



Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-3093
Tel 504 739 6685

Michael R. Chisum
Site Vice President
Waterford 3

10 CFR 50.90

W3F1-2017-0025

March 28, 2017

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

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"
Waterford Steam Electric Station, Unit 3 (Waterford 3)
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), Entergy Operations, Inc. (Entergy) is submitting a request for an amendment to the Technical Specifications (TS) for Waterford Steam Electric Station, Unit 3 (Waterford 3).

The proposed changes revise TS 3.8.1.3 (Diesel Fuel Oil) by removing the current stored diesel fuel oil numerical volume requirements from the TS and replacing them with diesel operating time requirements. The numerical values will be placed in the TS Bases so that they may be modified under licensee control.

Additionally, Waterford 3 is proposing a similar change to TS 3.8.1.1 and TS 3.8.1.2 (AC Sources) to remove the specific numerical value for the feed tank fuel oil volume and replace it with the feed tank time requirement.

Regarding stored diesel fuel oil, no changes to the current plant configuration, current numerical volume requirements, current 7 day storage tank basis, or current 1 hour feed tank basis are proposed in this application; the proposal merely swaps the current numerical volume requirements from the TS to the TS Bases and swaps the associated current 7 day storage tank basis and 1 hour feed tank basis from the TS Bases to the TS. In addition, no changes to any Surveillance Requirement 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) Revision 1. The availability of this TS

improvement was announced in the Federal Register on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIIP).

Waterford 3 requests approval of the proposed license amendment by March 28, 2018 with the amendment being implemented within 60 days.

In accordance with 10 CFR 50.91(a)(1), "Notice for Public Comment," the analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is being provided to the Commission.

In accordance with 10 CFR 50.91(b)(1), "Notice for Public Comment; State Consultation," a copy of this application and its reasoned analysis about no significant hazards considerations is being provided to the designated Louisiana Official.

This letter contains no new commitments.

If you have any questions or require additional information, please contact John Jarrell, Regulatory Assurance Manager, at 504-739-6685.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 28, 2017.

Sincerely,



MRC/JPJ/wjs

- Attachments:
1. Evaluation of Proposed Change
 2. Revised (Markup) Technical Specification Pages
 3. Clean (Revised) Technical Specification
 4. Markup of Technical Specification Bases

cc: Mr. Kriss Kennedy, Regional Administrator
U.S. NRC, Region IV
RidsRgn4MailCenter@nrc.gov

U.S. NRC Project Manager for Waterford 3
April.Pulvirenti@nrc.gov

U.S. NRC Senior Resident Inspector for Waterford 3
Frances.Ramirez@nrc.gov
Chris.Speer@nrc.gov

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Surveillance Division
Ji.Wiley@LA.gov

Attachment 1
to
W3F1-2017-0025

Evaluation of Proposed Change

Attachment 1
Evaluation of Proposed Change

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

1.0 DESCRIPTION

The proposed changes revise Technical Specification (TS) 3.8.1.3 (Diesel Fuel Oil) by removing the current stored diesel fuel oil numerical volume requirement from the TS and replacing them with diesel operating time requirements. 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. This change is consistent with NRC approved Technical Specifications Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler TSTF-501 Revision 1 (Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control). Differences between the proposed plant-specific TS change, and the changes proposed by TSTF-501 Revision 1 are listed in Section 2.0. The availability of this TS improvement was announced in the Federal Register on May 26, 2010 (75 FR 29588) as part of the consolidated line item improvement process (CLIP).

Additionally, Waterford 3 is proposing a similar change to TS 3.8.1.1 and TS 3.8.1.2 (AC Sources) to remove the specific numerical value for the feed tank fuel oil volume and replace it with the feed tank time requirement. This change is consistent with a change approved by the NRC in Reference 12.

2.0 PROPOSED CHANGES

The proposed changes revise TS 3.8.1.3 (Diesel Fuel Oil) by removing the current stored diesel fuel oil numerical volume requirements from the TS and replacing them with diesel operating time requirements. The numerical values will be placed in the TS Bases so that they 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. As a result:

- TS 3.8.1.3 Condition A in the actions is revised. Condition A is entered when the stored diesel fuel oil numerical volume requirement is not met. As discussed in the TS Bases, the numerical volume requirements in Condition A are based on volumes less than a 7 day supply, but greater than a 6 day supply. This revision removes the volumetric requirements from the TS and places it in the TS Bases. The TS are 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.

