Kevin Cimorelli
Site Vice President

Susquehanna Nuclear, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3795 Fax 570.542.1504
Kevin.Cimorelli@TalenEnergy.com

TALEN ENERGY

May 26, 2020

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

10 CFR 50.90

**SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT TO LICENSES NPF-14
AND NPF-22: REVISE TECHNICAL
SPECIFICATION 3.8.1 TO CREATE A NEW
CONDITION FOR AN INOPERABLE MANUAL
SYNCHRONIZATION CIRCUIT
PLA-7842**

**Docket No. 50-387
and 50-388**

Pursuant to 10 CFR 50.90, Susquehanna Nuclear, LLC (Susquehanna), is submitting a request for an amendment to the Technical Specifications (TS) for the Susquehanna Steam Electric Station (SSES), Units 1 and 2, Facility Operating License numbers NPF-14 and NPF-22. The proposed amendment would modify TS 3.8.1, "AC Sources – Operating."

The proposed amendment would create a new TS Action for an inoperable manual synchronization circuit requiring restoration within 14 days. The proposed amendment is necessary to reduce the potential for an unnecessary dual unit shutdown. Based on the configuration of the AC power sources at SSES, an inoperable manual synchronization circuit currently results in entry into Limiting Condition for Operation (LCO) 3.0.3 for both units, which is not commensurate with the risk associated with having an inoperable manual synchronization circuit.

Enclosure 1 provides a description and assessment of the proposed changes along with Susquehanna's determination that the proposed changes do not involve a significant hazard consideration. Enclosure 2 provides the existing TS pages marked to show the proposed changes. Enclosure 3 provides revised (clean) TS pages. Enclosure 4 provides existing TS Bases pages marked to show the proposed changes.

Susquehanna has prepared additional analysis demonstrating the independence between the automatic and manual transfer circuitry. This information will be provided, for information only, to support the NRC's review of the requested change. However, this information is considered sensitive, unclassified, non-safeguards information (SUNSI). Citing the sensitive nature of the information and the intention to provide it for information only, Susquehanna has agreed to

make the information available to the NRC staff in a read-only capacity via electronic portal, which will be established upon the NRC's request.

Susquehanna requests NRC approval of the proposed changes and issuance of the requested license amendment by July 31, 2021. Once approved, the amendment shall be implemented within 90 days.

In accordance with 10 CFR 50.91, Susquehanna is providing a copy of this application, with enclosures, to the designated Commonwealth of Pennsylvania state official.

Both the Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed the proposed changes.

There are no new or revised regulatory commitments contained in this submittal.

Should you have any questions regarding this submittal, please contact Ms. Melisa Krick, Manager – Nuclear Regulatory Affairs, at (570) 542-1818.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 5/26/20

K. Cimorelli

Enclosures:
1. Description and Assessment
2. Marked-Up Technical Specification Pages
3. Revised (Clean) Technical Specification Pages
4. Marked-Up Technical Specification Bases Pages

Copy: NRC Region I
Mr. M. Rossi, NRC Resident Inspector
Ms. S. Goetz, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

Enclosure 1 to PLA-7842

Description and Assessment

SUSQUEHANNA ASSESSMENT

1. Summary Description

Pursuant to 10 CFR 50.90, Susquehanna Nuclear, LLC (Susquehanna), is submitting a request for an amendment to the Technical Specifications (TS) for the Susquehanna Steam Electric Station (SSES), Units 1 and 2, Facility Operating License numbers NPF-14 and NPF-22. The proposed amendment would modify TS 3.8.1, "AC Sources – Operating."

The proposed amendment would create a new TS Action for an inoperable manual synchronization circuit requiring restoration within 14 days. The proposed amendment is necessary to reduce the potential for an unnecessary dual unit shutdown. Based on the configuration of the Alternating Current (AC) power sources at SSES, an inoperable manual synchronization circuit currently results in entry into Limiting Condition for Operation (LCO) 3.0.3 for both units, which is not commensurate with the risk associated with having an inoperable manual synchronization circuit.

2. Detailed Description

2.1 System Design and Operation

2.1.1 4.16 kV Distribution System

As discussed in Section 8.3.1.3 of the SSES Updated Final Safety Analysis Report (FSAR), the Class 1E AC system distributes power at 4.16 kV, 480 V, and 208/120 V to the safety-related loads. The safety-related loads are divided into four load groups per generating unit.

The 4.16 kV bus of each Class 1E load group is provided with connections to two off-site power sources designated as the preferred and alternate power supplies and a Diesel Generator (DG) is provided as the standby power supply. Each bus is normally energized by the preferred power supply. The preferred power source to each bus is electrically interlocked with the alternate power source such that the bus can only be connected to a single power source at any one time. If the preferred power source is not available at the 4.16 kV bus, automatic transfer is made to the alternate power source. If both preferred and alternate power sources become de-energized, the safety-related loads on each bus are picked up automatically by the standby DG assigned to that bus.

2.1.2 Diesel Generators

As described in FSAR Section 8.3.1.4, SSES is equipped with five DGs that are shared by the two units. The SSES electrical design differs from the typical dual-unit site in that the five DGs are shared between the two units instead of two DGs being assigned to each unit. DGs A-D are normally assigned to the four safety-related load groups. DG E is capable of being substituted for any of the DGs A-D without violating the independence of the redundant safety-related load groups. The capacity of the aligned DGs (assuming one of the aligned DGs fails) is sufficient to operate the engineered safety feature loads of one unit and those systems required for concurrent safe shutdown on the other unit.

2.1.3 13.8 kV Distribution System

As described in FSAR Section 8.3.1.2, the 13.8 kV distribution system consists of two Startup Buses and four Auxiliary Buses. The Startup Buses are fed from the Startup Transformers (each Startup Transformer feeds one Startup Bus) and provide the normal power source to two 4.16 kV buses in each unit and the alternate source of power to the remaining two 4.16 kV buses in each unit. If any 4.16 kV bus loses power, an automatic transfer from the normal to the alternate occurs after the normal supply breaker trips. The Auxiliary Buses are fed from the Auxiliary Transformers (each transformer feeds two buses) and provide power to large loads that are important to power generation but not nuclear safety (e.g., circulating water pumps, service water pumps).

