Britt T. McKinney
Vice President-Nuclear Site Operations

PPL Susquehanna, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3149 Fax 570.542.1504
btmckinney@pplweb.com

MAR 18 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 240 TO
LICENSE NPF-22: REVISION TO TECHNICAL
SPECIFICATIONS 3.3.8.1 AND 3.8.7
PLA-5869 **Docket No. 50-388**

In accordance with the provisions of 10 CFR 50.90, PPL Susquehanna, LLC is submitting a request for an amendment to the Technical Specifications for Susquehanna SSES Unit 2. The proposed changes to the Unit 2 Technical Specification Sections 3.3.8.1 and 3.8.7 are as follows:

(a) TS Section 3.3.8.1 Condition A is revised to clarify that this Condition applies to inoperable instrumentation other than during the performance of SR 3.8.1.19 (LOCA/LOOP testing) on Unit 1. TS Bases Section B3.3.8.1 is also revised to clarify that this condition is applicable to both Unit 1 and Unit 2 Loss of Power (LOP) instrumentation.

(b) New Condition B to TS 3.3.8.1 is added to allow the LOP instrumentation for two (2) Unit 1 4.16 kV ESS buses in the same Division to be inoperable for up to 8 hours for the performance of SR 3.8.1.19 on Unit 1. Existing TS 3.3.8.1 Conditions B through D are renumbered due to the addition of new Condition B. Renumbered TS 3.3.8.1 Condition E is revised to include new Condition B. TS Bases Section B3.3.8.1 is also revised.

(c) TS 3.8.7 Condition C is revised to eliminate "or more" and the plural to subsystems such that the condition would read: "One Unit 1 AC electrical power distribution subsystem inoperable."

This change is consistent with NUREG-1433, "Standard Technical Specifications for General Electric Plants (BWR/4)," Revision 2.

A001

(d) TS 3.8.7 new Condition D is added for two Unit 1 AC electrical power distribution subsystems inoperable. However, it would be restricted to a single Unit 1 Division (which comprises two subsystems) solely for performing testing required by Unit 1 TS SR 3.8.1.19. This will impose an 8-hour Completion Time for restoration of at least one of the two Unit 1 AC distribution subsystems. Existing Conditions D through I are renumbered due to the addition of new Condition D. Renumbered TS 3.8.7 Condition E is revised to include new Condition D. TS Bases Section B3.8.7 is also revised.

The request provides changes to Unit 2 TS 3.8.7, "Distribution Systems—Operating," consistent with an allowance that was approved in SSES Unit 2 Amendment No. 148, but removed in conversion to Improved TS in Unit 2 Amendment No. 151.

These proposed changes have been reviewed by the Plant Operations Review Committee and by the Susquehanna Review Committee.

The Enclosure to this letter provides a description of the proposed change. Attachment 1 provides the existing Technical Specification pages marked-up to show the proposed change. Attachment 2 provides the corresponding TS Bases "markup" pages. No new regulatory commitments are made herein.

We request approval of the proposed License Amendment by January 01, 2006, with the amendment being implemented within 60 days following approval.

In accordance with 10 CFR 50.91(b), PPL Susquehanna, LLC is providing the Commonwealth of Pennsylvania with a copy of this proposed License Amendment request.

If you have any questions regarding this submittal, please contact Mr. C. T. Coddington at (610) 774-4019.

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

Executed on: 3/18/05

B. T. McKinney

Enclosure:
PPL Susquehanna Evaluation of the Proposed Changes

Attachments:
Attachment 1 - Proposed Technical Specification Changes,
(Mark-ups)
Attachment 2 – Proposed Technical Specification Bases Changes,
(Mark-ups provided for information)

cc: NRC Region I
Mr. A. J. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Project Manager
Mr. R. Janati, DEP/BRP

Enclosure to PLA-5869

PPL Susquehanna, LLC Evaluation for Proposed Change to Technical Specifications 3.3.8.1 and 3.8.7

PPL EVALUATION

1.0 DESCRIPTION

This is a request to amend Operating License NPF-22 for PPL Susquehanna, LLC (PPL), Susquehanna Steam Electric Station Unit 2 (SSES).

This amendment request proposes several changes. These changes are as follows:

(1) Unit 2 TS Section 3.3.8.1 Condition A is revised to clarify that this Condition applies to inoperable instrumentation other than during the performance of SR 3.8.1.19 (LOCA/LOOP testing) on Unit 1. The corresponding TS Bases section is revised to clarify that this condition is applicable to both Unit 1 and Unit 2 Loss of Power (LOP) instrumentation.

(2) New Condition B to Unit 2 TS 3.3.8.1 is added to allow the LOP instrumentation for two (2) Unit 1 4.16 kV ESS buses in the same Division to be inoperable for up to 8 hours for the performance of SR 3.8.1.19 on Unit 1. Existing TS 3.3.8.1 Conditions B through D are renumbered due to the addition of new Condition B. Renumbered TS 3.3.8.1 Condition E is revised to include new Condition B. TS Bases Section B3.3.8.1 is also revised.

(3) Unit 2 TS 3.8.7 Condition C is revised to eliminate "or more" and the plural to subsystems such that the condition would read: "One Unit 1 AC electrical power distribution subsystem inoperable."

(4) Unit 2 TS 3.8.7 new Condition D is added for two Unit 1 AC electrical power distribution subsystems inoperable. However, it would be restricted to a single Unit 1 Division (which comprises two subsystems) solely for performing testing required by Unit 1 TS SR 3.8.1.19. This will impose an 8-hour Completion Time for restoration of at least one of the two Unit 1 AC distribution subsystems. Existing Conditions D through I are renumbered due to the addition of new Condition D. Renumbered TS 3.8.7 Condition E is revised to include new Condition D. TS Bases Section B3.8.7 is also revised.

These changes are requested to be approved by January 1, 2006 in order to support surveillance testing on Unit 1 during the spring 2006 refueling outage.

2.0 PROPOSED CHANGE

The proposed changes are:

(1) Unit 2 TS Section 3.3.8.1 Condition A is revised to read as follows, "One or more required channels inoperable for reasons other than Condition B. Also, TS Bases Section B3.3.8.1 Condition A is revised to clarify that Condition A applies to the LOP instrumentation associated with both the Unit 1 and Unit 2 4.16 kV ESS buses since both the Unit 1 and Unit 2 buses are required to support Unit 2 operation.

(2) Unit 2 TS 3.3.8.1 is revised to add new Condition B and the subsequent conditions have been renumbered. Also TS Bases Section B 3.3.8.1 has been revised. New Condition B reads as follows:

B. One or more required channels associated with Unit 1 4.16 kV ESS Buses in one Division inoperable for performance of Unit 1 SR 3.8.1.19	B.1 Restore the inoperable channels	8 hours

(3) Unit 2 TS 3.8.7 Condition C is revised to eliminate "or more" and the plural to subsystem"s" such that the condition would read: "One Unit 1 AC electrical power distribution subsystem inoperable."

