 24 months;
- j. The performance of activities required by the Quality Assurance Program for effluent and environmental monitoring at least once per 12 months;
- k. The Emergency Plan and implementing procedures at least once per 12 months;
- l. The Security Plan and implementing procedures at least once per 12 months; and
- ~~m. The Diesel Fuel Oil Testing Program and implementing procedures; and~~
- ~~n. Any other area of Unit operation considered appropriate by the NSRC or the President and Chief Executive Officer;~~

RECORDS

6.5.2.9 Records of NSRC activities shall be prepared, approved, and distributed as indicated below:

- a. Minutes of each NSRC meeting shall be prepared, reviewed by participating members and forwarded to the President and Chief Executive Officer within 14 days following each meeting;
- b. Reports of reviews encompassed by Specification 6.5.2.7 above, shall be prepared, reviewed by participating members and forwarded to the President and Chief Executive Officer within 14 days following completion of the review; and

ADMINISTRATIVE CONTROLS

PROCEDURES AND PROGRAMS (Continued)

- e. Process Control Program implementation;
- f. ODCM implementation; ~~and~~
- g. Quality Assurance Program implementation for effluent and environmental monitoring;
- h. Fire Protection Program implementation; ~~and~~
- ~~i. Diesel Fuel Oil Testing Program implementation.~~

6.8.2 Each procedure of Specification 6.8.1 and changes thereto; and any other procedure or procedure change that the Vice President Plant Operations determines to affect nuclear safety, shall be reviewed and approved as described below, prior to implementation.

- a. Each procedure, or change thereto shall be reviewed by a Qualified Reviewer who is knowledgeable in the functional area affected, but is not the individual who prepared the procedure or procedure change. All required cross-disciplinary reviews of new procedures, procedure revisions or change thereto shall be completed prior to approval.
- b. Procedures other than Administrative Control Procedures shall be approved by the responsible Manager or his designee as specified in Administrative Control Procedures. The Vice President Plant Operations shall approve Administrative Control Procedures. The Manager responsible for the Security Plan shall approve the Security Plan and implementing procedures. The Manager responsible for Emergency Planning shall approve the Radiological Emergency Response Plan and implementing procedures.
- c. The responsible Manager or his designee shall ensure each review includes a determination of whether a procedure, or change thereto, requires a 10 CFR 50.59 safety evaluation. If a procedure, or change thereto, requires a 10 CFR 50.59 safety evaluation, the responsible Manager or his designee shall forward the procedure, or change thereto with the associated 10 CFR 50.59 safety evaluation to the PSRC for review in accordance with Specification 6.5.1.6.a. Pursuant to Section 50.59, 10 CFR, NRC approval of items involving unreviewed safety questions shall be obtained prior to approval for implementation.
- d. Qualified Reviewers shall meet the applicable qualifications of ANSI/ANS 3.1-1978. Personnel recommended to be Qualified Reviewers shall be reviewed by the PSRC and approved and documented by the PSRC Chairman. The responsible Manager shall ensure that a sufficient complement of Qualified Reviewers for their functional area is maintained in accordance with Administrative Control Procedures.
- e. Records documenting the activities performed under Specification 6.8.2.a. through 6.8.2.d. shall be maintained in accordance with Specification 6.10.

INSERT "A"

The surveillance requirements of Technical Specification 3/4.8.1 are based upon, in part, the guidance of Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators From Plant Technical Specifications," Generic Letter 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," Regulatory Guide 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electrical Power Systems at Nuclear Power Plants," Revision 3, and NUREG-1431, "Standard Technical Specifications - Westinghouse Plants." Also, the guidance of NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," Revision 1, and Regulatory Guide 1.160 has been adopted to formulate a comprehensive Emergency Diesel Generator Reliability Program.

Technical Specification 3.8.1.1, Action b and c, require, in part, the demonstration of the operability of the remaining operable emergency diesel generator by performing Technical Specification 4.8.1.1.2a.4. This test is required to be completed regardless of when the inoperable emergency diesel generator is restored to operable status unless the emergency diesel generator was declared inoperable to do preplanned preventative maintenance, testing, or maintenance to correct a condition which, if left uncorrected, would not affect the operability of the emergency diesel generator. The requirement to test the remaining operable emergency diesel generator when one emergency diesel generator is inoperable is limited to those situations where the cause for inoperability can not be conclusively demonstrated in order to preclude the potential for common mode failures. The test is not required to be accomplished if the emergency diesel generator was declared inoperable due to an inoperable support system or an independently testable component. When such a test is required, it is required to be performed within 8 hours of having determined that the emergency diesel generator is inoperable.