2.1.4 Manual Synchronization Circuit

The manual synchronization circuit provides a means to switch the power supply to an energized electrical circuit from one source to another for the 13.8 kV buses and the 4.16 kV buses, as well as tie the DGs to the 4.16 kV buses. There is one manual synchronization circuit shared between the two units; it is comprised of a synchronization bus, a bus differential voltmeter, a synchroscope, two white lights, and 37 synchronizing selector switches (referred to as “sync selector switches” hereafter). Eight of the sync selector switches are for the DGs, 16 are for the primary and alternate offsite power supply to the 4.16 kV buses, and the remaining 13 are for the 13.8 kV buses. In order to manually synchronize one power supply to another, the desired hand switch is taken to the ON position. This provides power from the bus (i.e., the “Running Voltage”), which is compared to the source voltage (“Incoming Voltage”) with ground as a reference point. The synchroscope, two white lights, and the bus differential voltmeter provide indication to operators as to how well the two sources are matched in frequency, phase angle, and voltage. When the sources are synchronized, the operator manually closes the breaker for the new power source. Because the sync selector switches share the synchronization bus, only one sync selector switch can be turned on at a time.

The sync selector switches can be used to:

- Transfer the 4.16 kV Emergency Safeguard System (ESS) bus power source from the preferred power supply to the alternate power supply, or from the alternate power supply to the preferred power supply.

- Manually connect DGs A-D (or E, if substituted) to their corresponding 4.16 kV bus for DG testing purposes.

- Restore offsite power to an ESS bus (such as following a Loss of Offsite Power (LOOP)) if a DG was powering the bus. A de-energized ESS bus can be powered by offsite power without the use of the sync selector switches.

- Transfer the 13.8 kV bus power source between startup transformers.

- Transfer the 13.8 kV auxiliary buses between auxiliary transformers.

The sync selector switches are only utilized for manual transfers. The automatic transfer functions do not utilize any of the manual synchronization equipment. The ability to manually transfer the power source for a 4.16 kV or 13.8 kV bus is not assumed in any accident analysis. Restoration of the normal power source following a LOOP is not assumed in the accident analysis. Restoration of the normal power source can be made without the manual synchronization circuit by de-energizing the bus. The ability to synchronize a DG to an energized bus is also not assumed in any accident analysis, but is needed to perform certain tests.

2.2 Current Technical Specifications Requirements

LCO 3.8.1 requires, for each unit, that two offsite sources and four onsite DGs be operable in Modes 1, 2, and 3.[1] The manual synchronization circuit is not described in the LCO. The LCO Bases do not discuss the manual synchronization circuit when describing the operability requirements of the offsite sources and the DGs.

Surveillance Requirement (SR) 3.8.1.8 states, “Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.” The explicit reference to manual transfers requires the manual synchronization circuit to be tested. The associated Bases state, “Transfer of each 4.16 kV ESS bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit

[1] LCO 3.8.1 also requires, for Unit 2, two offsite sources to the Unit 1 onsite Class 1E AC electrical power system as well as the DG(s) capable of supplying the Unit 1 onsite distribution systems required to be operable by LCO 3.8.7, “Distribution Systems – Operating” to be operable in Modes 1 ,2 and 3. This requirement comes from the fact that some equipment required to mitigate the consequences of an accident on Unit 2 receive power from Unit 1 equipment.

distribution network to power the shutdown loads." The SR is modified by a Note stating that the automatic transfer shall not be tested in Mode 1 or 2. The Bases state the Note prohibits testing the automatic transfer in these modes because it could cause perturbations to the electrical distribution systems that could challenge continued steady state operation. However, the manual transfer of the power supply should not result in any perturbation to the electrical distribution system and is not restricted. SSES SR 3.8.1.8 is equivalent to the BWR/4 Standard Technical Specifications, NUREG-1433 (Reference 1), SR 3.8.1.8.

SR 3.8.1.16 states, "Verify each D/G: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power sources, and c. Returns to ready-to-load operation." The reference to the DG synchronizing with the offsite power source while loaded explicitly requires testing the manual synchronization circuit. As described in the associated Bases, "This Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and that the DG can be returned to ready-to-load status when offsite power is restored. . . In order to meet this Surveillance Requirement, the Operators must have the capability to manually transfer loads from the DGs to the offsite sources. Therefore, in order to accomplish this transfer and meet this Surveillance Requirement, the synchronizing selector switch must be functional."

SR 3.8.1.16 is consistent with Regulatory Guide (RG) 1.108, Revision 1 (Reference 2), Regulatory Position 2.a(6), "Demonstrate the ability to (a) synchronize the diesel generator unit with offsite power while the unit is connected to the emergency load, (b) transfer this load to the offsite power, (c) isolate the diesel generator unit, and (d) restore it to standby status." SSES SR 3.8.1.16 is equivalent to SR 3.8.1.16 in Reference 1.

SR 3.8.1.16 is modified by a Note which states, "This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY." The Note is necessary because the SR involves an integrated test between the DGs and the 4.16 kV ESS buses and the need for the testing regimen to include DG E being tested (substituted for all DGs) with all 4.16 kV ESS buses.

SR 3.8.1.3 states, "Verify each DG is synchronized and loaded and operates for $\geq$ 60 minutes at a load $\geq$ 3600 kW and $\leq$ 4000 kW." This SR does not explicitly test the manual synchronization circuit. However, the DG is connected to the ESS bus to support performance of the test, and that connection cannot be performed without the manual synchronization circuit. If the manual synchronization circuit is not available, the SR may still be met (i.e., the acceptance criteria may be satisfied) but could not be performed (i.e., the requirement to specifically determine the ability to meet the acceptance criteria).

SR 3.8.1.3 is consistent with Regulatory Position 2.c(2) of Reference 2, which requires demonstration of the full-load-carrying capability (continuous rating) for an interval of not less than one hour. SSES SR 3.8.1.3 is equivalent to SR 3.8.1.3 in Reference 1.

Based on the configuration of the Class 1E AC power sources at SSES, the inoperability of a single sync selector switch (and, therefore, the entirety of the manual synchronization circuit) removes the ability to meet the SR 3.8.1.8 and 3.8.1.16 synchronization verification for all four required DGs and both offsite sources for both units. SSES TS 3.8.1 does not have a Condition for an inoperable manual synchronization circuit, so the TS require entry into Condition G, "One or more offsite circuits and two or more required DGs inoperable, or One required DG and two offsite circuits inoperable." Required Action G.1 requires entry into LCO 3.0.3 immediately. Because all sync selector switches share a common synchronization bus for both units, the required entry into LCO 3.0.3 is applicable to both units despite the fact that all automatic transfers, as assumed in the accident analyses, can still be performed.