(4) Unit 2 TS 3.8.7 is revised to add a new Condition D and to renumber the subsequent conditions. TS Bases Section B3.8.7 is also revised. The new Condition D reads as follows:

D. Two Unit 1 AC electrical power distribution subsystems on one Division inoperable for performance of Unit 1 SR 3.8.1.19	D.1 restore at least one Unit 1 AC electrical power distribution subsystem to OPERABLE status	8 hours

Associated TS Bases changes that reflect the intent of the TS changes are also provided for information in an Attachment.

3.0 BACKGROUND

The onsite Class 1E AC and DC electrical power distribution system is divided into redundant and independent AC electrical power distribution subsystems and redundant independent DC electrical power distribution subsystems. The safety-related AC distribution system consists of four 4.16 kV Engineered Safeguards System (ESS) buses each having a primary and alternate offsite source of power as well as an onsite diesel generator (DG) source that supports one 4.16 kV ESS bus in each unit.

Portions of the Unit 1 AC Distribution System are shared between both units, since the common equipment [Emergency Service Water (ESW), Standby Gas Treatment System (SGTS), Control Structure HVAC (CREOAS), etc.] is energized only from the Unit 1 AC Distribution System. As such, some components that are required by Unit 2 receive power through Unit 1 electrical power distribution subsystems. The Unit 1 electrical power distribution subsystems needed to support the required Unit 2 equipment are addressed in Unit 2 LCO 3.8.7, Table 3.8.7-1. Refer to SSES Final Safety Analysis Report (FSAR) Sections 8.1.3 and 8.3.1 for further details and discussion, including references to applicable drawings.

Unit 2 TS 3.8.7 Condition C provides for "one or more" inoperable Unit 1 subsystems and allows a 72-hour Completion Time for restoration. However, the associated Required Action, Bases, and historical licensing basis documentation (References 1 and 2) do not currently provide the allowance for more than one inoperable Unit 1 subsystem when applying the 72-hour Completion Time. As such, Unit 2 TS 3.8.7 Condition C has been administratively restricted to allow entry only when a single Unit 1 required subsystem is inoperable.

Allowing two Unit 1 4.16 kV ESS buses in one division and associated Loss of Power instrumentation to be out of service for up to eight hours to perform LOCA/LOOP testing, negates the need to enter Technical Specification 3.0.3 to perform the required surveillance testing.

(1) Proposed Change to TS Section 3.3.8.1 Condition A:

TS Section 3.3.8.1 Condition A is revised to clarify that this Condition applies to inoperable instrumentation other than during the performance of SR 3.8.1.19 on Unit 1. Also, TS Bases Section B3.3.8.1, Condition A is revised to state that it is applicable to the LOP instrumentation on the 4.16 kV ESS buses for both Units since both the Unit 1 and Unit 2 4.16 kV ESS buses are required to support operation of Unit 2.

(2) Proposed Change to TS 3.3.8.1:

The new Condition B in TS 3.3.8.1 allows all the LOP instrumentation on two 4.16 kV ESS buses in the same Division to be inoperable for up to 8 hours solely for the performance of Unit 1 SR 3.8.1.19. During Unit 1 refueling outages, performance of Unit 1 TS SR 3.8.1.19 (i.e., testing system response to a loss of offsite power signal in conjunction with an ECCS initiation signal) is required. This surveillance is performed for each Division individually such that during performance of the surveillance the LOP instrumentation on only one division of buses becomes inoperable because the instrumentation is inhibited from performing its function in order to facilitate ECCS response timing. During these tests, Unit 2 is normally operating at full power. The Unit 2 TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," requires Unit 2 to have the Unit 1 LOP instrumentation operable in order to support certain common loads. The Unit 1 testing described above results in inoperability of the LOP instrumentation associated with the Unit 1 4.16 kV ESS buses. Since the common 4.16 kV loads can not be supplied by the Unit 2 AC distribution system, the corresponding Unit 2 surveillance test does not similarly affect Unit 1 operations or compliance with Unit 1 TS 3.3.8.1.

The performance of Unit 1 SR 3.8.1.19 (i.e., testing system response to a loss of offsite power signal in conjunction with an ECCS initiation signal) will cause the LOP instrumentation on the Unit 1 4.16 kV buses to be inoperable in one Unit 1 Division (two 4.16 kV ESS buses) at a time. The remaining LOP instrumentation required by Unit 2 TS 3.3.8.1 is sufficient to support the assumed accident mitigation and subsequent safe shutdown of Unit 2.

Prior to the conversion to the Improved Technical Specifications (ITS), if the LOP instrumentation was not returned to operable status within 1 hour, the 4.16 kV ESS bus would be required to be declared inoperable. The ESS buses had an allowance to be inoperable for up to 8 hours during the performance of the surveillance testing. Therefore, not restoring the LOP instrumentation within 1 hour had no affect on Unit 2 operation since the buses were already inoperable due to the surveillance testing. After the conversion to ITS, not restoring LOP instrumentation to operable status within 1 hour would result in the associated diesel generator to be declared inoperable. The extension for LOP instrumentation to be inoperable in order to perform surveillance testing on Unit 1 is necessary in order to complete the surveillance testing in an effective and safe manner and to avoid entering LCO 3.0.3 unnecessarily.

See also proposed change to TS 3.8.7 (proposed change 4) below.

(3) Proposed Change to TS 3.8.7 Condition C:

Unit 2 TS 3.8.7 Condition C provides for "one or more" inoperable Unit 1 subsystems and allows a 72-hour Completion Time for restoration. However, the associated Required Action, Bases, and historical licensing basis documentation (References 1

and 2) do not currently allow for more than one inoperable Unit 1 subsystem when applying the 72-hour Completion Time. As such, Unit 2 TS 3.8.7 Action C has been restricted to allow entry only when a single Unit 1 required subsystem is inoperable.

(4) Proposed Change to TS 3.8.7:

During Unit 1 refueling outages, performance of Unit 1 TS SR 3.8.1.19 (i.e., testing system response to a loss of offsite power signal in conjunction with an ECCS initiation signal) is required. This surveillance is performed for each Division of 4.16 kV ESS buses such that each performance momentarily deenergizes either the Unit 1 Division I or the Unit 1 Division II load groups. During these tests, Unit 2 is normally operating at full power. The Unit 2 TS 3.8.7, "Distribution Systems -- Operating," requires Unit 2 to have various Unit 1 AC subsystems energized and operable, as listed in Unit 2 TS Table 3.8.7-1, to support certain common loads. The Unit 1 testing described above results in multiple common subsystems required by Unit 2 TS Table 3.8.7-1 to be momentarily inoperable. Since the common loads on the 4.16kV ESS buses can not be supplied by the Unit 2 AC distribution system, the corresponding Unit 2 surveillance test does not similarly affect Unit 1 operations or compliance with Unit 1 TS 3.8.7.