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 Waterford 3, the current reference is ANSI-N195. This application does not propose to modify the current ANSI-N195 reference.

Entergy is proposing deviations from the TS changes described in TSTF-501 Revision 1 and the Nuclear Regulatory Commission (NRC) Staff's model safety evaluation (SE) published in the Federal Register on May 26, 2010 (75 FR 29588) as part of the CLIP Notice of Availability. The

following are the proposed changes:

- The proposal has no changes associated with lube oil inventory because the Waterford 3 TSs do not include the requirements for lube oil inventory.
- A revision to TS 3.8.1.1 and TS 3.8.1.2 (AC Sources) following a similar approach to the TS 3.8.1.3 change discussed above is proposed. The proposed revision to TS 3.8.1.1 and TS 3.8.1.2 replaces the specific feed tank numerical volume requirement with the requirement to maintain a minimum one hour supply of fuel oil. The specific numerical volume needed to support this requirement is moved to the TS Bases. Similar to the technical justification provided in the model SE as part of the CLIIP, this proposed change is acceptable since it merely removes the current numerical volume requirement for the feed tank and replaces it with the one hour supply. The numerical value is being moved to the TS bases. This change is consistent with a similar change approved by the NRC in Reference 12.

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

Reference 5 documents NRC identified issues and proposed resolutions associated with TSTF-501 Revision 1. The NRC resolution required that plant submittals add information to the UFSAR associated with the fuel oil consumption calculation methodology. Waterford 3 has previously submitted information on the fuel oil consumption calculation methodology to the NRC for review due to limited fuel oil margin. The NRC approved the use of the ANSI N195-1976 7 day time dependent load calculation methodology in Waterford 3 License Amendment 157 [Reference 11]. Waterford 3 UFSAR [Reference 7] Section 9.5.4 (Diesel Generator Fuel Oil Storage and Transfer Systems) and TS Bases 3/4.8 (Electrical Power Systems) was updated as a result of that amendment and already contains the required information.

3.0 BACKGROUND

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

4.0 TECHNICAL EVALUATION

Entergy has reviewed the model SE published in the Federal Register on May 26, 2010 (75 FR 29588) as part of the CLIIP Notice of Availability. Entergy has concluded that the technical justifications presented in the SE prepared by the NRC staff are applicable to Waterford 3 and therefore justify this amendment for the incorporation of the proposed changes to the Waterford 3 TS.

5.0 REGULATORY EVALUATION

5.1 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Entergy 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 the TS by removing the current diesel fuel oil numerical volume requirements from the TS and replacing them with diesel operating time requirements. The numerical values will be placed in the TS Bases so that they may be modified under licensee control. The current diesel fuel oil numerical volume requirements are based on a 7 day supply in the storage tanks and a one hour supply in the feed tanks. The TS are modified so that the diesel fuel oil inventory will require that a 7 day storage tank supply and a one hour feed tank supply be available for a diesel generator.

Basis for proposed no significant hazards determination: As required by 10 CFR 50.91(a), the Entergy 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 changes revise Technical Specification (TS) 3.8.1.3 (Diesel Fuel Oil) by removing the current stored diesel fuel oil numerical volume requirements from the TS and replacing them with diesel operating time requirements. 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" using the time dependent load method as approved in Waterford 3 License Amendment 157. 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 is 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 removes the TS 3.8.1.1 and TS 3.8.1.2 diesel feed tank fuel oil numerical volume requirements and replaces them with the diesel one hour diesel generator operation requirement. The specific volume and time is not changed and is consistent with the existing plant design basis to support a diesel generator under accident load conditions.