2.3 Reason for the Proposed Change

When performing the verification of the transfer capabilities of the offsite power sources in SR 3.8.1.8 and the DGs in SR 3.8.1.16, the appropriate sync selector switch is placed in the ON position. This is performed by rotating a keyed switch in the control room. Susquehanna has identified material degradation of the plastic within the key switch as a potential failure mechanism for the sync selector switch, which has resulted in two failures since 2013 (see References 3 and 4)[2]. This material degradation leads to the plastic shearing while the key switch is being rotated, ultimately resulting in the inability to rotate the keyed switch back to the OFF position. Consequently, the sync selector switch in this instance remains energized with the inability to be de-energized. Because the 37 sync selector switches share a common synchronization bus, this renders the manual transfer capability of the remaining 36 sync selector switches unavailable but does not impact the automatic transfers. Once the plastic shears within the keyed switch, the only way to restore the manual synchronization circuit to an operable status is to replace the sync selector switch.

Susquehanna has implemented procedural guidance for electrically isolating each of the 37 sync selector switches should a switch failure occur. As a result, operators can restore all but one required DG and one offsite source to an operable status. This action permits exiting LCO 3.0.3 and entering LCO 3.8.1, Condition D, which provides 12 hours to restore the DG or offsite circuit to an operable status. This is completed by replacing the sync selector switch.

Susquehanna has established a plan to replace all of the sync selector switches. However, the sync selector switch failures highlight that the SSES TS requires a dual-unit shutdown for a condition that does not pose a commensurate risk. All automatic transfer capabilities are still

[2] Following these failures, Susquehanna reviewed available operating experience and did not identify any other licensees with a similar failure history for these types of switches.

available with the manual synchronization circuit inoperable and, therefore, the assumptions for the accidents evaluated in Chapters 6 and 15 of the FSAR remain valid. Thus, it is prudent to request a change to the TS to provide time to restore the manual synchronization circuit to an operable status in a timeframe commensurate with the level of degradation of the plant.

2.4 Description of the Proposed Change

A change to the LCO 3.8.1 Bases is proposed to describe the manual synchronization circuit used to satisfy SR 3.8.1.8 and SR 3.8.1.16. The Bases will clarify that an inoperable manual synchronization circuit does not render a DG or offsite source inoperable. The addition states:

> The manual synchronization circuit is used to synchronize an offsite source from the normal circuit to the alternate circuit, as tested by SR 3.8.1.8. The manual synchronization circuit is also used to synchronize a bus that is powered by a DG with an offsite power source on a restoration of offsite power, as tested by SR 3.8.1.16. An inoperable manual synchronization circuit does not render an offsite circuit or DG inoperable.

This change is needed to clarify the appropriate actions to be taken if the manual synchronization circuit is inoperable.

TS 3.8.1 is revised to add a new Action H. The Condition states, "Manual synchronization circuit inoperable." The Required Action is to restore the manual synchronization circuit to an operable status and the Completion Time is 14 days. Changes to the TS Bases for Action H will be implemented in accordance with the TS Bases Control Program. The TS Bases markups are included in Enclosure 4.

3. Technical Evaluation

Automatic transfer of the 4.16 kV bus from the offsite source to a DG is assumed in the accident analysis, is required by TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," and is tested by SRs 3.8.1.11, 3.8.1.12, 3.8.1.13, 3.8.1.17, and 3.8.1.19. Manual transfer of the offsite power source from the normal circuit to the alternate circuit and manual transfer of the power source to a bus from the DG to an offsite circuit are required design features but are not required by the accident analysis. The inability to manually synchronize power sources does not render either power source inoperable. However, the inability to manually synchronize power sources complicates restoration following an accident. The ability to manually synchronize power sources is required by TS 3.8.1 and tested by SRs 3.8.1.8 and 3.8.1.16.

If a manual synchronization circuit is inoperable, the Required Actions of TS 3.8.1 for an inoperable power source are not appropriate. For example, Action A of TS 3.8.1 applies when one offsite circuit is inoperable and requires verification of the correct breaker alignment and

indicated power availability for each offsite circuit, and examination of required features with no offsite power. Neither action is necessary or appropriate if the manual synchronization circuit used to transfer from the normal to the alternate offsite source were inoperable because the offsite circuit is still energized and fully capable of performing its specified safety function. An appropriate action is to restore the manual synchronization circuit to operable status.

The ability to manually synchronize the power sources to a bus is not credited in the accident analysis and is not modeled in the SSES Probabilistic Risk Assessment (PRA) model. The inoperability of the manual synchronization circuit does not render the offsite sources or DGs inoperable but may prevent the ability to perform required SRs. The frequencies for performing SR 3.8.1.3, SR 3.8.1.8, and SR 3.8.1.16 are controlled by the Surveillance Frequency Control Program, but SR 3.8.1.3 is performed much more frequently than SR 3.8.1.8 and SR 3.8.1.16. Therefore, Susquehanna considered the effect of being unable to perform SR 3.8.1.3 for a DG due to an inoperable manual synchronization circuit.

3.1 Analysis of Completion Time

SSES has four required DGs and SR 3.8.1.3 is typically performed once per week on successive DGs such that each of the required DGs are typically tested once every 28 days (Note: the current Frequency of SR 3.8.1.3 is 31 days). In order to perform the monthly DG runs currently required by SR 3.8.1.3, operators manually synchronize the DG to the power grid by turning the sync selector switch to the ON position. If, while performing the surveillance, the sync selector switch becomes inoperable in the ON position, it will not be possible to perform the surveillance for the remaining DGs until the switch is repaired (Note: since the DG is already synchronized to the grid, SR 3.8.1.3 can be performed for the synchronized DG and there is no impact to the ability of the offsite sources to provide power). Based on Susquehanna scheduling practices and the 25 percent allowance permitted by SR 3.0.2, the next performance of SR 3.8.1.3 would be required within 17.75 days after which the DG scheduled to be tested would be declared inoperable.

Based on this analysis, Susquehanna is proposing a 14 day Completion Time for an inoperable manual synchronization circuit.[3] This 14 day Completion Time accounts for slight variations in scheduling of SR 3.8.1.3 from month to month, the low risk associated with the condition, and the fact that no FSAR-evaluated accidents rely on the manual synchronization circuit. Because it is not possible to predict every potential set of circumstances requiring entry into proposed Condition H, the 14 day Completion Time is based on the risk-significance of the Condition, not the time to complete potential restoration actions.

[3] If Susquehanna performed SR 3.8.1.3 on each required DG at 31-day intervals instead of 28-day intervals, the TS would allow for up to 14.75 days before being required to declare the next DG inoperable. Thus, a 14 day Completion Time is proposed.