The pre-ITS Unit 2 SSES Technical Specifications included an allowance for this testing which avoided entering LCO 3.0.3 on Unit 2. The conversion to Improved TS in Unit 2 Amendment No. 151 eliminated this allowance because ITS Unit 2 TS 3.8.7 Condition C would allow more than one Unit 1 4.16 kV ESS bus to be inoperable for up to 72 hours. However, having more than one 4.16 kV bus inoperable for 72 hours would require entry into TS 3.0.3. SSES Unit 2 Amendment No. 148 provided 8 hours (TS 3.8.3.1, Action J, applicable at the time of this Amendment) for testing of Unit 1 response to a loss of offsite power signal in conjunction with an ECCS initiation signal. This 8-hour action allowed two subsystems (referred to as "load groups" prior to Amendment 151) in one Division of the Unit 1 AC electrical power distribution system to be deenergized for the required Unit 1 testing without causing actions to be taken on Unit 2. The PPL submittals associated with Unit 2 Amendment No. 148 also responded to NRC questions regarding the SSES electrical power distribution design associated with the required testing in response to a loss of offsite power signal in conjunction with an ECCS initiation signal which would start the associated common loads.

The performance of Unit 1 SR 3.8.1.19 (i.e., testing system response to a loss of offsite power signal in conjunction with an ECCS initiation signal) will momentarily deenergize one Unit 1 Division (2 subsystems) of AC electrical power distribution subsystems. The remaining AC electrical power distribution subsystems required by Unit 2 TS 3.8.7 are sufficient to support the assumed accident mitigation and subsequent safe shutdown of Unit 2. This was explicitly acknowledged in the NRC Safety Evaluation dated April 10, 1998 for SSES Unit 2 Amendment 148 (Reference 1), and is therefore acceptable to reinstate in the Technical Specifications.

4.0 TECHNICAL ANALYSIS

(1) Proposed Change to TS Bases Section B3.3.8.1 Condition A:

TS Section 3.3.8.1 Condition A is revised to clarify that this Condition applies to inoperable instrumentation other than during the performance of SR 3.8.1.19 on Unit 1. Also, TS Bases Section B3.3.8.1 Condition A is to be clarified to state that it is applicable to the LOP instrumentation on the 4.16 kV ESS buses for both Units since both the Unit 1 and Unit 2 4.16 kV ESS buses are required to support operation of Unit 2.

(2) Proposed Change to TS 3.3.8.1:

SR 3.8.1.19 for Unit 1 is performed when Unit 1 is shutdown and Unit 2 is typically at power. Certain common loads required for Unit 2 operation are supplied by Unit 1 4.16 kV ESS buses only. The Unit 1 surveillance test affects the availability of one Division of required loads for Unit 2 while it is at power. Unit 2 TS 3.3.8.1 requires that the LOP instrumentation on the Unit 1 4.16 kV ESS buses remain operable to support Unit 2 operation. The surveillance test required by Unit 1 SR 3.8.1.19 results in the LOP instrumentation being inoperable on two Unit 1 4.16 kV ESS buses (i.e. one Division). The LOP instrumentation is required to be returned to operable status within one hour or the associated diesel generators must be declared inoperable. If the associated diesel generators are declared inoperable, entry into LCO 3.0.3 is required on Unit 2. Normally during the performance of SR 3.8.1.19, the LOP instrumentation can be returned to operable status within one hour provided there are no issues with the test equipment etc. Having additional time to perform the surveillance test allows for correction of minor issues and does not adversely affect human performance while still being able to support the mitigation of accident conditions.

During the Unit 1 performance of SR 3.8.1.19, sufficient equipment is available to support mitigation of accident conditions in Unit 2. The resulting combination of all four Unit 2 4.16 kV ESS buses (both Divisions) and the Unit 2 required portions of the two remaining Unit 1 4.16 kV ESS buses is sufficient to support accident mitigation and subsequent safe shutdown of Unit 2.

Design Overview

The Class 1E AC distribution system in each SSES unit consists of four 4.16 kV Engineered Safeguards System (ESS) buses, each having a primary and alternate offsite source of power and LOP instrumentation. In addition, four common diesel generators (DGs) provide emergency power for the ESS buses; each DG supplies power to one ESS bus in Unit 1 and one ESS bus in Unit 2. The distribution system is divided into two divisions (Divisions I and II), each with redundant load groups, so that loss of any one load group does not prevent the minimum functions required by the safety analyses from

being performed. On a fluid system, such as Core Spray (CS), which has two subsystems with each subsystem comprised of two pumps, this scheme is implemented as follows:

ESS Bus A: Div I CS pump A	ESS Bus B : Div II CS pump B
ESS Bus C: Div I CS pump C	ESS Bus D : Div II CS pump D

Also some common components such as Emergency Service Water (ESW), Standby Gas Treatment System (SGTS), Control Structure HVAC (CREOAS) required by Unit 2 receive power through Unit 1 4.16 kV ESS buses only.

During the Unit 1 surveillance, since Unit 1 is shutdown, Unit 1 is only required to have either the Unit 1 Division I or the Unit 1 Division II 4.16 kV ESS buses energized in order to support common loads; therefore, only Division I or Division II LOP instrumentation operable. Since Unit 2 is operating, it is required to have both Unit 1 and Unit 2 Divisions I and II 4.16 kV ESS buses energized; and therefore, both Divisions on both Units' LOP instrumentation operable. The surveillance test SR 3.8.1.19 deenergizes one Division (two 4.16 kV ESS buses) on Unit 1. The resulting combination of all four Unit 2 4.16 kV ESS buses and LOP instrumentation (both divisions) and two Unit 1 4.16 kV ESS buses (one division) is sufficient to support accident mitigation and subsequent safe shutdown of Unit 2.

Additionally, performance of the Unit 1 test does not result in the inability of any emergency diesel generator to support its associated Unit 2 AC distribution subsystem. The diesels are fully loaded to support the Unit 1 testing for approximately one hour. This meets the requirement to run fully loaded for a five-minute period to fulfill the TS SR 3.8.1.19. Although considered highly unlikely, if a design basis loss of coolant accident (LOCA) and loss of offsite power occurs on Unit 2 during this test, the operator would be directed to take manual compensatory actions. These operator actions have been addressed in the test procedure. The operator would take immediate action to shed non-essential loads from the Unit 1 loaded diesels to prepare the diesels for the accident loads via the load sequence timers in Unit 2.

