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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Ref 10 CFR 50.90

Subject: Comanche Peak Nuclear Power Plant (CPNPP)
Docket Nos. 50-445 and 50-446
Response to RAI for License Amendment Request to Extend Allowed Outage Time
for an Inoperable Emergency Diesel Generator

References: 1. Letter from CPNPP to NRC, dated September 14, 2023, "Comanche Peak Nuclear
Power Plant (CPNPP) License Amendment Request Proposing Changes to Technical
Specifications to Extend the Allowed Outage Time for an Inoperable Emergency Diesel
Generator from 72 hours to 14 Days," ML23257A172

2. Letter from NRC to CPNPP, dated February 2, 2024, "Comanche Peak - Request for
Additional Information - License Amendment Request to Extend the Allowed Outage
Time for an Inoperable Emergency Diesel Generator (EPID L-2023-LLA-0130),"
ML24036A012

Dear Sir or Madam:

Vistra Operations Company LLC ("Vistra OpCo") submitted, in Reference 1, a license amendment request (LAR) for Comanche Peak Nuclear Power Plant Unit Nos. 1 and 2, (CPNPP) Technical Specification (TS) 3.8.1, "AC Sources - Operating." In Reference 2, the NRC requested additional information needed to complete its review of the LAR. This letter provides a response to Reference 2, in the attached Response to Request for Additional Information. As described in the attached response, Enclosures 1 and 2 to this letter provide TS and TS bases markups which supersede those provided in Reference 1.

This communication contains no new commitments regarding CPNPP Units 1 and 2.

Should you have any questions, please contact N. Boehmisch at (254) 897-5064 or nicholas.boehmisch@luminant.com.

Sincerely,


Jay Lloyd (Mar 4, 2024 12:36 EST)

Jay J. Lloyd

Attachment: Response to Request for Additional Information

Enclosure 1: Technical Specification Markup

Enclosure 2: Technical Specification Bases Markup

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Response to Request for Additional Information

By letter dated September 14, 2023 (Agencywide Document Access Management System (ADAMS) Accession No. ML23257A172), Vistra Operations Company LLC (Vistra OpCo, the licensee) requested an amendment for Comanche Peak Nuclear Power Plant, Unit Nos. 1 and 2 (Comanche Peak) Technical Specification (TS) 3.8.1, "AC Sources – Operating." The amendment would allow an extension in the Required Action B.4 allowed outage time (AOT) from 72 hours to 14 days (the terms AOT and completion time (CT) are used interchangeably) for an inoperable emergency diesel generator (EDG), based on the availability of Alternate Power Diesel Generator (APDG). The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is needed to complete its review of the license amendment request (LAR).

Regulatory Requirements and Guidance

Title 10 of the Code of Federal Regulations (10 CFR), Section 50.63, "Loss of All Alternating Current Power," requires that each light-water-cooled nuclear power plant to be able to withstand and recover from a station blackout (i.e., loss of the offsite electric power system concurrent with reactor trip and unavailability of the onsite emergency alternating current electric power system) of a specified duration. The 10 CFR 50.63 requirements provide assurance that necessary operator actions can be performed and that necessary control room–area equipment will be functional under the expected environmental conditions during and following a station blackout, thereby ensuring that the core will be cooled, and appropriate containment integrity will be maintained.

10 CFR 50.36(a)(1) states, in part, that each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed TSs. A summary statement of the bases or reasons for such specifications shall also be included in the application, but shall not become part of the TSs.

10 CFR 50.36(c)(2)(i), "Limiting conditions for operation," states, in part, that TS will include limiting conditions for operation, which are "the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

NUREG-0800, Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," (ML113640138) provides guidance, from a deterministic perspective, for reviewing the EDGs outage time extension request.

Request Additional Information (RAI)

RAI #1

Section B of BTP 8-8 states, in part:

The TS must contain Required Actions and Completion Times to verify that the supplemental AC source is available before entering extended AOT. The availability of AAC [alternate alternating current] or supplemental power source shall be checked every 8-12 hours (once per shift).