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

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

Response: No

The change does not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The change does not alter assumptions made in the safety analysis but ensures that the diesel generator operates as assumed in the accident analysis. The proposed change is consistent with the safety analysis assumptions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No

The proposed changes revise Technical Specification (TS) 3.8.1.3 (Diesel Fuel Oil) by removing the current stored diesel fuel oil numerical volume requirements from the TS and replacing them with diesel operating time requirements. 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.

The proposed change also removes the TS 3.8.1.1 and TS 3.8.1.2 diesel feed tank fuel oil numerical volume requirements and replaces them with the diesel one hour diesel generator operation requirement. As the basis 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.

5.2 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

A description of the proposed TS change and its relationship to applicable regulatory requirements were published in the Federal Register Notice of Availability on May 26, 2010 (75 FR 29588). Entergy has reviewed the NRC staff's model SE referenced in the CLIP Notice of Availability and concluded that the regulatory evaluation section is applicable to Waterford 3.

6.0 ENVIRONMENTAL CONSIDERATION

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

7.0 REFERENCES

- 1) Federal Register Notice, TSTF Traveler-501 Notice of Availability published on May 26, 2010 (75 FR 29588).
- 2) TSTF Traveler-501 Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" [ADAMS Accession No. ML090510686].
- 3) TSTF Traveler-501 Response to NRC RAI dated May 5, 2008 [ADAMS Accession No. ML082620238].
- 4) TSTF Traveler-501 Response to NRC RAI dated December 13, 2007 [ADAMS Accession No. ML080670151].
- 5) NRC Letter to TSTF, Identification and Resolution of Issues Regarding Plant Specific Adoption of Traveler TSTF-501, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," April 3, 2014 [ADAMS Accession No. ML14084A512].
- 6) Waterford Steam Electric Station Unit 3, Technical Specifications, through Amendment 249.
- 7) Waterford Steam Electric Station Unit 3, Updated Final Safety Analysis Report (UFSAR), Revision 309 [ADAMS Accession No. ML16172A180].
- 8) NUREG-1432 Revision 4, Standard Technical Specifications Combustion Engineering Plants - Specifications, Volume 1 [ADAMS Accession No. ML12102A165].
- 9) NUREG-1432 Revision 4, Standard Technical Specifications Combustion Engineering Plants - Bases, Volume 2 [ADAMS Accession No. ML12102A169].
- 10) NRC Operating Licensing Amendment 216, Waterford 3 - Modify Diesel Generator Fuel Oil Testing Surveillance Requirements, July 30, 2008 [ADAMS Accession No. ML081990472].
- 11) NRC Operating Licensing Amendment 157, Waterford 3 – Amendment for a Previously Unreviewed Safety Question Regarding Emergency Diesel Generator Fuel Oil Storage and Transfer Systems Design Basis, February 15, 2000 [ADAMS Accession No. ML003685002].
- 12) NRC License Amendment for Calvert Cliffs, Issuance of Amendments Regarding the Adoption of Technical Specification Task Force 501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," October 21, 2014 [ADAMS Accession No. ML14239A491].

Attachment 2
to
W3F1-2017-0025

Revised (Markup) Technical Specification Pages

(3 Pages)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. Diesel oil feed tanks containing a minimum ~~volume of 339 gallons~~ **one hour supply** of fuel, and
 2. A separate diesel generator fuel oil storage tank, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one offsite circuit of 3.8.1.1a inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of 3.8.1.1b inoperable:
 - (1) Demonstrate the OPERABILITY of the remaining A.C. circuits by performing Surveillance Requirements 4.8.1.1.1a (separately for each offsite A.C. circuit) within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours) by performing Surveillance Requirement 4.8.1.1.2a.4 within 8 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated.
 - (2) Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, unless the following condition exists:

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
- b. One diesel generators with:
 1. A diesel oil feed tank containing a minimum ~~volume of 339 gallons~~ **one hour supply** of fuel, and
 2. The diesel fuel oil storage tanks, and
 3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, operations involving positive reactivity additions that could result in loss of required SHUTDOWN MARGIN or boron concentration, or load movements with or over irradiated fuel. In addition, when in MODE 5 with the reactor coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the top of the fuel seated in the reactor pressure vessel, immediately initiate corrective action to restore the required sources to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for Surveillance Requirement 4.8.1.1.2a.5.)