If a loss of offsite power event alone were to occur to one or both units during the Unit 1 tests, the AC distribution subsystems not associated with the tested subsystems are capable of supporting the minimum safety functions necessary to shutdown the reactor(s) and maintain them in a safe shutdown condition. Therefore, the required AC buses must be restored to operable status within a relatively short period of time. The 8-hour Completion Time (Required Action A.1) balances the benefit of performing the required test with the low probability of a loss of offsite power or LOCA with loss of offsite power while one division is inoperable for the duration of the test.

(3) Proposed Change to TS 3.8.7 Condition C:

During the conversion to Improved Technical Specifications, the words "or more" were added to Unit 2 TS 3.8.7 Condition C due to a typing error. No discussion of the words "or more" could be found in any internal PPL documents or any documents sent to the NRC. The NRC's SE does not address Condition C with the words added. The associated Required Action, the Bases, NUREG 1433, nor the NRC Safety Evaluation for the conversion currently supports the allowance for more than one inoperable Unit 1 subsystem when applying the 72-hour Completion Time. The removal of these words will make the TS consistent with the supporting documents.

(4) Proposed Change to TS 3.8.7:

SR 3.8.1.19 for Unit 1 is performed when Unit 1 is shutdown and Unit 2 is typically at power. Since certain common loads required for Unit 2 operation are supplied by Unit 1 4.16 kV ESS buses only; the Unit 1 surveillance test affects the availability of one Division of required loads for Unit 2 while it is at power. Unit 2 TS 3.8.7 requires that various Unit 1 AC electrical power distribution subsystems remain energized to support required Unit 2 credited equipment, and only contains provisions (Action C) for one subsystem not energized. Since the test required by Unit 1 SR 3.8.1.19 effectively deenergizes two Unit 1 AC distribution subsystems (i.e. one Division), Unit 2 LCO 3.8.7 is not met. Since Action C of Unit 2 TS 3.8.7 applies only to one Unit 1 AC distribution subsystem not energized, Unit 2 entry into LCO 3.0.3 is required.

The performance of Unit 1 SR 3.8.1.19 results in deenergizing both AC electrical power distribution subsystems on one Division because the surveillance is also a partial functional test of other systems. When performing Unit 1 SR 3.8.1.19, it is necessary to block the automatic transfer from normal to the alternate offsite power supply for the two Unit 1 4 kV buses in the same division being tested prior to deenergizing them for the surveillance. Blocking the automatic transfer disables two Unit 1 AC subsystems at a time when they are required to be operable to support Unit 2 operation.

PPL has confirmed that during the Unit 1 performance of SR 3.8.1.19 sufficient equipment is available to support mitigation of accident conditions in Unit 2. The resulting combination of all four Unit 2 AC distribution subsystems (both Divisions) and the Unit 2 required portions of the two remaining Unit 1 distribution subsystems is sufficient to support accident mitigation and subsequent safe shutdown of Unit 2. This confirmation was originally documented in the March 24, 1998 PPL response to NRC request for additional information associated with the Unit 2 Amendment No. 148. The NRC reiterated the acceptability of this position in their safety evaluation for Unit 2 Amendment No. 148 (Reference 1).

Additionally, performance of the Unit 1 test does not result in the inability of any emergency diesel generator to support its associated Unit 2 AC distribution subsystem.

The diesels are fully loaded to support the Unit 1 testing for approximately one hour. This meets the requirement to run fully loaded for a five-minute period to fulfill the TS SR 3.8.1.19. Although considered highly unlikely, if a design basis loss of coolant accident (LOCA) and loss of offsite power occurs on Unit 2 during this test, the operator would be directed to take manual compensatory actions. As previously addressed in the request and approval for Unit 2 Amendment No. 148, these operator actions have been addressed in the test procedure. The operator would take immediate action to shed non-essential loads from the Unit 1 loaded diesels to prepare the diesels for the accident loads via the load sequence timers in Unit 2.

If a loss of offsite power event alone were to occur to one or both units during the Unit 1 tests, the AC distribution subsystems not associated with the tested subsystems are capable of supporting the minimum safety functions necessary to shutdown the reactor(s) and maintain them in a safe shutdown condition. Therefore, the required AC buses must be restored to operable status within a relatively short period of time. The 8-hour Completion Time (Required Action A.1) balances the benefit of performing the required test with the low probability of a loss of offsite power or LOCA with loss of offsite power while one division is inoperable for the duration of the test.

Based on the evaluation of the plant design capability and limited amount of time in the vulnerable conditions, and prior approval in Amendment No. 148: (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.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

This No Significant Hazards Consideration evaluates the following changes to the Technical Specifications:

(1) Unit 2 TS Section 3.3.8.1 Condition A is revised to clarify that this Condition applies to inoperable instrumentation other than during the performance of SR 3.8.1.19 (LOCA/LOOP testing) on Unit 1. Also, TS Bases Section B3.3.8.1 Condition A is revised to clarify that this condition is applicable to both Unit 1 and Unit 2 LOP instrumentation.

(2) New Condition B is added to Unit 2 TS 3.3.8.1 to allow the LOP instrumentation for two (2) Unit 1 4.16 kV ESS buses in the same Division to be inoperable for up to 8 hours for the performance of SR 3.8.1.19 on Unit 1. Existing TS 3.3.8.1 Conditions B through D are renumbered due to the addition of new Condition B. Renumbered TS 3.3.8.1 Condition E is revised to include new Condition B. TS Bases Section B3.3.8.1 is also revised.

(3) Unit 2 TS 3.8.7 Condition C is revised to eliminate "or more" and the plural to subsystem"s" such that the condition would read: "One Unit 1 AC electrical power distribution subsystem inoperable."

(4) Unit 2 TS 3.8.7 new Condition D has been added for two Unit 1 AC electrical power distribution subsystems inoperable. However, it would be restricted to a single Unit 1 Division (which comprises two subsystems) solely for performing testing required by Unit 1 TS SR 3.8.1.19. This will impose an 8-hour Completion Time for restoration of at least one of the two Unit 1 AC distribution subsystems. Existing Conditions D through I are renumbered due to the addition of new Condition D. Renumbered TS 3.8.7 Condition E is revised to include new Condition D. TS Bases Section B3.8.7 is also revised.

PPL Susquehanna, LLC (PPL) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The Technical Specification allowed Completion Time for any inoperability is not an initiator to any accident sequence analyzed in the Final Safety Analysis Report (FSAR). The changes do not involve any physical change to structures, systems, or components (SSCs) and does not alter the method of operation or control of SSCs. The current assumptions in the safety analysis regarding accident initiators and mitigation of accidents are unaffected by these changes. No additional failure modes or mechanisms are being introduced and the likelihood of previously analyzed failures remains unchanged.

Operation in accordance with the proposed Technical Specification (TS) ensures that the AC distribution system and supported equipment functions remain capable of performing the function as described in the FSAR. Therefore, the mitigative functions supported by the system will continue to provide the protection assumed by the analysis.