...

The availability of AAC or supplemental power source should be verified within the last 30 days before entering extended AOT by operating or bringing the power source to its rated voltage and frequency for 5 minutes and ensuring all its auxiliary support systems are available or operational.

In Section 2.2 of the LAR, the licensee stated that the proposed change satisfies the guidelines in NUREG-0800, BTP 8-8 to verify the availability of the APDG prior to entering the extended 14-day CT. After the initial verification, BTP 8-8 states that the availability of AAC or supplemental power source continue to be checked once every 12 hours (i.e., once per shift). The initial verification should occur within the last 30 days before entering the extended 14-day CT. However, the NRC staff found that the LAR did not include proposed TS required actions and completion times for the AAC power source availability verification.

Additionally, insert B of the TS bases markup in attachment 2 to the LAR states, in part:

Prior to a planned entry into Required Action B.4 the following actions will be taken;

1. The associated Unit's Alternate Power Diesel Generator (APDG) will be verified in standby, ready to align to a pre-determined 6.9 kV Class 1E bus, and with fuel oil level at approximately 100%.

The NRC staff notes that 10 CFR 50.36(a)(1) describes information in the TS bases as reasons for the TS requirements, but it is not a part of the TS. However, the above quoted portion of the TS bases markup introduces a requirement which should also be a part of the TS but is not proposed.

Provide the following:

- a) To address the above BTP 8-8 guidance, provide proposed required actions and completion times for Comanche Peak TS 3.8.1 Condition B (and the associated TS bases markup) to verify the availability of the AAC power source prior to extending the AOT.
- b) Clarify in the TS bases markup how the above BTP 8-8 guidance concerning the availability verification of the AAC power source (by operating or bringing the power source to rated voltage and frequency) will be addressed within 30 days before entering the extended AOT of TS 3.8.1 Condition B.

RESPONSE 1 a)

A new Required Action B.2 is added to evaluate the availability of the Alternate Power Generator (APG). The completion time is 12 hours AND once per 12 hours thereafter. The term Alternate Power Diesel Generator (APDG) has been changed to Alternate Power Generator (APG) in the enclosed markups. This is an administrative change from the original LAR for the purpose of aligning with the terminology already in use by plant operators. A new TS and TS bases markup is enclosed and supersedes the markups provided in the original LAR submittal.

RESPONSE 1 b)

A requirement to verify the APG by operating or bringing the power source to rated voltage and frequency is added to the TS bases. A new TS and TS bases markup is enclosed and supersedes the markups provided in the original LAR submittal.

RAI #2

Section 2.2 of the LAR states, in part:

TS Limiting Condition for Operation (LCO) 3.8.1, AC Sources - Operating will be revised as follows:

Condition B (One DG inoperable), Required Action B.4 (Restore DG to OPERABLE status), Completion Time will change from "72 hours OR In accordance with the Risk Informed Completion Time Program," to "24 hours from discovery of Condition B entry \geq 48 hours concurrent with unavailability of APDG AND 14 days OR In accordance with the Risk Informed Completion Time Program." The AND logical connector will be indented one level. The OR logical connector will not be indented.

...

This proposed change satisfies the requirement in NUREG-0800, BTP 8-8 that if the APDG becomes unavailable during the extended 14-day CT, it must be returned to an available status, or a shutdown will be commenced within 24 hours. This condition is only permitted once within any given extended 14-day CT.