Technical Specification 4.8.1.1.2a.4 is considered to be a "Start Test" as described in Regulatory Guide 1.9, Revision 3. A "Start Test" is performed to demonstrate proper startup from standby conditions and to verify that the required design voltage and frequency is attained. For these tests, Regulatory Guide 1.9, Revision 3, recommends that the emergency diesel generators be slow started and allowed to reach rated speed on a prescribed schedule that is selected to minimize stress and wear.

Regulatory Guide 1.9, Revision 3, considers Technical Specification 4.8.1.1.2a.5 to be a "Load-Run Test". A "Load-Run Test" demonstrates 90 to 100 percent (5580 to 6201 kilowatts) of the continuous rating (6201 kilowatts) of the emergency diesel generator for an interval of not less than 1 hour and until temperature equilibrium has been attained. This test may be accomplished by synchronizing the generator with offsite power and the loading and unloading of an diesel generator during this test should be gradual and based on a prescribed schedule that is selected to minimize stress and wear on the diesel generator.

Regulatory Guide 1.9, Revision 3, considers Technical Specification 4.8.1.1.2b to be a "Fast-Start Test". A "Fast-Start Test" demonstrates that each emergency diesel generator starts from standby conditions. If a plant normally has in operation keep warm systems designed to maintain lube oil and jacket water cooling at certain temperatures or prelubrication systems or both, this would constitute normal standby conditions for that plant. Verification that the emergency diesel generator reaches required voltage and frequency within acceptable limits and time is also required.

The requirements of the "Single-Load Rejection Test" and the "Full-Load Rejection Test" as described in Regulatory Guide 1.9, Revision 3 have been combined. The "Full-Load Rejection Test" is a demonstration of the emergency diesel generator's capability to reject a load equal to 90 to 100 percent of its continuous rating (5580 to 6201 kilowatts) while operating at a power factor between 0.8 and 0.9 and that the voltage does not exceed 4784 volts and that the frequency does not exceed 65.4 Hertz following a load rejection of 5580 to 6201 kilowatts. The frequency criteria is from the "Single-Load Rejection Test" and is based on nominal engine speed plus 75 percent of the difference between nominal speed and the over-speed trip setpoint. In addition, through a plant procedure, the ESW pump starting transient during the LOCA sequencing test, Technical Specification 4.8.1.1.2.g.4.d, will be demonstrated to be within a minimum voltage of 4784 Vac and recover to 4320 Vac within 3 seconds and to be within a maximum voltage of 4784 Vac and recover to 4320 Vac within 2 seconds. This acceptance criteria is based on Regulatory Guide 1.9 Revision 3, section 1.4 and past trending of ESW pump starting transient performance.

The note that will not allow a surveillance requirement to be performed in Modes 1 or 2 is based on the improved Standard Technical Specifications (NUREG-1431) which recognizes that the performance of certain surveillance requirements during operation with the reactor critical could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. However, this note does not preclude operating the emergency diesel generator with the reactor critical, as necessary, to support operational conditions.

INSERT "B"

DIESEL FUEL OIL TESTING PROGRAM

In accordance with Technical Specification 6.8.4, a Diesel Fuel Oil Testing Program to implement required testing of both new fuel oil and stored fuel oil shall be established. For the intent of this specification, new fuel oil shall represent diesel fuel oil that has not been added to the Diesel Fuel Oil Storage Tanks. Once the fuel oil is added to the Diesel Fuel Oil Storage Tanks, the diesel fuel oil is considered stored fuel oil, and shall meet the Technical Specification requirements for stored fuel oil.

Tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the new 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 tanks, but in no case is the time between receipt of the new fuel oil and conducting the tests to exceed 30 days. The tests, limits, and applicable ASTM standards being used to evaluate the condition of new fuel oil are:

1. By sampling new fuel oil ^{in accordance with} ~~based on~~ ASTM D4057 prior to addition to storage tanks and:
2. By verifying ^{in accordance with} ~~based on~~ the tests specified in ASTM D975-81 prior to addition to the storage tanks that the sample has:
 - a) 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 supplier's certificate or an absolute specific gravity at 60/60 °F or greater than or equal to 0.83 but less than or equal to 0.89 or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;
 - b) A kinematic viscosity at 40 °C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, if gravity was not determined by comparison with the supplier's certification;
 - c) A flash point equal to or greater than 125 °F; and
 - d) A water and sediment content of less than or equal to 0.05% when tested based on ASTM D1796-83.

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 Limiting Condition for Operation of Technical Specification 3.8.1.1, since the new fuel oil has not been added to the diesel fuel oil storage tanks.

Within 30 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 D975-81 are met when tested ^{in accordance with} ~~based on~~ ASTM D975-81 except that the analysis for sulfur may be performed ^{in accordance with} ~~based on~~ ASTM D1552-79, ASTM D2622-82, or ASTM D4294-90. An exception to ASTM D129, which is specified in ASTM D975-81, has been taken. ASTM D129 uses a Barium precipitation method for the determination of sulfate after oxidation has occurred. The use of any wet lab sulfate analysis is acceptable since the determination is made in the aqueous rinse water for the oxidation process. In the event the correct fuel oil properties are not met, Action g provides an additional 30 days from the time that it is determined that the correct fuel oil properties are not met to meet the Diesel Fuel Oil Testing Program limits. The additional 30 day period is acceptable because the fuel oil properties of interest, even if they are not within limits, would not have an immediate effect on emergency diesel generator operation. The diesel fuel oil surveillance ^{in accordance with} ~~based on~~ the Diesel Fuel Oil Testing Program will ensure the availability of high quality diesel fuel oil for the emergency diesel generators. ^{in accordance with} ~~based on~~

At least once every 31 days, a sample of fuel oil is obtained from the storage tanks ^{in accordance with} ~~based on~~ ASTM D2276-83. The particulate contamination is verified to be less than 10 mg/liter when checked ^{in accordance with} ~~based on~~ ASTM D2276-83, Method A. The filter size for the determination of particulate contamination will be 3.0 micron instead of 0.8 micron as specified by ASTM D2276-83. The filtered amount of diesel fuel oil will be approximately one liter when possible. Also, it is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

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 which can cause engine failure.

The frequency for performing surveillance on stored fuel oil is based on stored fuel oil degradation trends which indicate that particulate concentration is unlikely to change significantly between surveillances.

INSERT "C"

g. Diesel Fuel Oil Testing Program

in accordance with

A diesel fuel oil testing program to implement required testing of both new fuel oil and stored fuel oil. The program shall include sampling and testing requirements, and acceptance criteria, ~~based on~~ the applicable ASTM Standards. The purpose of the program is to establish the following:

- a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:
 1. an API gravity or an absolute specific gravity within limits,
 2. a flash point within limits for ASTM 2D fuel oil,
 3. a kinematic viscosity within limits for ASTM 2D fuel oil,
 4. a water and sediment content within the limits for ASTM 2D fuel oil;
- b. Other properties for ASTM 2D fuel oil are within limits within 30 days following sampling and addition of new fuel oil to storage tanks; and
- c. Total particulate concentration of the stored fuel oil is < 10 mg/liter when tested every 31 days ~~based on~~ the applicable ASTM Standards.

in accordance with

h. Emergency Diesel Generator Reliability Program

An emergency diesel generator reliability program that establishes the requirements and guidelines for emergency diesel generator reliability, availability, and monitoring. The program shall include the following:

- a. Emergency diesel generator reliability performance goals (target reliability) based upon the station blackout coping assessment. Target reliability goal monitoring is accomplished through monitoring methods that are based upon those described in Appendix D of NUMARC 87-00,
- b. Measures to ensure detailed root cause analysis of emergency diesel generator failures is performed and effective corrective actions are taken in response to failures,
- c. Implementation of an emergency diesel generator preventive maintenance program that is consistent with the Maintenance Rule, and
- d. Monitoring of emergency diesel generator availability and performance parameters to ensure the target reliability is met or exceeded.