Therefore, this 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 does not involve a physical alteration of the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There are no setpoints, at which protective or mitigative actions are initiated, affected by this change. This change will not alter the manner in which equipment operation is initiated, nor will the function demands on credited equipment be changed. No alterations in the procedures that ensure the plant remains within analyzed limits are being proposed, and no changes are being made to the procedures relied upon to respond to an off-normal event as described in the FSAR. As such, no new failure modes are being introduced. The change does not alter assumptions made in the safety analysis and licensing basis.

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

   Response: No.

   The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. The proposed change is acceptable because the restoration time for deenergized AC distribution subsystems has been previously evaluated in Unit 2 Amendment No. 148. Therefore the plant response to analyzed events will continue to provide the margin of safety assumed by the analysis.

5.2 Applicable Regulatory Requirements/Criteria

SSES FSAR Sections 3.1 and 3.13 provide detailed discussion of SSES compliance with the applicable regulatory requirements and guidance. The proposed TS amendment:

(a) Does not alter the design or function of any system;
(b) Does not result in any change in the qualifications of any component; and
(c) Does not result in the reclassification of any component's status in the areas of shared, safety related, independent, redundant, and physically or electrically separated.

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.

6.0 ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions, which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL Susquehanna, LLC has evaluated the proposed change and has determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. The basis for this determination, using the above criteria, follows:

Basis

As demonstrated in the No Significant Hazards Consideration Evaluation, the proposed amendment does not involve a significant hazards consideration.

There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

There is no significant increase in individual or cumulative occupational radiation exposure. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

7.0 REFERENCES

1. Letter, Nerses to Byram, "Susquehanna Steam Electric Station, Unit 2 (TAC NO. M94502)" (Amendment No. 148), dated April 10,1998.

2. Letter, Nerses to Byram, "Susquehanna Steam Electric Station, Units 1 and 2 (TAC NOS. M96327 and M96328)" (Amendment Nos. 178 and 151), dated July 30,1998.

Attachment 1 to PLA-5869

Proposed Technical Specification Changes

Unit 2

(Mark-ups)

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and
When the associated diesel generator is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

NOTE
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable for reasons other than Condition B.	A.1 Enter the Condition referenced in Table 3.3.8.1-1 for the channel.	Immediately
B. One or more required channels associated with Unit 1 4.16 kV ESS Buses in one Division inoperable for the performance of Unit 1 SR 3.8.1.19	B.1 Restore the inoperable channels	8 hours
~~C~~B. As required by Required Action A.1 and referenced in Table 3.3.8.1-1.	~~C~~B.1 Place channel in trip.	1 hour

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D~~C. As required by Required Action A.1 and referenced in Table 3.3.8.1-1.	~~D~~C.1 Restore the inoperable Channel.	1 hour
~~E~~D. Required Action and associated Completion Time of Condition B, ~~or~~ C, or D not met.	~~E~~D.1 Declare associated diesel generator (DG) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains DG initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.8.1.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.8.1.2 Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.8.1.3 Perform CHANNEL CALIBRATION.	24 months
SR 3.3.8.1.4 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 3.3.8.1-1 (page 1 of 1)

Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER BUS	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage < 20%)				
a. Bus Undervoltage	1	~~C~~D	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 780.4V and ≤ 899.6V
b. Time Delay	1	~~C~~D	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 0.4sec and ≤0.6 sec
2. 4.16 kV Emergency Bus Undervoltage Low Setting (Degraded Voltage 65%)				
a. Bus Undervoltage	2	~~B~~C	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2503V and ≤ 2886V
b. Time Delay	1	~~C~~D	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2.7sec and ≤ 3.3sec
3. 4.16 kV Emergency Bus Undervoltage LOCA (Degraded Voltage 93%)				
a. Bus Undervoltage	2	~~B~~C	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 3801V and ≤ 3935V
b. Time Delay (LOCA)	1	~~C~~D	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 9 sec and ≤ 11 sec
c. Time Delay (Non LOCA)	1	~~C~~D	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4 min 30 sec and ≤ 5 min 30 sec

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Distribution Systems—Operating

LCO 3.8.7 The electrical power distribution subsystems in Table 3.8.7-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Not applicable to DG E DC Bus 0D597 ---------- One or more Unit 2 AC electrical power distribution subsystems inoperable.	A.1 Restore Unit 2 AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7 except for Condition FE or GF
B. ----------NOTE---------- Not applicable to DG E DC Bus 0D597 ---------- One or more Unit 2 DC electrical power distribution subsystems inoperable.	B.1 Restore Unit 2 DC electrical power distribution subsystems to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO 3.8.7 except for Condition FE or GF
C. One ~~or more~~ Unit 1 AC electrical power distribution subsystems inoperable.	C.1 Restore Unit 1 AC electrical power distribution subsystem to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

D. Two Unit 1 AC electrical power distribution subsystems on one Division inoperable for performance of Unit 1 SR 3.8.1.19.	D.1 Restore at least one Unit 1 AC electrical power distribution subsystem to OPERABLE status.	8 hours
E~~D~~. Required Action and Associated Completion Time of Condition A, B or C not met.	E~~D~~.1 Be in MODE 3. AND E~~D~~.2 Be in MODE 4.	12 hours 36 hours
F~~E~~. Diesel Generator E DC electrical power subsystem inoperable, while not aligned to the Class 1E distribution system.	F~~E~~.1 Verify that all ESW valves associated with Diesel Generator E are closed.	2 hours
G~~F~~. Diesel Generator E DC electrical power subsystem inoperable, while aligned to the Class 1E distribution system.	G~~F~~.1 Declare Diesel Generator E inoperable.	2 hours
H~~G~~. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function.	H~~G~~.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I~~H~~. ----------NOTE---------- Not applicable to DG E DC Bus 0D597 ---------- One or more Unit 1 DC electrical power distribution subsystem(s) inoperable.	I~~H~~.1 Transfer associated Unit 1 and common loads to corresponding Unit 2 DC electrical power distribution subsystem. AND	2 hours
	I~~H~~.2 Restore Unit 1 and common loads to corresponding Unit 1 DC electrical power distribution subsystem.	72 hours after Unit 1 DC electrical power subsystem is restored to OPERABLE status.
J~~I~~. Required Actions and associated Completion Times of Condition I~~H~~ not met.	J~~I~~.1 Declare associated common loads inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage or indicated power availability to required AC and DC electrical power distribution subsystems.	7 days

Table 3.8.7-1 (page 1 of 2)
Unit 2 AC and DC Electrical Power Distribution Subsystems

