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U. S. Nuclear Regulatory Commission  
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**SUSQUEHANNA STEAM ELECTRIC STATION  
PROPOSED LICENSE AMENDMENT NUMBER 262  
FOR UNIT 2 OPERATING LICENSE NO. NPF-22  
ELECTRICAL POWER SYSTEMS  
TECHNICAL SPECIFICATION 3.8.1  
PLA-6148**

**Docket No. 50-388**

Pursuant to 10 CFR 50.90, PPL Susquehanna, LLC (PPL), hereby requests approval of the following proposed amendment to the Susquehanna Steam Electric Station (SSES) Unit 2 Technical Specification (TS). The proposal would change Technical Specification 3.8.1 "Electrical Power Systems – AC Sources Operating."

This proposed change reflects a new ACTIONS Note 3 added to the SSES Unit 2 TS 3.8.1 "AC Sources – Operating," to allow a Unit 1 4160 V subsystem to be de-energized and removed from service to perform bus maintenance.

As demonstrated in the enclosed evaluation, the proposed amendment does not involve a significant hazard consideration.

This change is necessary to resolve issues that occurred during the Unit 1 outage in 2006. At that time, Unit 2 was operating in Mode 1 and Unit 1 was in Mode 5. This proposed change provides an exception to the requirement to enter Unit 2 LCO 3.8.1 when performing bus maintenance on a Unit 1 4160 V bus.

In order to support planned Unit 1 4160 V bus maintenance during the spring of 2008 Unit 1 refueling outage, PPL requests approval of this proposed amendment by January 31, 2008. PPL further requests that the approved amendment be issued to be effective immediately upon approval with the implementation to be completed within 30 days.

The Enclosure to this letter provides the Evaluation of this Proposed Change to Technical Specification 3.8.1. Attachment 1 is the Technical Specification mark-up. Attachment 2 is a mark-up of the associated Technical Specification Bases changes provided for information.

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There are no regulatory commitments associated with the proposed changes.


The need for this change has been discussed with the SSES NRC Project Manager, and it has also been reviewed by the SSES Plant Operations Review Committee and by the Susquehanna Review Committee.

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 or require additional information, please contact Mr. Duane L. Filchner at (610) 774-7819.

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

Executed on: 3-2-07



B. T. McKinney

Enclosure:

PPL Susquehanna, LLC Evaluation of Proposed Change to Unit 2 Technical Specification 3.8.1, "Electrical Power Systems – AC Sources Operating"

Attachments:

- Attachment 1 Proposed Change to Unit 2 Technical Specification 3.8.1, "Electrical Power Systems – AC Sources Operating" (Mark-ups)
- Attachment 2 Proposed Change to Unit 2 Technical Specifications Bases 3.8.1, "Electrical Power Systems – AC Sources Operating" (Mark-ups provided for Information Only)

Copy: NRC Region I  
Mr. R. V. Guzman, NRC Project Manager  
Mr. R. R. Janati, DEP/BRP  
Mr. C. R. Welch, NRC Sr. Resident Inspector

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## **Enclosure to PLA-6148**

### **PPL Susquehanna, LLC Evaluation of Proposed Change to Unit 2 Technical Specification 3.8.1 “Electrical Power Systems – AC Sources Operating”**

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## PPL EVALUATION

Subject: PPL Susquehanna Evaluation of Proposed Change to Unit 2 Technical Specification 3.8.1 Electrical Power Systems – AC Sources Operating

### 1. DESCRIPTION

This proposed change to the PPL Susquehanna (PPL) Unit 2 Technical Specification 3.8.1 reflects a new ACTIONS Note 3 added to the SSES Unit 2 TS 3.8.1 to allow a Unit 1 4160 V subsystem to be de-energized and removed from service to perform bus maintenance.

PPL plans to implement this proposed Unit 2 TS amendment in early 2008 to support Unit 1 4160 V bus maintenance planned for the Unit 1 refueling outage during the spring of 2008.