Further, the proposed Completion Time is consistent with the 14 day Completion Time for the similar situation of an inoperable Reactor Core Isolation Cooling (RCIC) system in LCO 3.5.3. Like the credited automatic power source transfer capability and the uncredited manual bus transfer capability, the High Pressure Coolant Injection (HPCI) system is credited in the accident analysis while the RCIC system is not credited. While the analytical basis for the 14 day Completion Times for HPCI and RCIC are different, the level of plant degradation provides a reasonable parallel to that for an inoperable sync selector switch. In both cases, the credited function (HPCI and automatic bus transfer) is unaffected when the uncredited capability (RCIC and manual synchronization) is lost. In both cases the analyzed accidents can still be mitigated. Accordingly, 14 days are provided to restore the system to an operable status, thereby preventing an unnecessary plant transient.

4. Regulatory Evaluation

4.1 Applicable Regulatory Requirements/Criteria

Title 10 Code of Federal Regulations (10 CFR) 50.36(c)(2)

Limiting conditions for operation 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. . . A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria:

(A) Criterion 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

(B) Criterion 2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(C) Criterion 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(D) Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Conclusion

10 CFR 50.36 sets the regulatory requirements for the content of TS as quoted above. 10 CFR 50.36(c)(2) requires, in part, that the TS contain LCOs, and that remedial actions are prescribed for when a nuclear power plant fails to meet an LCO. The proposed change would add an additional remedial action to take in the event that the LCO is not met; the remedial actions are not specified by the regulation. Therefore, 10 CFR 50.36(c)(2) will continue to be met.

General Design Criteria

Following approval of the proposed license amendment, SSES will maintain the ability to meet the applicable General Design Criteria (GDC) as described in FSAR Section 3.1.

GDC-5, Sharing of Structures, Systems, and Components

Structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units.

GDC-17, Electric Power Systems

An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all

onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

Conclusion

The change proposed to the TS will not impact any installed component at SSES, nor does it alter the manner in which installed components are operated. Rather, the proposed change increases the amount of time the plant is allowed to operate with the manual synchronization circuit inoperable. During the time that the manual synchronization circuit is inoperable, the automatic transfer functions of all Class 1E AC sources remain unaffected; i.e., in the event of an accident the DGs will start and all safety-related loads will be transferred to them. Thus, the assumptions in the accident analyses found in Chapter 15 of the FSAR remain valid. Therefore, the criteria above and as described in the SSES FSAR continue to be met.

4.2 No Significant Hazards Considerations Analysis

In accordance with the requirements of 10 CFR 50.90, Susquehanna Nuclear, LLC (Susquehanna), requests an amendment to the Technical Specifications (TS) for the Susquehanna Steam Electric Station (SSES), Units 1 and 2. The proposed amendment would create a new TS Action for an inoperable manual synchronization circuit requiring restoration within 14 days. The proposed amendment is necessary to reduce the potential for an unnecessary dual unit shutdown. Based on the configuration of the AC power sources at SSES, an inoperable synchronization circuit currently results in entry into Limiting Condition for Operation (LCO) 3.0.3 for both units, which is not commensurate with the risk associated with an inoperable manual synchronization circuit.

Susquehanna has evaluated the proposed amendment against the standards in 10 CFR 50.92 and has determined that the operation of the SSES in accordance with the proposed amendment presents no significant hazards. Susquehanna's evaluation against each of the criteria in 10 CFR 50.92 follows.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed change will create a new Action (i.e, Condition, Required Action, and Completion Time) for an inoperable manual synchronization circuit in LCO 3.8.1, "AC Sources - Operating." The proposed change does not modify any structures, systems, or components (SSCs) installed at SSES, nor does it alter the manner in which any SSCs are operated. Thus, the capability of performing the design functions of the Class 1E AC power systems, and the SSCs which receive power from the Class 1E AC power systems, is not affected. Inoperability of the manual synchronization circuit does not impact the automatic transfer capabilities of the Class 1E AC power systems at SSES. The Diesel Generators retain their ability to automatically start and load in the event of an accident during the period in which the manual synchronization circuit is inoperable. The manual synchronization circuit is not assumed to initiate or credited to mitigate any accident previously evaluated. As a result, the proposed change does not affect the probability of an accident previously evaluated.

   The proposed change provides a 14 day Completion Time for an inoperable manual synchronization circuit in lieu of declaring an offsite power source or diesel generator inoperable, which requires restoration within 72 hours. The manual synchronization circuit is not credited in any accident previously evaluated and the consequences of an accident during the extended Completion Time are no different from the consequences of an accident during the current Completion Time.

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

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

   Response: No

   The proposed change will create a new Action for an inoperable manual synchronization circuit in LCO 3.8.1. The change does not involve a physical alteration of the plant (i.e., no different SSCs will be installed) or a change in the methods governing normal plant operations. The manual synchronization circuit is not credited in the analysis of any accident previously evaluated but may be used in the post-accident recovery from an accident in order to power components from offsite power instead of onsite emergency power. The proposed change does not create any new credible failure mechanisms of the manual synchronization circuit or of the automatic transfer capabilities of the Class 1E AC power systems. As such,

the proposed change does not introduce new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing basis.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No

The proposed change will create a new Action for an inoperable manual synchronization circuit in LCO 3.8.1. The proposed change does not alter the manner in which safety limits, limiting safety settings, or limiting conditions for operation are determined. The safety analysis assumptions and acceptance criteria are not affected by this change.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above evaluation, Susquehanna concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5. Environmental Consideration

Susquehanna has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment 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 amendment.

6. References

1. NRC NUREG-1433, "Standard Technical Specifications General Electric BWR/4 Plants," Revision 4, Volumes 1 and 2, dated April 2012 (ADAMS Accession Nos. ML12104A192 and ML12104A193).

2. NRC Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, dated August 1977 (ADAMS Accession No. ML12216A011).

3. Susquehanna letter to NRC, "Licensee Event Report 50-387/2013-001-01 (PLA-7082)," dated November 4, 2013 (ADAMS Accession No. ML13309A632).

4. Susquehanna letter to NRC, "Licensee Event Report 50-387(388)/2016-016-00 (PLA-7567)," dated January 12, 2017 (ADAMS Accession No. ML17012A334).