TYPE	VOLTAGE	DIVISION I	DIVISION II
AC Buses	4160 V Load Groups:	1A201 (Subsys. A) 1A203 (Subsys. C) 2A201 (Subsys. A) 2A203 (Subsys. C)	1A202 (Subsys. B) 1A204 (Subsys. D) 2A202 (Subsys. B) 2A204 (Subsys. D)
	480 V Load Centers:	1B210 (Subsys. A) 1B230 (Subsys. C) 2B210 (Subsys. A) 2B230 (Subsys. C)	1B220 (Subsys. B) 1B240 (Subsys. D) 2B220 (Subsys. B) 2B240 (Subsys. D)
	480 V Motor Control Centers:	0B516 (Subsys. A) 0B517 (Subsys. A) 1B216 (Subsys. A) 1B217 (Subsys. A) 0B536 (Subsys. C) 0B136 (Subsys. C) 1B236 (Subsys. C) 2B216 (Subsys. A) 2B236 (Subsys. C) 2B237 (Subsys. C) 2B217 (Subsys. A)	0B526 (Subsys. B) 0B527 (Subsys. B) 1B226 (Subsys. B) 1B227 (Subsys. B) 0B546 (Subsys. D) 0B146 (Subsys. D) 1B246 (Subsys. D) 2B246 (Subsys. D) 2B247 (Subsys. D) 2B226 (Subsys. B) 2B227 (Subsys. B)
	208/120 V Distribution Panels:	1Y216 (Subsys. A) 1Y236 (Subsys. C) 2Y216 (Subsys. A) 2Y236 (Subsys. C)	1Y226 (Subsys. B) 1Y246 (Subsys. D) 2Y226 (Subsys. B) 2Y246 (Subsys. D)

(continued)

Table 3.8.7-1 (page 2 of 2)
Unit 2 AC and DC Electrical Power Distribution Subsystems

TYPE	VOLTAGE	DIVISION I	DIVISION II
DC Buses	250 V Buses:	2D652 2D254	2D662 2D264 2D274
	125 V Buses	1D612 (Subsys. A) 1D614 (Subsys. A) 1D632 (Subsys. C) 1D634 (Subsys. C) 2D612 (Subsys. A) 2D614 (Subsys. A) 2D632 (Subsys. C) 2D634 (Subsys. C)	1D622 (Subsys. B) 1D624 (Subsys. B) 1D642 (Subsys. D) 1D644 (Subsys. D) 2D622 (Subsys. B) 2D624 (Subsys. B) 2D642 (Subsys. D) 2D644 (Subsys. D)
DG E DC Bus	125 V Bus	0D597	

Attachment 2 to PLA-5869

Technical Specification Bases Changes

(Mark-ups Provided for Information)

B 3.3 INSTRUMENTATION

B 3.3.8.1 Loss of Power (LOP) Instrumentation

BASES

BACKGROUND

Successful operation of the required safety functions of the Emergency Core Cooling Systems (ECCS) is dependent upon the availability of adequate power sources for energizing the various components such as pump motors, motor operated valves, and the associated control components. The LOP instrumentation monitors the 4.16 kV emergency buses. Offsite power is the preferred source of power for the 4.16 kV emergency buses. If the monitors determine that insufficient power is available, the buses are disconnected from the offsite power sources and connected to the onsite diesel generator (DG) power sources.

Each 4.16 kV emergency bus has its own independent LOP instrumentation and associated trip logic. The voltage for each bus is monitored at three levels, which can be considered as three different undervoltage Functions: Loss of Voltage (< 20%), 4.16 kV Emergency Bus Undervoltage Degraded Voltage LOCA (< 93%), and 4.16 kV Emergency Bus Undervoltage Low Setting (Degraded Voltage) (< 65%). Each Function, with the exception of the Loss of Voltage relays is monitored by two undervoltage relays for each emergency bus, whose outputs are arranged in a two-out-of-two logic configuration. The Loss of Voltage Function is monitored by one undervoltage relay for each emergency bus, whose output is arranged in a one-out-of-one logic configuration. When voltage degrades below the setpoint, the channel output relay actuates, which then outputs a LOP trip signal to the trip logic.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The LOP instrumentation is required for Engineered Safety Features to function in any accident with a loss of offsite power. The Unit 1 LOP instrumentation is required to be operable for Unit 2 when the associated Unit 1 4.16 kV emergency buses are required to be operable per Unit 2 T.S. 3.8.7 and 3.8.8. The required channels of LOP instrumentation ensure that the ECCS and other assumed systems powered from the DGs, provide plant protection in the event of any of the Reference 1 and 2 analyzed accidents in which a loss of offsite power is assumed. The initiation of the DGs on loss of offsite power, and subsequent initiation of the ECCS, ensure that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Accident analyses credit the loading of the DG based on the loss of offsite power during a loss of coolant accident. The diesel starting and loading times have been included in the delay time associated with each safety system component requiring DG supplied power following a loss of offsite power.

The LOP instrumentation satisfies Criterion 3 of the NRC Policy Statement. (Ref. 3)

The OPERABILITY of the LOP instrumentation is dependent upon the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.8.1-1. Each Function must have a required number of OPERABLE channels per 4.16 kV emergency bus, with their setpoints within the specified Allowable Values. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions.

The Allowable Values are specified for each Function in the Table. Trip setpoints are specified in the system calculations. The setpoints are selected to ensure that the setpoints do not exceed the Allowable Value. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within the Allowable Value, is acceptable. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., degraded voltage), and when the measured output value of the process parameter reaches the setpoint, the associated device changes state. The Allowable Values are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are then derived based on engineering judgement.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage< 20%)

Loss of voltage on a 4.16 kV emergency bus indicates that offsite power may be completely lost to the respective emergency bus and is unable to supply sufficient power for proper operation of the applicable equipment. Therefore, the power supply to the bus is transferred from offsite power to DG power when the voltage on the bus drops below the Loss of Voltage Function Allowable Values (loss of voltage with a short time delay). This ensures that adequate power will be available to the required equipment.

The Bus Undervoltage Allowable Values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that power is available to the required equipment. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that power is available to the required equipment.

One channel of 4.16 kV Emergency Bus Undervoltage (Loss of Voltage) Function per associated emergency bus is required to be OPERABLE when the associated DG is required to be OPERABLE to ensure that no single instrument failure can preclude the DG function. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage) relay controls and provides a permissive to allow closure of the associated alternate source breaker and the associated DG breaker. (one channel input to each of the four DGs.) Refer to LCO 3.8.1, "AC Sources—Operating," and 3.8.2, "AC Sources—Shutdown," for Applicability Bases for the DGs.

2., 3. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)

A reduced voltage condition on a 4 kV emergency bus indicates that, while offsite power may not be completely lost to the respective emergency bus, available power may be insufficient for starting large ECCS motors without risking damage to the motors that could disable the ECCS function. Therefore, power supply to the bus is transferred from offsite power to onsite DG power when there is no offsite power or a degraded power supply to the bus. This transfer will occur only if the voltage of the primary and alternate power sources drop below the Degraded Voltage Function

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

2., 3. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) (continued)

Allowable Values (degraded voltage with a time delay) and the source breakers trip which causes the DG to start. This ensures that adequate power will be available to the required equipment.