Regarding this proposed change to TS 3.8.1 Condition B:

- a) The explanation for the proposed TS completion time that starts "24 hours from discovery..." is not fully explained in the LAR. Provide further clarification for when and how this completion time segment will be applied. Also provide an associated TS bases markup.
- b) In attachment 1, the TS markup for TS 3.8.1.B.4 does not reflect the deletion of the 72-hour frontstop. Additionally, the LAR does not describe the justification for the change from "72 hours" to "24 hours from discovery of Condition B entry \geq 48 hours concurrent with unavailability of APDG." Provide such technical justification and TS markup revision as appropriate.
- c) The proposed TS 3.8.1.B.4 appears to be missing a frontstop CT for Condition B entry durations of less than 48 hours when one EDG is inoperable while the APDG is unavailable. As currently proposed in the LAR, a plant shutdown per LCO 3.0.3 would be required because there are no remedial actions for this condition described in the Comanche Peak TS. Provide clarification for this change or consider TS revision.
- d) The proposed change contains an acronym that is not defined in Comanche Peak TS. Clarify all acronyms new to TS 3.8.1 (e.g., APDG).

RESPONSE 2 a)

Based on the diversity of AC electrical power sources, and the remaining redundancy and reliability, operation may continue in Condition B for a period that should not exceed 14 days if the APG is available. If the APG is or becomes unavailable with an inoperable DG, then action is required to restore the APG to available status or to restore the DG to OPERABLE status within 72 hours from discovery of an unavailable APG. However, if the APG unavailability occurs sometime after 48 hours of continuous DG inoperability, then the remaining time to restore the APG to available status or to restore the DG to OPERABLE status is limited to 24 hours.

The 72-hour and 24-hour Completion Times allow for an exception to the normal “time zero” for beginning the allowed outage time “clock.” The 72-hour Completion Time only begins on discovery that both:

- a) An inoperable DG exists; and
- b) The APG is unavailable.

The 24-hour Completion Time only begins on discovery that:

- a) An inoperable DG exists for ≥ 48 hours; and
- b) The APG is unavailable.

Therefore, when one required DG is inoperable the Completion Time can be extended from 72 hours to 14 days if the APG is verified available for backup operation.

The addition of the 24-hour completion time is consistent with the guidance in BTP 8-8.

RESPONSE 2 b)

The 72-hour completion time markup has been corrected and the front stop has been restored in the enclosed TS and TS Bases markups. The 72-hour completion time has been modified by the addition of “from discovery of unavailability of APG.” This change effectively retains the initial 72-hour completion time in instances when the APG is unavailable at time zero. In all other cases between time zero and 48 hours, the initial 72-hour completion time is retained by the “24 hours from discovery of condition B entry greater than or equal to 48 hours concurrent with unavailability of APG.”

RESPONSE 2 c)

The front stop has been restored as described in Response 2 b).

RESPONSE 2 d)

The acronym Alternate Power Diesel Generator (APDG) has been changed to Alternate Power Generator (APG) in the enclosed markups. The acronym is defined in the new TS markup.

RAI #3

Section B of BTP 8-8 states:

- The extended AOT will be used no more than once in a 24-month period (or refueling interval) on a per diesel basis to perform EDG maintenance activities, or any major maintenance on offsite power transformer and bus.
- The preplanned maintenance will not be scheduled if severe weather conditions are anticipated.
- The system load dispatcher will be contacted once per day to ensure no significant grid perturbations (high grid loading unable to withstand a single contingency of line or generation outage) are expected during the extended AOT.
- Component testing or maintenance of safety systems and important non safety equipment in the offsite power systems that can increase the likelihood of a plant transient (unit trip) or LOOP [Loss of Offsite Power] will be avoided. In addition, no discretionary switchyard maintenance will be performed.
- TS required systems, subsystems, trains, components, and devices that depend on the remaining power sources will be verified to be operable and positive measures will be

provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices.

- Steam-driven emergency feed water pump(s) in case of PWR [pressurized water reactor] units will be controlled as “protected equipment.”

The LAR does not address the above guidance. Provide a discussion addressing the above guidance.

RESPONSE 3

The following BTP 8-8 requirements will be added to the TS base as reflected in the enclosed markup.