Enclosure 2 of PLA-7842

Marked-Up Technical Specification Pages

Revised Technical Specifications Pages

Unit 1 TS Pages
3.8-1, 3.8-2, 3.8-3, 3.8-4, 3.8-5, 3.8-6, 3.8-7, 3.8-8, 3.8-9,
3.8-10, 3.8-11, 3.8-12, 3.8-13, 3.8-14, 3.8-15, and 3.8-16

Unit 2 TS Pages
3.8-1, 3.8-2, 3.8-3, 3.8-4, 3.8-5, 3.8-6, 3.8-7, 3.8-8, 3.8-9, 3.8-10,
3.8-11, 3.8-12, 3.8-13, 3.8-14, 3.8-15, 3.8-16, 3.8-17, and 3.8-18

3.8 Electrical Power Systems

3.8.1 AC Sources-Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Four diesel generators (DGs).

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------

1. LCO 3.0.4.b is not applicable to DGs.

2. When an OPERABLE diesel generator is placed in an inoperable status solely for the purpose of alignment of DG E to or from the Class 1E distribution system, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided both offsite circuits are OPERABLE and capable of supplying the affected 4.16 kV ESS Bus.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND A.2 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable. AND	1 hour AND Once per 8 hours thereafter 24 hours from discovery of no offsite power to one 4.16 kV ESS bus concurrent with inoperability of redundant required feature(s). (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Restore offsite circuit to OPERABLE status.	72 hours
B. One required DG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE offsite circuits. AND B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable. AND	1 hour AND Once per 8 hours thereafter 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure. OR B.3.2 Perform SR 3.8.1.7 for OPERABLE DGs. AND B.4 Restore required DG to OPERABLE status.	24 hours 24 hours OR 24 hours prior to entering Condition B 72 hours
C. Two offsite circuits inoperable.	C.1 Restore one offsite circuit to OPERABLE status.	24 hours
D. One offsite circuit inoperable. AND One required DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems-Operating," when Condition D is entered with no AC power source to any 4.16 kV ESS bus. ---------- D.1 Restore offsite circuit to OPERABLE status. OR D.2 Restore required DG to OPERABLE status.	 12 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two or more required DGs inoperable.	E.1 Restore at least three required DGs to OPERABLE status.	2 hours
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours
G. One or more offsite circuits and two or more required DGs inoperable. OR One required DG and two offsite circuits inoperable.	G.1 Enter LCO 3.0.3.	Immediately
H. Manual synchronization circuit inoperable.	H.1 Restore manual synchronization circuit to OPERABLE status.	14 days

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Four DGs are required and a DG is only considered OPERABLE when the DG is aligned to the Class 1E distribution system. DG Surveillance Requirements have been modified to integrate the necessary testing to demonstrate the availability of DG E and ensure its OPERABILITY when substituted for any other DG. If the DG Surveillance Requirements, as modified by the associated Notes, are met and performed, DG E can be considered available and OPERABLE when substituted for any other DG after performance of SR 3.8.1.3 and SR 3.8.1.7.

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	Not Used.	

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. DG loading may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.7. 5. DG E, when not aligned to the Class 1 E distribution system, may satisfy this SR using the test facility. 6. A single test will satisfy this Surveillance for both units if synchronization is to the 4.16 kV ESS bus for Unit 1 for one periodic test and synchronization is to the 4.16 kV ESS bus for Unit 2 for the next periodic test. However, if it is not possible to perform the test on Unit 2 or test performance is not required per SR 3.8.2.1, then the test shall be performed synchronized to the 4.16 kV ESS bus for Unit 1. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3600 kW and ≤ 4000 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each engine mounted day tank fuel oil level is ≥ 420 gallons for DG A-D and ≥ 425 gallons for DG E.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each engine mounted day tank.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tanks to each engine mounted tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	----------NOTE---------- The automatic transfer of the unit power supply shall not be performed in MODE 1 or 2. ---------- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.9	----------NOTE---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 4.5 seconds following load rejection, the voltage is ≥ 3760 V and ≤ 4560 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; and c. Within 6 seconds following load rejection, the frequency is ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.10	----------NOTES---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG does not trip and voltage is maintained ≤ 4560 V during and following a load rejection of ≥ 4000 kW.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.11 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2, or 3. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from 4.16 kV ESS buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through individual load timers, 3. maintains steady state voltage ≥ 4000 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 59.3 Hz and ≤ 60.5 Hz, and 5. supplies permanently connected loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR for both units by performance of SR 3.8.1.12.a, b and c using the test facility to simulate a 4.16 kV ESS bus. SR 3.8.1.12.d and e may be satisfied with either the normally aligned DG or DG E aligned to the Class 1E distribution system. ---------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal, each DG auto-starts from standby condition and: a. In ≤ 10 seconds after auto-start achieves voltage ≥ 3793 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; b. In ≤ 10 seconds after auto-start achieves frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains frequency ≥ 59.3 Hz and ≤ 60.5 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the individual load timers from the offsite power system.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.13	----------NOTES---------- 1. A single test at the specified Frequency will satisfy this Surveillance for both units. 2. DG E, when not aligned to the Class 1 E distribution system, may satisfy this SR for both units by using a simulated ECCS initiation signal. ---------- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the 4.16 kV ESS bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current; and c. Low lube oil pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load ranges do not invalidate this test. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. 3. DG E, when not aligned to the Class 1E distribution system may satisfy this SR by using the test facility. ---------- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4400 kW and ≤ 4700 kW for DGs A through D and ≥ 5000 kW and ≤ 5500 kW for DG E; and b. For the remaining hours of the test loaded ≥ 3600 kW and ≤ 4000 kW for DGs A through D and ≥ 4500 kW and ≤ 5000 kW for DG E.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3800 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. ----------	
	Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

3.8 Electrical Power Systems

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	----------NOTES---------- This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. ---------- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	----------NOTES---------- This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. ---------- Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	----------NOTE---------- Load timers associated with equipment that has automatic initiation capability disabled are not required to be OPERABLE. ---------- Verify each sequenced load is within required limits of the design interval.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.19 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2 or 3. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through individual load timers, 3. achieves steady state voltage ≥ 4000 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 59.3 Hz and ≤ 60.5 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

3.8 Electrical Power Systems

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR does not have to be performed with DG E substituted for any DG. --- Verify, when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources-Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Four diesel generators (DGs).

c. Two qualified circuits between the offsite transmission network and the Unit 1 onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.7, Distribution Systems - Operating; and

d. The DG(s) capable of supplying the Unit 1 onsite Class 1E electrical power distribution subsystem(s) required by LCO 3.8.7.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------

1. LCO 3.0.4.b is not applicable to DGs.

2. When an OPERABLE diesel generator is placed in an inoperable status solely for the purpose of alignment of DG E to or from the Class 1E distribution system, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided both offsite circuits are OPERABLE and capable of supplying the affected 4.16 kV ESS Bus.