Two Functions are provided to monitor degraded voltage at two different levels. These Functions are the Degraded Voltage LOCA (< 93%) and Degraded Voltage Low Setting (< 65%). These relays respond to degraded voltage as follows: 93% for approximately 5 minutes (when no LOCA signal is present) and approximately 10 seconds (with a LOCA signal present), and 65% (Degraded Voltage Low Setting). The Degraded Voltage LOCA Function preserves the assumptions of the LOCA analysis and the Degraded Voltage Low Setting Function preserves the assumptions of the accident sequence analysis in the FSAR. The circuitry is designed such that with the LOCA signal present, the non-LOCA time delay is physically bypassed.

The Bus Undervoltage Allowable Values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that sufficient power is available to the required equipment. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that sufficient power is available to the required equipment.

Two channels of 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) per Function (Functions 2 and 3) per associated bus are required to be OPERABLE when the associated DG is required to be OPERABLE. This ensures no single instrument failure can preclude the start of DGs (each logic inputs to each of the four DGs). Refer to LCO 3.8.1 and LCO 3.8.2 for Applicability Bases for the DGs.

ACTIONS

A Note has been provided to modify the ACTIONS related to LOP instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into

(continued)

BASES

ACTIONS (continued)

the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable LOP instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable LOP instrumentation channel.

A.1

Required Action A.1 directs entry into the appropriate Condition referenced in Table 3.3.8.1-1 when LOP instrumentation channels are inoperable for reasons other than for the performance of SR 3.8.1.19 on Unit 1. The applicable Condition specified in the Table is Function dependent. Each time a channel associated with a Unit 1 4.16 kV ESS Bus or a Unit 2 4.16 ESS Bus is discovered inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition. This Condition is applicable to the Unit 1 4.16 kV ESS Buses since the Unit 1 buses power station common loads such as SGTS, CREOASS, and ESW

B.1

With one or more required channels on the Unit 1 4.16 kV ESS Buses in one Division for the performance of SR 3.8.1.19 on Unit 1 inoperable but not resulting in a loss of safety function, the remaining channels are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining channels could result in the minimum required ESF functions not being supported. Therefore, the required Unit 1 4.16 kV ESS Bus channels must be restored to OPERABLE status within 8 hours.

(continued)

BASES

ACTIONS

CB.1

With one or more channels of a Function inoperable, the Function is not capable of performing the intended function. Therefore, only 1 hour is allowed to restore the inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action C.1. Placing the inoperable channel in trip

would conservatively compensate for the inoperability, restore capability to accommodate a single failure (within the LOP instrumentation), and allow operation to continue. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the channel in trip would result in a DG initiation), Condition ED must be entered and its Required Action taken.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

DG.1

With one channel of the Function inoperable, the Function is not capable of performing the intended function. Therefore, only 1 hour is allowed to restore the inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, Condition ED must be entered and its Required Action taken.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of channels.

(continued)

BASES

ACTIONS (continued)

~~E~~D.1

If the Required Action and associated Completion Times of Conditions B, ~~or~~ C, or D are not met, the associated Function is not capable of performing the intended function. Therefore, the associated DG(s) is declared inoperable immediately. This requires entry into applicable Conditions and Required Actions of LCO 3.8.1 and LCO 3.8.2, which provide appropriate actions for the inoperable DG(s).

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each LOP instrumentation Function are located in the SRs column of Table 3.3.8.1-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains DG initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken.

SR 3.3.8.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria which are determined by the plant staff based on an investigation of a combination of the channel instrument uncertainties may be used to support this parameter comparison and include indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1.1 (continued)

The Frequency is based upon operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal checks of channels during normal operational use of the displays associated with channels required by the LCO.

SR 3.3.8.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

The Frequency of 31 days is based on operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is a rare event.

SR 3.3.8.1.3

A CHANNEL CALIBRATION verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency is based upon the assumption of an 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.8.1.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specific channel. The system functional testing performed in LCO 3.8.1 and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety functions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1.4 (continued)

The 24 month Frequency is based on the need to perform portions of this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.

REFERENCES

1. FSAR, Section 6.3.
2. FSAR, Chapter 15.
3. Final Policy Statement on Technical Specifications Improvements, July 22,1993 (58 FR 32193)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Distribution Systems—Operating

BASES

BACKGROUND

The onsite Class 1E AC and DC electrical power distribution system is divided into redundant and independent AC and DC electrical power distribution subsystems and a DG E electrical power distribution subsystem.

The primary AC distribution system consists of four 4.16 kV Engineered Safeguards System (ESS) buses each having a primary and alternate offsite source of power as well as an onsite diesel generator (DG) source that supports one 4.16 kV ESS bus in each unit. Each 4.16 kV ESS bus is normally supplied by either Startup Transformer (ST) No. 10 or ST No. 20. ST No. 10 and ST No. 20 each provide the normal source of power to two of the four 4.16 kV ESS buses in each Unit and the alternate source of power to the remaining two 4.16 kV ESS buses in each Unit. If any 4.16 kV ESS bus loses power, an automatic transfer from the normal to the alternate occurs after the normal supply breaker trips. If both offsite sources are unavailable, the onsite emergency DGs supply power to the 4.16 kV ESS buses.

There are two 250 VDC electrical power distribution subsystems; four 125 VDC electrical power distribution subsystems; and, and one 125 VDC DG E electrical power distribution subsystem, all of which support the necessary power for ESF functions.

In addition, some components required by Unit 2 receive power through Unit 1 electrical power distribution subsystems, the Unit 1 AC and DC electrical power distribution subsystems needed to support the required equipment are addressed in Unit 2 LCO 3.8.7.

Required distribution subsystems are listed in LCO 3.8.7, Table 3.8.7-1.

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume ESF systems are OPERABLE. The AC and DC electrical power distribution systems are designed

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

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, 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 and DC electrical power distribution subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst case single failure.

The AC and DC electrical power distribution system satisfies Criterion 3 of the NRC Policy Statement (Ref. 4).

LCO

The required electrical power distribution subsystems listed in Table 3.8.7-1 ensure the availability of AC and DC electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The AC and DC electrical power distribution subsystems are required to be OPERABLE.

Maintaining the AC and DC electrical power distribution subsystems OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

AC electrical power distribution subsystems require the associated buses and electrical circuits to be energized to their proper voltages. DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage from either the associated battery or charger. The AC and DC electrical power distribution subsystem is only considered Inoperable when the subsystem is not energized to its proper voltage.

(continued)

BASES

APPLICABILITY

The electrical power distribution subsystems 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.

Electrical power distribution subsystem requirements for MODES 4 and 5 are covered in the Bases for LCO 3.8.8, "Distribution Systems—Shutdown."