- The extended AOT will be used no more than once in a 24-month period (or refueling interval) on a per diesel basis to perform DG maintenance activities, or any major maintenance on offsite power transformer and bus. This once-per-period limitation will apply only to pre-planned maintenance, the 14-day completion time will remain available for emergent corrective maintenance.
- The preplanned maintenance will not be scheduled if severe weather conditions are anticipated.
- The system load dispatcher will be contacted once per day to ensure no significant grid perturbations (high grid loading unable to withstand a single contingency of line or generation outage) are expected during the 14-day completion time.

As discussed in section 2.5 and section 3.8 of the LAR the CPNPP work management process establishes the followings BTP 8-8 requirements when one DG is out of service.

- Component testing or maintenance of safety systems and important non safety equipment in the offsite power systems that can increase the likelihood of a plant transient (unit trip) or LOOP [Loss of Offsite Power] will be avoided. In addition, no discretionary switchyard maintenance will be performed.
- TS required systems, subsystems, trains, components, and devices that depend on the remaining power sources will be verified to be operable and positive measures will be provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices.
- Steam-driven emergency feed water pump(s) in case of PWR [pressurized water reactor] units will be controlled as “protected equipment.”

RAI #4

Section B of BTP 8-8 states, in parts:

To support the one-hour time for making this power source available, plants must assess their ability to cope with loss of all AC power for one hour independent of an AAC power source. The plant should have formal engineering calculations for equipment sizing and protection and have approved procedures for connecting the AAC or supplemental power sources to the safety buses.

.....

The availability of AAC or supplemental power source should be verified within the last 30 days before entering extended AOT by operating or bringing the power source to its rated voltage and frequency for 5 minutes and ensuring all its auxiliary support systems are available or operational.

Section 3.6 of the LAR states, in part:

Licensed Operators and Non-Licensed Operators are trained on the purpose and use of the APDGs. Using a combination of the plant simulator and plant Job Performance Measures, the operators periodically display their ability and proficiency to respond to a loss of all AC power (i.e., Station Blackout), which includes walking through the actions required to ensure the APDGs are available to provide power to the station within one hour from the time that the emergency procedures direct their use as the emergency power source.

- a) The LAR addresses the above BTP 8-8 guidance regarding the procedure for connecting the AAC sources to the safety buses. However, the LAR does not provide the discussion of the equipment capacity to cope with loss of all AC power (station blackout (SBO) condition) for one hour independent of an AAC power source. Provide a discussion of relevant equipment capacity.
- b) The LAR does not provide the discussion of the APDG sizing. Provide the calculation assumptions and summary that demonstrate that the APDG size is adequate to bring the unit in SBO to cold shutdown in case of a prolonged SBO condition to meet the intent of BTP 8-8.
- c) The LAR does not describe the auxiliary systems necessary to support the APDG function and how these auxiliary systems are ensured to be available or operational. Provide such discussion.

RESPONSE 4 a)

As stated in section 3.3 of the LAR both units are capable of coping for 4 hours as AC independent plants. Therefore, the APG is not needed for the station to cope with loss of all AC power for one hour. This issue is further addressed in the CPNPP FSAR section 8B "Station Blackout;"

To assess the compliance of Comanche Peak Units 1 and 2 with the Station Blackout rule (10CFR50.63) an evaluation [TXX-92447, dated October 1, 1992] following the guidance provided by RG 1.155 (August 1988) was performed. This evaluation determined that both units are capable of coping with a station blackout (SBO) for 4 hours as AC Independent plants and that no modifications were required.

RESPONSE 4 b)

CPNPP has provided a non-safety related APG package for each unit to be connected to a 6.9 kV Class 1E bus to provide defense-in-depth for safe shutdown of a unit during a beyond design basis event of LOOP concurrent with failure of DGs. The APG packages consists of two 480V diesel generators as the alternate power source and a 480V/6900V transformer to deliver alternate power to the selected 6.9 kV bus.