3. When Unit 1 is in Modes 4 or 5 and an OPERABLE Unit 1 4160 V subsystem is placed in an inoperable status solely for the purpose of performing bus maintenance with both offsite circuits and four diesel generators otherwise OPERABLE, only entry into LCO 3.8.7 Condition C is required.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND	1 hour AND Once per 8 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	AND	
	A.2 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one 4.16 kV ESS bus concurrent with inoperability of redundant required feature(s).
	AND	
	A.3 Restore offsite circuit to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required DG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE offsite circuits.	1 hour AND Once per 8 hours thereafter
	AND	
	B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	
	B.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure. OR	24 hours
	B.3.2 Perform SR 3.8.1.7 for OPERABLE DGs.	24 hours OR 24 hours prior to entering Condition B
	AND	
	B.4 Restore required DG to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two offsite circuits inoperable.	C.1 Restore one offsite circuit to OPERABLE status.	24 hours
D. One offsite circuit inoperable. AND One required DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems-Operating," when Condition D is entered with no AC power source to any 4.16 kV ESS bus. ---------- D.1 Restore offsite circuit to OPERABLE status. OR D.2 Restore required DG to OPERABLE status.	 12 hours 12 hours
E. Two or more required DGs inoperable.	E.1 Restore at least 3 required DGs to OPERABLE status.	2 hours
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One or more offsite circuits and two or more required DGs inoperable. OR One required DG and two offsite circuits inoperable.	G.1 Enter LCO 3.0.3.	Immediately
H. Manual synchronization circuit inoperable.	H.1 Restore manual synchronization circuit to OPERABLE status.	14 days

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Four DGs are required and a DG is only considered OPERABLE when the DG is aligned to the Class 1E distribution system. DG Surveillance Requirements have been modified to integrate the necessary testing to demonstrate the availability of DG E and ensure its OPERABILITY when substituted for any other DG. If the DG Surveillance Requirements, as modified by the associated Notes, are met and performed, DG E can be considered available and OPERABLE when substituted for any other DG after performance of SR 3.8.1.3 and SR 3.8.1.7.

2. SR 3.8.1.21 establishes Surveillance Requirements for the Unit 1 AC sources required to support Unit 2.

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	Not Used.	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. DG loading may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.7. 5. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR using the test facility. 6. A single test will satisfy this Surveillance for both units if synchronization is to the 4.16 kV ESS bus for Unit 2 for one periodic test and synchronization is to the 4.16 kV ESS bus for Unit 1 for the next periodic test. However, if it is not possible to perform the test on Unit 1 or test performance is not required per SR 3.8.2.1, then the test shall be performed synchronized to the 4.16 kV ESS bus for Unit 2. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3600 kW and ≤ 4000 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.4	Verify each engine mounted day tank fuel oil level is ≥ 420 gallons for DG A-D and ≥ 425 gallons for DG E.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each engine mounted day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tanks to each engine mounted tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	----------NOTE---------- The automatic transfer of unit power supply shall not be performed in MODE 1 or 2. ---------- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	----------NOTE---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 4.5 seconds following load rejection, the voltage is ≥ 3760 V and ≤ 4560 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; and c. Within 6 seconds following load rejection, the frequency is ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.10 .	----------NOTE---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG does not trip and voltage is maintained ≤ 4560 V during and following a load rejection of ≥ 4000 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.11 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2 or 3. 3. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from 4.16 kV ESS buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through individual load timers, 3. maintains steady state voltage ≥ 4000 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 59.3 Hz and ≤ 60.5 Hz, and 5. supplies permanently connected loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.12 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR for both units by performance of SR 3.8.1.12.a, b and c using the test facility to simulate a 4.16 kV ESS bus. SR 3.8.1.12.d and e may be satisfied with either the normally aligned DG or DG E aligned to the Class 1E distribution system. ---------- Verify, on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal, each DG auto-starts from standby condition and: a. In ≤ 10 seconds after auto-start achieves voltage ≥ 3793 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; b. In ≤ 10 seconds after auto-start achieves frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains frequency ≥ 59.3 Hz and ≤ 60.5 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the individual load timers from the offsite power system.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.13 ----------NOTES---------- 1. A single test at the specified Frequency will satisfy this Surveillance for both units. 2. DG E when not aligned to the Class 1E distribution system may satisfy this SR by using a simulated ECCS initiation signal. ---------- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the 4.16 kV ESS bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current; and c. Low lube oil pressure.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.14 ----------NOTES---------- 1. Momentary transients outside the load ranges do not invalidate this test. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. 3. DG E when not aligned to the Class 1E distribution system may satisfy this SR using the test facility. ---------- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4400 kW and ≤ 4700 kW for DGs A through D and ≥ 5000 kW and ≤ 5500 kW for DG E; and b. For the remaining hours of the test loaded ≥ 3600 kW and ≤ 4000 kW for DGs A through D and ≥ 4500 kW and ≤ 5000 kW for DG E.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.15 ----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3800 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. 3. A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	----------NOTE---------- This SR shall be performed for each DG on a rotational basis and for each 4.16 kV ESS bus at the specified FREQUENCY. ----------	
	Verify each DG:	In accordance with the Surveillance Frequency Control Program
	a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;	
	b. Transfers loads to offsite power source; and	
	c. Returns to ready-to-load operation.	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	----------NOTES---------- This SR shall be performed for each DG on a rotational basis and for each 4.16 kV ESS bus at the specified FREQUENCY. ---------- Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	----------NOTE---------- Load timers associated with equipment that has automatic initiation capability disabled are not required to be OPERABLE. ---------- Verify each sequenced load is within required limits of the design interval.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.19 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2 or 3. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through individual load timers, 3. achieves steady state voltage ≥ 4000 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 59.3 Hz and ≤ 60.5 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR must be met, but does not have to be performed with DG E substituted for any DG. ---------- Verify, when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8 and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.21	----------NOTE---------- When Unit 1 is in MODE 4 or 5, or moving irradiated fuel assemblies in the secondary containment, the Note to Unit 1 SR 3.8.2.1 is applicable. ---------- For required Unit 1 AC sources, the following SRs of Unit 1 Specification 3.8.1 are applicable: SR 3.8.1.1; SR 3.8.1.10; SR 3.8.1.3; SR 3.8.1.11; SR 3.8.1.4; SR 3.8.1.14; SR 3.8.1.5; SR 3.8.1.15; SR 3.8.1.6; SR 3.8.1.16; SR 3.8.1.7; SR 3.8.1.18; SR 3.8.1.9; SR 3.8.1.19; and SR 3.8.1.8 (when more than one Unit 1 offsite circuit is required)	In accordance with applicable SRs