ELECTRICAL POWER SYSTEMS

DIESEL FUEL OIL

LIMITING CONDITION FOR OPERATION

3.8.1.3 The stored diesel fuel oil shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTION: (Note: Separate ACTION entry is allowed for each DG.)

- a. With the fuel oil storage tank volume less than ~~39,300 gallons a 7 day supply~~ and greater than ~~37,000 gallons a 6 day supply~~, restore fuel oil storage tank volume to greater than or equal to ~~39,300 gallons a 7 day supply~~ within 5 days (provided replacement fuel oil is onsite within the first 48 hours).
- b. With one or more DGs with stored fuel oil total particulates not within limits, restore fuel oil total particulates to within limits within 7 days.
- c. With one or more DGs with new fuel oil properties not within limits, restore stored fuel oil properties to within limits within 30 days.
- d. If any of the above ACTIONS cannot be met, or if the diesel fuel oil is not within limits for reasons other than the above ACTIONS, immediately declare the associated DG(s) inoperable.

SURVEILLANCE REQUIREMENTS

4.8.1.3.1 In accordance with the Surveillance Frequency Control Program verify each fuel oil storage tank volume.

4.8.1.3.2 Verify fuel oil properties of new or stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.

Attachment 3
to
W3F1-2017-0025

Revised (Clean) Technical Specification Pages

(3 Pages)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generators, each with:
 1. Diesel oil feed tanks containing a minimum one hour supply of fuel, and
 2. A separate diesel generator fuel oil storage tank, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one offsite circuit of 3.8.1.1a inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of 3.8.1.1b inoperable:
 - (1) Demonstrate the OPERABILITY of the remaining A.C. circuits by performing Surveillance Requirements 4.8.1.1.1a (separately for each offsite A.C. circuit) within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours) by performing Surveillance Requirement 4.8.1.1.2a.4 within 8 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated.
 - (2) Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, unless the following condition exists:

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
- b. One diesel generators with:
 1. A diesel oil feed tank containing a minimum one hour supply of fuel, and
 2. The diesel fuel oil storage tanks, and
 3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, operations involving positive reactivity additions that could result in loss of required SHUTDOWN MARGIN or boron concentration, or load movements with or over irradiated fuel. In addition, when in MODE 5 with the reactor coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the top of the fuel seated in the reactor pressure vessel, immediately initiate corrective action to restore the required sources to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 (except for Surveillance Requirement 4.8.1.1.2a.5.)

ELECTRICAL POWER SYSTEMS

DIESEL FUEL OIL

LIMITING CONDITION FOR OPERATION

3.8.1.3 The stored diesel fuel oil shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTION: (Note: Separate ACTION entry is allowed for each DG.)

- a. With the fuel oil storage tank volume less than a 7 day supply and greater than a 6 day supply, restore fuel oil storage tank volume to greater than or equal to a 7 day supply within 5 days (provided replacement fuel oil is onsite within the first 48 hours).
- b. With one or more DGs with stored fuel oil total particulates not within limits, restore fuel oil total particulates to within limits within 7 days.
- c. With one or more DGs with new fuel oil properties not within limits, restore stored fuel oil properties to within limits within 30 days.
- d. If any of the above ACTIONS cannot be met, or if the diesel fuel oil is not within limits for reasons other than the above ACTIONS, immediately declare the associated DG(s) inoperable.

SURVEILLANCE REQUIREMENTS

4.8.1.3.1 In accordance with the Surveillance Frequency Control Program verify each fuel oil storage tank volume.

4.8.1.3.2 Verify fuel oil properties of new or stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.

Attachment 4
to
W3F1-2017-0025

Markup of Technical Specification Bases

(6 Pages)