The DG loading calculation for LOOP provides the loading requirement for loads needed for safe shutdown of the plant. A review of the calculation showed that the calculation also includes loads that are not needed for plant shutdown. The DG loading calculation for LOOP was reassessed for applicability to the APG, by locking out loads not needed for plant shutdown, to determine the power required to be delivered to the 6.9kV bus for plant shutdown. The reassessment, Calculation EE-CA-0007-4014, determined a power requirement of 2993 kVA for safe shutdown

loads to be delivered by the APG transformer to the 6.9 kV bus. The APG transformer rating is 3000 kVA. The transformer can provide 3450 kVA for safe shutdown of the plant. The maximum demand on the transformer during restart of a 1,000 HP motor will be 7528 kVA that will last for the acceleration time of the motor, less than 5 seconds. A review of transformer short-time thermal load capability, IEEE C57.109 shows that the transformer can handle this demand of 2.509 times its rating of 3000 kVA for more than 5 minutes. As such the APG transformer is adequately sized to deliver power needed for safe shut down of the plant.

The APG diesel generators deliver the required power for plant shutdown while maintaining adequate voltage and frequency for the loads. A conservative size of 3500 kW (2-1750kW in parallel) at 0.8 pf was established for the APGs to ensure the following requirements:

1. To ensure adequate voltage at 6.9 kV bus for service of shutdown loads, the APG will;
 - a. Maintain a steady state voltage between 470 V (97.9% of 480 V rated voltage) to 494 V (102.9% of 480 V rated voltage).
 - b. On application of a 1,000 HP motor start, the voltage will not dip below 410V (85.4% of rated voltage), will recover to 456V (95% of rated voltage) within 3 seconds and then to nominal value in a few seconds.
2. To ensure adequate frequency for service of safe shutdown loads, the APG will;
 - a. Maintain a steady state frequency at nominal 60Hz.
 - b. On application of a 1,000 HP motor start, the frequency will not dip below 57Hz, will recover to 58.8 Hz within 3 seconds and then to nominal value in a few seconds.
3. The APG will be capable of restarting a 1,000 HP motor if it trips after completion of loading of remaining safe shutdown loads on the APG.

The APG voltage regulator can maintain APG voltage within +/- 0.25% from no load to full load voltage. The APG voltage control conservatively meets the 1.a requirement described above. The APG maintains a nominal frequency of 60 Hz during steady state conditions and meets 2.a requirement.

A 1,000 HP motor restart places the maximum starting kVA demand on the APG. Calculation EE-CA-0007-4014 determined this demand to be 7528 kVA. Each of the two APG diesel generators, operating in parallel, will provide 3764 kVA of this demand. Vendor documents show that each APG diesel generator can deliver 5940 kVA and limit the frequency dip to 3% and a voltage dip to 12.9%. The frequency and voltage dips are less than the allowed dips per requirement 2.b and 1.b. The vendor document also shows that frequency and voltage recovery times to nominal frequency and voltage are less than 3 seconds for load change of 0 – 25%, 0 – 50%, and 0 – 75%. The frequency and voltage recovery time to nominal frequency and voltage is 3.9 seconds for load change of 0 – 100%. These recovery times are less than that required by requirements 1.b and 2.a. Therefore, the APG diesel generators conservatively meet the 1.b and 2.b requirements.

As described above, the maximum kVA, during restart of a 1,000HP motor, to be provided by each diesel generator is 3764 kVA. Each APG diesel generator can deliver 5940 kVA and limit the frequency and voltage dips to less than that allowed by requirement 1.b and 2.b. Therefore, the APG meets requirement 3 and can restart the 1,000 HP motor if it trips after the completion of loading all other safe shutdown loads on the APG.

Based on above the APG diesel generators are conservatively sized for delivery of safe shutdown power.

RESPONSE 4 c)

The APG stand-alone package consists of diesel generators and a 480V/6900V transformer. No auxiliary systems are required to support APG function. However, 480V power is provided for auxiliaries such as battery chargers, jacket water heater, and generator space heater when the APG is not operating.