Enclosure 3 of PLA-7842

Revised (Clean) Technical Specification Pages

Revised Technical Specifications Pages

Unit 1 TS Pages
3.8-4, 3.8-5, 3.8-6, 3.8-7, 3.8-8, 3.8-9, 3.8-10, and 3.8-11

Unit 2 TS Page
3.8-5

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Two or more required DGs inoperable.	E.1	Restore at least three required DGs to OPERABLE status.	2 hours
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 AND F.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours
G. One or more offsite circuits and two or more required DGs inoperable. OR One required DG and two offsite circuits inoperable.	G.1	Enter LCO 3.0.3.	Immediately
H. Manual synchronization circuit inoperable.	H.1	Restore manual synchronization circuit to OPERABLE status.	14 days

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Four DGs are required and a DG is only considered OPERABLE when the DG is aligned to the Class 1E distribution system. DG Surveillance Requirements have been modified to integrate the necessary testing to demonstrate the availability of DG E and ensure its OPERABILITY when substituted for any other DG. If the DG Surveillance Requirements, as modified by the associated Notes, are met and performed, DG E can be considered available and OPERABLE when substituted for any other DG after performance of SR 3.8.1.3 and SR 3.8.1.7.

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	Not Used.	

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. DG loading may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.7. 5. DG E, when not aligned to the Class 1 E distribution system, may satisfy this SR using the test facility. 6. A single test will satisfy this Surveillance for both units if synchronization is to the 4.16 kV ESS bus for Unit 1 for one periodic test and synchronization is to the 4.16 kV ESS bus for Unit 2 for the next periodic test. However, if it is not possible to perform the test on Unit 2 or test performance is not required per SR 3.8.2.1, then the test shall be performed synchronized to the 4.16 kV ESS bus for Unit 1. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 3600 kW and ≤ 4000 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each engine mounted day tank fuel oil level is ≥ 420 gallons for DG A-D and ≥ 425 gallons for DG E.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each engine mounted day tank.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tanks to each engine mounted tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ 3793 V and frequency ≥ 58.8, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V and frequency ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	----------NOTE---------- The automatic transfer of the unit power supply shall not be performed in MODE 1 or 2. ---------- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	----------NOTE---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 64.5 Hz; b. Within 4.5 seconds following load rejection, the voltage is ≥ 3760 V and ≤ 4560 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; and c. Within 6 seconds following load rejection, the frequency is ≥ 59.3 Hz and ≤ 60.5 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.10	----------NOTES---------- A single test at the specified Frequency will satisfy this Surveillance for both units. ---------- Verify each DG does not trip and voltage is maintained ≤ 4560 V during and following a load rejection of ≥ 4000 kW.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This SR shall be performed for each DG on a rotational test basis and for each 4.16 kV ESS bus at the specified FREQUENCY. 3. This Surveillance shall not be performed in MODE 1, 2, or 3. ----------	
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of 4.16 kV ESS buses; b. Load shedding from 4.16 kV ESS buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through individual load timers, 3. maintains steady state voltage ≥ 4000 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 59.3 Hz and ≤ 60.5 Hz, and 5. supplies permanently connected loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. DG E, when not aligned to the Class 1E distribution system, may satisfy this SR for both units by performance of SR 3.8.1.12.a, b and c using the test facility to simulate a 4.16 kV ESS bus. SR 3.8.1.12.d and e may be satisfied with either the normally aligned DG or DG E aligned to the Class 1E distribution system. ---------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal, each DG auto-starts from standby condition and: a. In ≤ 10 seconds after auto-start achieves voltage ≥ 3793 V, and after steady state conditions are reached, maintains voltage ≥ 4000 V and ≤ 4400 V; b. In ≤ 10 seconds after auto-start achieves frequency ≥ 58.8 Hz, and after steady state conditions are reached, maintains frequency ≥ 59.3 Hz and ≤ 60.5 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized or auto-connected through the individual load timers from the offsite power system.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	----------NOTES---------- 1. A single test at the specified Frequency will satisfy this Surveillance for both units. 2. DG E, when not aligned to the Class 1 E distribution system, may satisfy this SR for both units by using a simulated ECCS initiation signal. ---------- Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the 4.16 kV ESS bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current; and c. Low lube oil pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load ranges do not invalidate this test. 2. A single test at the specified Frequency will satisfy this Surveillance for both units. 3. DG E, when not aligned to the Class 1E distribution system may satisfy this SR by using the test facility. ---------- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4400 kW and ≤ 4700 kW for DGs A through D and ≥ 5000 kW and ≤ 5500 kW for DG E; and b. For the remaining hours of the test loaded ≥ 3600 kW and ≤ 4000 kW for DGs A through D and ≥ 4500 kW and ≤ 5000 kW for DG E.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One or more offsite circuits and two or more required DGs inoperable. OR One required DG and two offsite circuits inoperable.	G.1 Enter LCO 3.0.3.	Immediately
H. Manual synchronization circuit inoperable.	H.1 Restore manual synchronization circuit to OPERABLE status.	14 days

Enclosure 4 of PLA-7842

Marked-Up Technical Specification Bases Pages

Revised Technical Specifications Bases Pages

Unit 1 TS Bases Pages
3.8-7, 3.8-14, and 3.8-15

Unit 2 TS Bases Pages
3.8-7, 3.8-15, and 3.8-16

BASES

LCO (continued)

The manual synchronization circuit is used to synchronize an offsite source from the normal circuit to the alternate circuit, as tested by SR 3.8.1.8. The manual synchronization circuit is also used to synchronize a bus that is powered by a DG with an offsite power source on a restoration of offsite power, as tested by SR 3.8.1.16. An inoperable manual synchronization circuit does not render an offsite circuit or a DG inoperable.

The AC sources must be separate and independent (to the extent possible) of other AC sources. For the DGs, the separation and independence are complete. For the offsite AC sources, the separation and independence are to the extent practical. A circuit may be connected to more than one ESS bus, with automatic transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESS bus is required to have OPERABLE automatic transfer interlock mechanisms to each ESS bus to support OPERABILITY of that offsite circuit.

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 4 and 5 are covered in LCO 3.8.2, "AC Sources-Shutdown."

BASES

ACTIONS (continued)

E.1 (continued)

According to Regulatory Guide 1.93 (Ref. 7), with two or more DGs inoperable, operation may continue for a period that should not exceed 2 hours.