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion I7 of Appendix A to 10 CFR Part 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source. When one diesel generator is inoperable to perform either preplanned maintenance (both preventive and corrective) or unplanned corrective maintenance work, the allowed-outage-time (AOT) can be extended from 72 hours to 10 days, if a temporary emergency diesel generator (TEDG) is verified available and aligned for backup operation to the permanent plant EDG removed from service. The TEDG will be available prior to removing the permanent plant EDG from service for the extended preplanned maintenance work or prior to exceeding the 72-hour AOT for the extended unplanned corrective maintenance work. A Configuration Risk Management Program (CRMP) is implemented to assess risk of this activity when applying this ACTION. The TEDG availability is verified by: (1) starting the TEDG and verifying proper operation; (2) verifying 24 hour onsite fuel supply; and (3) ensuring the TEDG is aligned to supply power through a 4.16 kV non-safety bus to the 4.16kV safety bus. A status check for TEDG availability will also be performed at least once every 72 hours following the initial TEDG availability verification. The status check shall consists of: (1) verifying the TEDG equipment is mechanically and electrically ready for manual operation; (2) verifying 24 hour onsite fuel supply; and (3) ensuring the TEDG is aligned to supply power through a 4.16 kV non-safety bus to the 4.16 kV safety bus. If the TEDG becomes unavailable during the 10 day AOT and cannot be restored to available status, the EDG AOT reverts back to 72-hours. The 72 hours begins with the discovery of the TEDG unavailability, not to exceed a total of 10 days from the time the EDG originally became inoperable. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss-of-offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the Surveillance Requirements needed to demonstrate the OPERABILITY of the component.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

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. With the minimum AC and DC power sources and associated distribution systems inoperable the ACTION requires the immediate suspension of various activities including operations involving positive reactivity additions that could result in loss of required SHUTDOWN MARGIN (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SHUTDOWN MARGIN or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SHUTDOWN MARGIN or refueling concentration. This may result in an overall reduction in boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes, including increases when operating with a positive moderator temperature coefficient, must also be evaluated to ensure they do not result in a loss of required SHUTDOWN MARGIN. Suspension of these activities does not preclude completion of actions to establish a safe conservative condition.

The fuel handling accident (UFSAR Section 15.7.3.4) analysis assumes protection against load movements with or over irradiated fuel assemblies that could cause fuel assembly damage. Examples of load movements include movement of new fuel assemblies, irradiated fuel assemblies, and the dummy fuel assembly. The load movements do not include the movement over assemblies in a transfer cask using a single-failure-proof handling system. The load movements do not include the movement of the spent fuel machine or refuel machine without loads attached. It also does not include load movements in containment when the reactor vessel head or Upper Guide Structure is still installed. Load movements also exclude suspended loads weighing less than 1000 lbm (e.g. Westinghouse analysis CN-NFPE-09-57 describes no fuel failure for loads weighing less than 1000 lbm based upon the 2000 lbm analysis for drops distributed over two assemblies).

ADD

TS 3.8.1.1 and TS 3.8.1.2 provide verification that the level of fuel oil in the feed tank is at or above the level at which fuel oil is automatically added. The level is selected to ensure adequate fuel oil for a minimum of one hour of DG operation at full load plus 10% consistent with the ANSI N195-1976 methodology. The fuel oil level ensuring the one hour supply is 339 usable gallons.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

SR 4.8.1.1.2e.10

This SR provides verification that each EDG fuel oil transfer pump maintains capability to take suction from the opposite train fuel oil storage tank and transfer that fuel oil to its associated diesel fuel oil feed tank.

Demonstrating this capability supports text contained in Safety Evaluation from Amendment No. 157, Amendment for a previously Un-reviewed Safety Question regarding Emergency Diesel Generator Fuel Oil Storage and Transfer Systems Design Basis. Specifically, Waterford 3 does not fully align with Regulatory Guide 1.137 (RG 1.137), Revision 1, Fuel Oil Systems for Standby Diesel Generators, in that the RG 1.137 endorsed ANSI standard (N195-1976) requires a 7 day time-dependent load calculation plus 10% margin to mitigate design basis accidents. However, Waterford 3 engineering evaluation indicates that the minimum fuel oil required in each Fuel Oil Storage Tank (FOST) per the current Technical Specification is only sufficient to operate its associated EDG for 7 days plus approximately 1% margin.