RAI #5

The Comanche Peak license amendment for implementation of the risk informed completion time [RICT] program which allows an inoperable EDG for up to a maximum 30-day backstop was approved by the NRC on August 8, 2022 (ML22192A007). Please explain the need for the current license amendment to extend the EDG AOT frontstop to 14 days (deterministic bases with risk insights) which appears to be encompassed by the previously approved RICT program (risk-informed bases).

RESPONSE 5

One of the Comanche Peak staff initiatives to improve operations is through the more effective use of on-line maintenance to control the scope of maintenance during refueling outages while maintaining an adequate level of defense-in-depth. Moving much of the DG maintenance to online supports that initiative. A competing consideration is maintenance of adequate margins to the RG 1.174, Revision 3, guidance for “very small” changes in risk as a result of a risk-informed application, e.g., the Risk Informed Completion Time (TSTF-505R2 or RICT application). These margins are deemed important to be able to address emergent plant conditions and keep the unit operating to the extent possible. To balance these considerations, the Comanche Peak staff has chosen to incorporate what is intended to be routine on-line DG maintenance into the baseline risk for the plant, leaving adequate margins to allow the use of the RICT application to address emergent issues.

Enclosure 1 to TXX-24011
Technical Specification Markup

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One DG inoperable.</p>	<p>B.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>
	<p><u>AND</u></p> <p>B.2 -----NOTE----- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature.</p>	
	<p>Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p>	<p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p> <p>B.3 Evaluate availability of Alternate Power Generator (APG).</p>	<p>12 hours</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
	<p><u>AND</u> 4</p> <p>B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p>	<p>24 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p style="text-align: center;">4</p> <p>B.3.2 -----NOTE----- The SR need not be performed if the DG is already operating and loaded. -----</p> <p>Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> <p>B.4 Restore DG to OPERABLE status.</p> <p style="text-align: center;">5</p>	<p>24 hours</p> <p>72 hours from discovery of unavailability of APG</p> <p style="text-align: center;"><u>AND</u></p> <p>24 hours from discovery of Condition B entry \geq 48 hours concurrent with unavailability of APG</p> <p style="text-align: center;"><u>AND</u></p> <p>14 days</p> <p><u>OR</u></p> <p>In accordance with the Risk Informed Completion Time Program</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Two required offsite circuits inoperable.</p>	<p>C.1 -----NOTE----- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature. ----- Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. <u>AND</u> C.2 Restore one required offsite circuit to OPERABLE status.</p>	<p>12 hours from discovery of Condition C concurrent with inoperability of redundant required features</p> <p>24 hours</p> <p><u>OR</u></p> <p>In accordance with the Risk Informed Completion Time Program</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One DG inoperable.</p>	<p>B.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>
	<p><u>AND</u></p> <p>B.2 -----NOTE----- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature.</p>	
	<p>Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p>	<p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p> <p>B.3 Evaluate availability of Alternate Power Generator (APG).</p>	<p>12 hours</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
	<p><u>AND</u></p> <p>B.4.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p>	<p>24 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>B.4.2 -----NOTE----- The SR need not be performed if the DG is already operating and loaded. -----</p> <p>Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> <p>B.5 Restore DG to OPERABLE status.</p>	<p>24 hours</p> <p>72 hours from discovery of unavailability of APG</p> <p><u>AND</u></p> <p>24 hours from discovery of Condition B entry \geq 48 hours concurrent with unavailability of APG</p> <p><u>AND</u></p> <p>14 days</p> <p><u>OR</u></p> <p>In accordance with the Risk Informed Completion Time Program</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Two required offsite circuits inoperable.</p>	<p>C.1 -----NOTE----- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature. ----- Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>C.2 Restore one required offsite circuit to OPERABLE status.</p>	<p>12 hours from discovery of Condition C concurrent with inoperability of redundant required features</p> <p>24 hours</p> <p><u>OR</u></p> <p>In accordance with the Risk Informed Completion Time Program</p>