F.1 and F.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

H.1

The manual synchronization circuit is made up of a synchroscope, a bus differential voltmeter, and 37 synchronization selector switches ("sync selector switches"). Eight of the sync selector switches are for the DGs, 16 are for the primary and alternate supply of the 4.16 kV ESS Buses, and the remaining 13 switches are for the 13.8 kV Buses. All of the selector switches utilize the same synchronization bus; therefore, only one sync selector switch can be turned on at a time without blowing fuses. The sync selector switches are only utilized for manual transfers. The automatic transfers that occur between the 4.16 kV ESS Buses or the automatic start and load of the DG during a LOOP are not impacted by the failure of a sync selector switch.

When the manual synchronization circuit is inoperable, the manual transfer function of all Class 1E ESS Buses is eliminated and operators cannot perform surveillance testing on any bus. However, inoperability of the manual transfer function does not impact the ability of the DGs to start and load on demand, nor does it impact any of the automatic

BASES

ACTIONS (continued)

H.1 (continued)

transfer functions for the ESS buses. Thus, all DGs and ESS buses are available to perform their safety functions. Required Action H.1 is intended to require restoration of the manual synchronization circuit to an OPERABLE status in a timeframe commensurate with the safety significance of the condition.

The 14 day Completion Time takes into account the OPERABILITY of the automatic transfer functions of all Class 1E ESS Buses during the period of inoperability. Additionally, the 14 day Completion Time takes into account the capacity and capability of the AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during the period.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, GDC 18 (Ref. 9). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3), and Regulatory Guide 1.137 (Ref. 11), as addressed in the FSAR.

The Safety Analysis for Unit 2 assumes the OPERABILITY of some equipment that receives power from Unit 1 AC Sources. Therefore, Surveillance requirements are established for the Unit 1 onsite Class 1E AC electrical power distribution subsystem(s) required to support Unit 2 by LCO 3.8.7, Distribution Systems—Operating. The Unit 1 SRs required to support Unit 2 are identified in the Unit 2 Technical Specifications.

Where the SRs discussed herein specify voltage and frequency tolerances, the following summary is applicable. The minimum steady state output voltage of 4000 V represents the value that will allow the degraded voltage relays to reset after actuation. This value is based on the upper value of the degraded voltage relay reset voltage of 3938 V, representing 94.68% of 4160 V, plus the worst-case voltage drop from the DG to an associated 4.16 kV switchgear bus. The specified maximum steady state output voltage of 4400 V is equal to the maximum operating voltage specified for 4000 V. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages.

BASES

LCO (continued)

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

The manual synchronization circuit is used to synchronize an offsite source from the normal circuit to the alternate circuit, as tested by SR 3.8.1.8. The manual synchronization circuit is also used to synchronize a bus that is powered by a DG with an offsite power source on a restoration of offsite power, as tested by SR 3.8.1.16. An inoperable manual synchronization circuit does not render an offsite circuit or a DG inoperable.

The AC sources must be separate and independent (to the extent possible) of other AC sources. For the DGs, the separation and independence are complete. For the offsite AC sources, the separation and independence are to the extent practical. A circuit may be connected to more than one ESS bus, with automatic transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESS bus is required to have OPERABLE automatic transfer interlock mechanisms to each ESS bus to support OPERABILITY of that offsite circuit. If a Unit 1 – 4.16 kV bus is de-energized solely for the purpose of performing maintenance, automatic transfer interlock mechanisms for the de-energized bus are not required to be operable.

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 4 and 5 are covered in LCO 3.8.2, "AC Sources—Shutdown."

BASES

ACTIONS
(continued)

F.1 and F.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

H.1

The manual synchronization circuit is made up of a synchroscope, a bus differential voltmeter, and 37 synchronization selector switches ("sync selector switches"). Eight of the sync selector switches are for the DGs, 16 are for the primary and alternate supply of the 4.16 kV ESS Buses, and the remaining 13 switches are for the 13.8 kV Buses. All of the selector switches utilize the same synchronization bus; therefore, only one sync selector switch can be turned on at a time without blowing fuses. The sync selector switches are only utilized for manual transfers. The automatic transfers that occur between the 4.16 kV ESS Buses or the automatic start and load of the DG during a LOOP are not impacted by the failure of a sync selector switch.

When the manual synchronization circuit is inoperable, the manual transfer function of all Class 1E ESS Buses is eliminated and operators cannot perform surveillance testing on any bus. However, inoperability of the manual transfer function does not impact the ability of the DGs to start and load on demand, nor does it impact any of the automatic transfer functions for the ESS buses. Thus, all DGs and ESS buses are available to perform their safety functions. Required Action H.1 is intended to require restoration of the manual synchronization circuit to an OPERABLE status in a timeframe commensurate with the safety significance of the condition.

BASES

ACTIONS (continued)

H.1 (continued)

The 14 day Completion Time takes into account the OPERABILITY of the automatic transfer functions of all Class 1E ESS Buses during the period of inoperability. Additionally, the 14 day Completion Time takes into account the capacity and capability of the AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during the period.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, GDC 18 (Ref. 9). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3), and Regulatory Guide 1.137 (Ref. 11), as addressed in the FSAR.

The Safety Analysis for Unit 2 assumes the OPERABILITY of some equipment that receives power from Unit 1 AC Sources. Therefore, Surveillance requirements are established for the Unit 1 onsite Class 1E AC electrical power distribution subsystem(s) required to support Unit 2 by LCO 3.8.7, Distribution Systems-Operating. As Noted at the beginning of the SRs, SR 3.8.1.1 through SR 3.8.1.20 are applicable to the Unit 2 AC sources and SR 3.8.1.21 is applicable to the Unit 1 AC sources.

Where the SRs discussed herein specify voltage and frequency tolerances, the following summary is applicable. The minimum steady state output voltage of 4000 V represents the value that will allow the degraded voltage relays to reset after actuation. This value is based on the upper value of the degraded voltage relay reset voltage of 3938 V, representing 94.68% of 4160 V, plus the worst-case voltage drop from the DG to an associated 4.16 kV switchgear bus. The specified maximum steady state output voltage of 4400 V is equal to the maximum operating voltage specified for 4000 V. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages.

The minimum frequency value is derived from the recommendations found in Regulatory Guide 1.9 (Ref. 3). The allowable steady state frequency for all DGs is 60 Hz +/-2%. DG E is also required to maintain a frequency of not less than 57 Hz during transient conditions. To provide additional margin for DG E to meet the 57 Hz criteria, the 2% margin allowed for steady state frequency is further reduced to 1%, or