The NRC evaluation section in Safety Evaluation of Amendment No. 157, for the EDG FOST not having 10% margin in fuel oil inventory, credited acceptability of the design based upon Waterford 3 having EDG Fuel Oil Storage and Transfer Systems cross connecting capabilities. With the ability to cross-tie the two EDG Fuel Oil Storage and Transfer Systems, one EDG will be able to operate continuously for a period of well over 7 days.

Per Safety Evaluation in Amendment 180, TS SR 4.8.1.1.2e verifies that each fuel oil transfer pump transfers fuel to its associated diesel oil feed tank by taking suction from the opposite train FOST via the installed cross connect. This test is performed by aligning the "A" fuel oil transfer pump suction to the "B" FOST, or the "B" fuel oil transfer pump suction to the "A" FOST. Only one train is tested at a time, and that train is considered inoperable during the test. The train that is being tested is considered inoperable. The test alignment requires the normal fuel transfer suction valve to be closed and two cross-connect valves to the opposite train to be opened. When an increase in volume is observed in the associated train's diesel oil feed tank, the fuel oil transfer pump is secured and valves realigned.

The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

LCO 3.8.1.3

ACTION a

This ACTION ensures that each diesel generator fuel oil storage tank (FOST) contains fuel oil of a sufficient volume to operate each diesel generator for a period of 7 days. An administrative limit is used to assure at least 39,300 usable gallons are stored in the tank when accounting for volumetric shrink, instrumentation uncertainty, and other effects that impact usable fuel volume. This useable volume is sufficient to operate the diesel generator for 7 days based on the time-dependent loads of the diesel generator following a loss of offsite power and a design bases accident and includes the capacity to power the engineered safety features in conformance with Regulatory Guide 1.137 October 1979. The minimum onsite stored fuel oil is sufficient to operate the diesel generator for a period longer than the time to replenish the onsite supply from the outside sources discussed in FSAR 9.5.4.2.

An additional provision is included in the ACTION which allows the diesel generators to remain operable when their 7 day fuel oil supply is not available provided that at least a 6 day supply of fuel oil is available. This provision is acceptable on the basis that replacement fuel oil is onsite within the first 48 hours after falling below the 7 day supply. An administrative limit is used to assure at least 37,000 usable gallons are stored in the tank when accounting for volumetric shrink, instrumentation uncertainty, and other effects that impact usable fuel volume.

This useable volume is sufficient to operate the diesel generator for 5 days based on the full continuous load (4400kW) of the diesel generator and is sufficient to operate the diesel generator for greater than 6 days based on the time dependent loads of the diesel generator following a loss of offsite power and a design basis accident.

ACTION b

This ACTION is entered as a result of a failure to meet the acceptance criterion of particulate limits. 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, and particulate concentration is unlikely to change significantly between surveillance frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7-day Completion Time allows for further evaluation, re-sampling, and re-analysis of the DG fuel oil.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

ACTION c

With the new fuel oil properties defined in the Bases for SR 4.8.1.3.2 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a diesel generator start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the diesel generator would still be capable of performing its intended function.

ACTION d

This ACTION is entered as a result of the failure to meet any of the other ACTIONS.

SR 4.8.1.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks 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. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 4.8.1.3.2

SR 4.8.1.3.2 provides 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 the 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. The 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 and conducting the tests to exceed 31 days. The tests, limits and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-06.
- b. Verify in accordance with the tests specified in ASTM D975-7b that the sample has a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point $\geq 125^\circ\text{F}$,
- c. Verify in accordance with ASTM D1298 or ASTM D4052 that the sample has an absolute specific gravity of 60/60°F of ≥ 0.85 and ≤ 0.885 or an API gravity at 60°F of $\geq 28.4^\circ$ and $\leq 35^\circ$ and
- d. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-04 or water and sediment content within limits when tested in accordance with ASTM D2709-96.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

SR 4.8.1.3.2 (Continued)

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.

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 D975-7b are met for Grade 2-D

new fuel oil when tested in accordance with ASTM D975-7b. 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 diesel generator operation. This Surveillance ensures the availability of high quality fuel oil for the diesel generators.

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.

Particulate concentrations will be determined in accordance with ASTM D6217-98. 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 test intervals.