Enclosure 2 to TXX-24011

Technical Specification Bases Markup

BASES

BACKGROUND (continued)

Ratings for Train A and Train B DGs satisfy the requirements of Regulatory Guide 1.9; Ref. (3) and IEEE 387 (Ref. 13). The continuous service rating of each DG is 7000 kW with 10% overload permissible for up to 2 hours in any 24 hour period. The ESF loads that are powered from the 6.9 kV ESF buses are listed in Reference 2. The maximum calculated load is less than 6300 kW. This maximum continuous service load is reflected in selected surveillances.



INSERT A

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 15 (Ref. 5), assume ESF systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the Accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least one train of the onsite AC sources or one of the offsite AC sources OPERABLE during Accident conditions in the event of:

- a. An assumed loss of all offsite power or all onsite AC power; and
- b. A worst case single failure.

The AC sources satisfy Criterion 3 of 10CFR50.36(c)(2)(ii).

LCO

Two qualified circuits between the offsite transmission network buses at the plant switchyards and the onsite Class 1E Electrical Power System and separate and independent DGs for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit. In addition, one automatic load sequencer per train must be OPERABLE.

(continued)

INSERT A

The onsite system for each unit may be connected to an Alternate Power Generator (APG), Ref. FSAR 8.3.1.1.1.3. The APG may be connected to either 6.9 kV Class 1E bus. The APG consists of 3000 kW, non-safety related, commercial grade diesel generators. Manual action is required to align the APG to the selected 6.9 kV Class 1E bus. The APG is available to support extended Completion Times in the event of an inoperable DG as well as provide defense-in-depth as an AC source to mitigate a Station Blackout (SBO). The APG is normally not connected to the Class 1E AC Distribution System and is connected to a Class 1E bus when required for supplemental power to the affected unit.

BASES

ACTIONS

B.2 (continued)

driven auxiliary feedwater pumps and the TDAFW pump which must be available for mitigation of a Feedwater line break. Single train systems, other than the turbine driven auxiliary feedwater pump, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG.


The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

- a. An inoperable DG exists; and
- b. A required feature on the other train (Train A or Train B) is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

Discovering one DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

 B.3.4.1 and B.3.4.2

Required Actions B ~~3~~-4.1 and B ~~3~~-4.2 are only applicable to the affected Unit. Any actions that may apply to an unaffected Unit, or the DGs for the unaffected Unit, would be determined by the Corrective Action Program and

(continued)

INSERT B

B.3

In order to extend the Required Action B.5 Completion Time for an inoperable DG from 72 hours to 14 days, it is necessary to verify the availability of the APG within 12 hours on entry into TS 3.8.1 LCO and every 12 hours thereafter. Since Required Action B.3 only specifies “evaluate,” discovering the APG unavailable does not result in the Required Action being not met (i.e., the evaluation is performed). However, on discovery of an unavailable APG, the Completion Time for Required Action B.5 starts the 72-hour and/or 24-hour clock.

APG availability requires that:

- 1) Within the past 30 days, the APG must be verified, by operating or bringing the power source to its rated voltage and frequency for 5 minutes and ensuring all its auxiliary support systems are available or operational. The Required Action evaluation can be met with an administrative verification of this prior testing.
- 2) The corresponding control equipment and interconnecting cabling supplying power to the 6.9 kV switchgear transfer switch associated with the inoperable DG is confirmed available. The Required Action evaluation is met with (a) an administrative verification of prior testing and completion of preventative maintenance activities, and (b) general visual verification that connections and cabling from the APG are intact.
- 3) APG fuel tank levels are verified locally to be > 90%.
- 4) APG supporting system parameters for starting and operating are verified to be within required limits for functional availability (e.g., battery state of charge).

The APGs are not used to extend the Completion Time for more than one inoperable DG at any one time.