ACTIONS

A.1

With one or more required Unit 2 AC buses, load centers, motor control centers, or distribution panels inoperable but not resulting in a loss of safety function, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

The Condition A worst scenario is one division without AC power (i.e., no offsite power to the division and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operators' attention be focused on minimizing the potential for loss of power to the remaining division by stabilizing the unit, and on restoring power to the affected division. The 8 hour time limit before

(continued)

BASES

ACTIONS

A.1 (continued)

requiring a unit shutdown in this Condition is acceptable because:

a. There is a potential for decreased safety if the attention of unit operators is diverted from the evaluations and actions necessary to restore power to the affected division to the actions associated with taking the unit to shutdown within this time limit.

b. The potential for an event in conjunction with a single failure of a redundant component in the division with AC power. (The redundant component is verified OPERABLE in accordance with Specification 5.5.11, "Safety Function Determination Program (SFDP).")

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single continuous occurrence of failing to meet LCO 3.8.7. If Condition A is entered while, for instance, a DC bus is inoperable and subsequently returned OPERABLE, this LCO may already have been not met for up to 2 hours. This situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time a DC circuit could again become inoperable, and AC distribution could be restored OPERABLE. This could continue indefinitely.

Condition A is modified by a Note that states that Condition A is not applicable to the DG E DC electrical power subsystem. Condition FE or GF is applicable to an inoperable DG E DC electrical power subsystem.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This results in establishing the "time zero" at the time this LCO was initially not met, instead of at the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely. The completion time exception is not applicable to Condition FE or GF because Condition FE and GF are only applicable to DG E DC electrical power subsystem.

(continued)

BASES

ACTIONS (continued)

B.1

With one or more Unit ~~1~~2 DC buses inoperable, the remaining DC electrical power distribution subsystems may be capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in one of the remaining DC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required DC buses must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition B represents one subsystem or multiple DC~~E~~ Buses without adequate DC power, potentially with both the battery significantly degraded and the associated charger non-functioning. In this situation the plant is significantly more vulnerable to a loss of minimally required DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining divisions, and restoring power to the affected division.

This 2 hour limit is more conservative than Completion Times allowed for the majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without DC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected division;

c. The potential for an event in conjunction with a single failure of a redundant component.

(continued)

BASES

ACTIONS

B.1 (continued)

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single continuous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently restored OPERABLE, the LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC division could again become inoperable, and DC distribution could be restored OPERABLE. This could continue indefinitely.

Condition B is modified by a Note that states that Condition B is not applicable to the DG E DC electrical power subsystem. Condition ~~E~~F or ~~F~~G is applicable to an inoperable DG E DC electrical power subsystem.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time the LCO was initially not met, instead of at the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely. The Completion Time exception is not applicable to Condition E and F because Condition E and F are only applicable to DG E DC electrical power subsystem.

C.1

With one Unit 1 AC electrical power distribution subsystem that supports Unit 2 inoperable, the remaining Unit 1 AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. However, the overall reliability is reduced because a single failure in the remaining AC electrical power distribution subsystem could result in the minimum required ESF functions not being supported.

(continued)

BASES

ACTIONS

C.1 (continued)

The Completion Time of 72 hours is consistent with the Completion Times associated with LCOs for the Unit 2 and common equipment potentially affected by loss of a Unit 1 AC electrical power subsystem.

D.1

With two required Unit 1 AC buses, load centers, motor control centers, or distribution panels inoperable for the performance of Unit 1 SR 3.8.1.19 but not resulting in a loss of safety function, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

ED.1 and ED.2

If the inoperable distribution subsystem 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 plant 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.

FE.1

If Diesel Generator E is not aligned to the Class 1E distribution system, the only supported safety function is for the ESW system. Therefore, under this condition, if Diesel Generator E DC power distribution subsystem is not OPERABLE, to ensure the OPERABILITY of the ESW system, actions are taken to either restore the power distribution

(continued)

BASES

ACTIONS

F.1 (continued)

subsystem to OPERABLE status or shutdown Diesel Generator E and close the associated ESW valves. The 2 hour limit is consistent with the allowed time for other inoperable DC power distribution subsystems and provides sufficient time to evaluate the condition and take the corrective actions.

GF.1

If the Diesel Generator E is aligned to the class 1E distribution system, the loss of Diesel Generator E DC power distribution subsystem will result in the loss of a on-site Class 1E power source. Therefore, under this condition, if Diesel Generator E DC power distribution subsystem is not OPERABLE actions are taken to either restore the power distribution subsystem to OPERABLE status or declare Diesel Generator E inoperable and take Actions of LCO 3.8.1. The 2 hour limit is consistent with the allowed time for other DC sources and provides sufficient time to evaluate the condition and take the necessary corrective actions.

HG.1

Condition HG corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one AC or DC electrical power distribution subsystem is lost, and this results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown. Entry into Condition GF is not required if the loss of safety function is the result of entry into Condition A in combination with the loss of safety functions governed by LCOs other than LCO 3.8.7. In this case, enter LCO 3.8.7, Condition A, and the Condition for loss of function in the LCO that governs the safety function that is lost.

(continued)

BASES

ACTIONS (continued)

I~~H~~.1

With one or more Unit 1 DC electrical power subsystems inoperable, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. However, The overall reliability is reduced because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. The Completion Time of 2 hours is consistent with the Completion Times associated with a loss of one or more DC distribution subsystems and will allow sufficient time to restore power.

Completion of Required Action I~~H~~.1 causes Unit 1 loads to be powered from a Unit 2 DC electrical power subsystem. Although the corresponding Unit 2 DC electrical power subsystem is evaluated for this condition, this condition is outside the design commitment to maintain DC power separation between units. To minimize the time this condition exists, Required Action I~~H~~.2 direct power to be restored from the corresponding Unit 1 DC electrical power subsystem, which restores power to the common loads, or requires that the Unit 1 and common loads be declared inoperable. The Completion Time of 72 hours provides sufficient time to restore power and acknowledges the fact that the condition, although not consistent with all design requirements, maintains all required safety systems available.

J~~I~~.1

If Unit 1 and common loads required to support Unit 2 cannot be transferred to corresponding Unit 2 DC electrical power subsystem when Unit 1 DC sources are inoperable; or, cannot be transferred back to a Unit 1 DC source when the Unit 1 DC source becomes OPERABLE, the associated loads may be incapable of performing their intended function and must be declared inoperable immediately.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the AC and DC, electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate independence of the electrical buses are maintained, and the appropriate voltage or indicated power is available to each required bus. This includes a verification that Unit 1 and common 125 VDC loads are aligned to a Unit 1 DC power distribution subsystem. The verification of voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 15.
3. Regulatory Guide 1.93, December 1974.
4. Final Policy Statement on Technical Specifications Improvements, July 22, 1993 (58 FR 39132).