BASES

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~~B.3-4.1 and B.3-4.2~~ (continued)

the 24 hour COMPLETION TIME for TS 3.8.1, Required Actions B ~~3-4.1~~ and B ~~3-4.2~~ does not apply with respect to the unaffected Unit or its DGs.

Required Action B. ~~3-4.1~~ provides an allowance to avoid unnecessary testing of the OPERABLE DG. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, ~~SR 3.8.1.2~~ does not have to be performed. If the cause of inoperability exists on the other DG, the other DG would be declared inoperable upon discovery and Condition E of ~~LCO 3.8.1~~ would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B. ~~3-4.1~~ is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG, performance of ~~SR 3.8.1.2~~ suffices to provide assurance of continued OPERABILITY of that DG.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B. ~~3-4.1~~ or B. ~~3-4.2~~, the applicable plant procedures will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (~~Ref. 7~~), 24 hours is reasonable to confirm that the OPERABLE DG is not affected by the same problem as the inoperable DG.

During performance of surveillance activities as a requirement for ACTION statements, the air-roll test shall not be performed.

 INSERT C

~~B.4.1~~

~~According to Regulatory Guide 1.93 (~~Ref. 6~~), operation may continue in Condition B for a period that should not exceed 72 hours.~~

~~In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.~~

(continued)

INSERT C

B.5

Based on the diversity of AC electrical power sources, and the remaining redundancy and reliability, operation may continue in Condition B for a period that should not exceed 14 days if the APG is available. If the APG is or becomes unavailable with an inoperable DG, then action is required to restore the APG to available status or to restore the DG to OPERABLE status within 72 hours from discovery of an unavailable APG. However, if the APG unavailability occurs at or sometime after 48 hours of continuous DG inoperability, then the remaining time to restore the APG to available status or to restore the DG to OPERABLE status is limited to 24 hours.

The 72-hour and 24-hour Completion Times allow for an exception to the normal “time zero” for beginning the allowed outage time “clock.” The 72-hour Completion Time only begins on discovery that both:

- a) An inoperable DG exists; and
- b) The APG is unavailable.

The 24-hour Completion Time only begins on discovery that:

- a) An inoperable DG exists for ≥ 48 hours; and
- b) The APG is unavailable.

Therefore, when one required DG is inoperable the Completion Time can be extended from 72 hours to 14 days if the APG is verified available for backup operation.

Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

In Condition B, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 14-day Completion Time takes into account the capacity and capability of the remaining AC sources (including APGs), reasonable time for repairs, and low probability of a DBA occurring during this period. Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The 14-Day completion time will be used no more than once in a 24-month period (or refueling interval) on a per diesel basis to perform pre-planned DG maintenance activities, or any major maintenance on offsite power transformer and bus. This once-per-period limitation will apply only to pre-planned maintenance, the 14-day completion time will remain available for emergent corrective maintenance.

The preplanned maintenance will not be scheduled if severe weather conditions are anticipated.

The system load dispatcher will be contacted once per day to ensure no significant grid perturbations (high grid loading unable to withstand a single contingency of line or generation outage) are expected during the 14-day completion time.

BASES

ACTIONS (continued) B.4.2

~~The COMPLETION TIME for restoring the inoperable SSWS train to OPERABLE status can be extended to 8 days, on a one time basis for SSWS 2-02 (Train B) pump replacement during Unit 2 Cycle 19. This one time change regains reliability margin for Unit 2, Train B SSWS. The 8 day completion time is based on a deterministic evaluation supplemented with risk insights.~~

C.1 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes the motor driven auxiliary feedwater pumps and the TDAFW pump which must be available for mitigation of a Feedwater line break. Single train systems, other than the turbine driven auxiliary feedwater pump, are not included.

The Completion Time for Required Action C.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

- a. All required offsite circuits are inoperable; and
- b. A required feature is inoperable.

If at any time during the existence of Condition C (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe

(continued)