### 2. PROPOSED CHANGE

A mark-up of the proposed change to the Unit 2 Technical Specifications (TS) is included in Attachment 1 of this submittal. The Unit 2 TS 3.8.1 is revised to add new ACTIONS Note 3 as follows:

*“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 required diesel generators otherwise OPERABLE, only entry into LCO 3.8.7 Condition C is required.”*

The plant configuration described by new ACTIONS Note 3 exists when Unit 2 is operating in Modes 1, 2, or 3, Unit 1 is in Modes 4 or 5, and a Unit 1 4160 V subsystem is de-energized and removed from service to perform bus maintenance. In this configuration, both the offsite power supplies continue to provide power to the remaining unaffected 4160 V subsystems (7 total) on both Units 1 and 2. In addition, the Diesel Generator (DG) that is associated with the de-energized Unit 1 4160 V subsystem remains capable of supplying power to its associated Unit 2 4160 V subsystem and the other 3 DG's are capable of supplying power to their associated buses on both units.

The ACTIONS Note 3 applies when both sources of offsite power remain energized and capable of supplying all the loads connected to the seven unaffected 4160 V buses on both Units 1 and 2. In addition, the associated DG remains capable of performing its required safety function for Unit 2. Therefore, the new ACTIONS Note 3 establishes an

exception to the definition of an OPERABLE offsite circuit and an OPERABLE DG, for performance of bus maintenance only. Entry into Unit 2 TS 3.8.1 Conditions A, B, and D is not required when deenergizing a Unit 1 4160 V subsystem solely for the purpose of performing bus maintenance.

The TS Bases Section B 3.8.1 has also been revised based on this change.

### 3. **BACKGROUND**

During the Susquehanna Unit 1 Refuel and Inspection Outage 14 (U1 RIO14) in the spring of 2006, entry into Unit 2 TS 3.8.1 was not implemented appropriately to perform Unit 1 4160 V bus related maintenance. This resulted in a Condition Report that identified that the same problems (i.e. improper implementation of Unit 2 TS 3.8.1) occurred when performing Unit 1 4160 V bus maintenance during the U1 RIO13 in March 2004. Accordingly, these events were determined to be reportable and Licensee Event Report (LER) 50-388-2006-02 Rev. 0 was issued to the NRC on June 14, 2006 via PLA-6061. The need to change Unit 2 TS 3.8.1 was identified in LER 50-388-2006-02 as an action to prevent recurrence.

Susquehanna Units 1 and 2 each contain an onsite Class 1E AC electrical power distribution system that is divided into redundant and independent AC electrical power distribution subsystems. The Class 1E AC distribution system for each unit consists of four 4160 V Engineered Safeguards System (ESS) buses, each bus having the capability to receive power from a primary and alternate ESS transformer connected to the offsite sources. In addition, four shared diesel generators (DGs) can be connected to the 4160 V ESS buses to provide emergency power in the event the primary and alternate offsite power sources are not available. Each DG supplies power to one ESS bus in Unit 1 and one ESS bus in Unit 2. Further, the AC electrical distribution system on each unit 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.

Portions of the Unit 1 AC Distribution System are shared between Units 1 and 2. The common equipment [Emergency Service Water (ESW), Standby Gas Treatment System (SGTS), Control Structure HVAC (CREOAS), and Control Room Floor Cooling] is energized only from the Unit 1 AC Distribution System. As such, some components that are required for Unit 2 operation receive power from the Unit 1 AC Distribution Subsystems. The Unit 1 AC Distribution Subsystems needed to support operation of the required Unit 2 equipment are listed in Unit 2 LCO 3.8.7, Table 3.8.7-1. Operation of the Unit 2 ECCS equipment supplied by the Unit 2 AC Distribution Subsystems is not affected by the Unit 1 4160 V bus maintenance activities discussed herein. 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.

During unit outages, 4160 V buses are taken out of service to perform inspections and maintenance. This periodic maintenance assures proper operation during both normal and postulated accident conditions. The necessary steps and work group coordination required to de-energize the bus (and the associated offsite and DG feeder circuits to the bus) in an orderly fashion to perform bus inspection and maintenance, or to prepare for surveillance activities, are controlled by plant procedures. These procedures also provide the necessary steps and work group coordination to complete the restoration of the bus and feeder circuits and remove temporary equipment and connections in order to assist in ultimately declaring the bus operable. The total elapsed time for these maintenance and inspection activities is between 50 and 60 hours as identified in the plant schedule. This includes concurrent entry into LCO 3.8.1 as necessary to perform bus feeder cubicle maintenance. The evolution below describes the workflow during a 4160 V bus outage under the proposed TS change:

- De-energize the bus per plant procedure; apply Clearance Order #1 on the bus feeder breakers. Enter LCO 3.8.7 Condition C (72 hours) and perform bus maintenance and inspection.
- Remove the associated DG from service. Apply Clearance Order #2 on the DG, enter LCO 3.8.1 Condition D (12 hours) and perform maintenance and inspection of the DG power supply cubicle. Remove Clearance Order #2 and Exit LCO 3.8.1.D.
- Remove one offsite power supply from service. Apply Clearance Order #3 on the offsite source, enter LCO 3.8.1 Condition D (12 hours) and perform maintenance and inspection of the offsite power supply cubicle. Remove Clearance Order #3 and Exit LCO 3.8.1 D.
- Remove the other offsite power supply from service. Apply Clearance Order #4 on the offsite source, enter LCO 3.8.1 Condition D (12 hours) and perform maintenance and inspection of the offsite power supply cubicle. Remove Clearance Order #4 and Exit LCO 3.8.1 D.
- Remove Clearance Order #1 and Exit LCO 3.8.7 C.

The current TS require that when a Unit 1 subsystem is de-energized to perform bus maintenance, LCO 3.8.1 Conditions A, B, and D are entered because an offsite power circuit and a DG are declared inoperable. Condition A is entered because the determination of offsite circuit operability is made utilizing the definition of an OPERABLE offsite circuit as described in the LCO Section of Technical Specification

Bases 3.8.1. The LCO 3.8.1 Bases also describe that Condition B would be entered because "...the DG associated with the de-energized Unit 1 4160 V subsystem cannot connect to its respective ESS bus ...and accept required loads within the assumed loading sequence intervals." The LCO 3.8.1 Bases further establish that entry into Condition D for an inoperable offsite circuit and an inoperable DG results in a 12 hour completion time because individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period. However, 12 hours is not sufficient to perform all the required bus related maintenance and inspection. The estimated time required to perform all the work is between 50 and 60 hours per the plant schedule.

This proposed change to Unit 2 TS 3.8.1, i.e. the addition of new ACTIONS Note 3, allows a Unit 1 4160 V ESS bus to be taken out of service to perform bus maintenance activities without requiring either the primary or alternate offsite power source or the DG associated with the affected bus to be declared inoperable. In this condition, only the affected Unit 1 4160 V ESS bus is de-energized. Both the primary and alternate power supplies from the ESS Transformers to the each of the unaffected 4160 V buses on both units remain energized. In addition, the associated DG remains capable of supplying power to its associated Unit 2 4160 V ESS bus. Therefore, both offsite circuits and the DG's remain capable of supplying power to the unaffected 4160 V ESS buses (7 total on both units).

#### 4. TECHNICAL ANALYSIS

Unit 1 4160 V ESS bus maintenance is performed when Unit 1 is in Modes 4 or 5 and Unit 2 is in Modes 1, 2 or 3. The common loads required for Unit 2 continued operation need to remain powered by Unit 1 4160 V ESS buses. Since the bus maintenance activities on Unit 1 affect the availability of only one bus, the remaining three 4160 V ESS buses on Unit 1 remain capable of supplying the required loads for Unit 2. This change to TS 3.8.1 is needed to provide sufficient time to perform the maintenance on a Unit 1 4160 V bus (i.e. 50-60 hours vs. 12 hrs currently limited by TS 3.8.1 Condition D).

The table below lists the common supported systems and the TS Conditions and Completion Times for one inoperable Unit 1 subsystem.

Common System	Applicable LCO	Completion Time (CT) (One subsystem)
ESW	3.7.2	7 days
SGTS	3.6.4.3	7 days
CREOAS	3.7.3	7 days
Control Room Floor Cooling	3.7.4	30 days

Only one subsystem would be affected by a Unit 1 de-energized and out of service bus. In each case the minimum required Completion Time for one inoperable Division is 7 days. Therefore, the 72 hour requested Completion Time to perform the bus maintenance is bounded and reasonable when compared to the affected systems.

Unit 2 TS 3.8.1 requires the following AC electrical power sources to 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.

A qualified circuit between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution Subsystem consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite Class 1E ESS bus or buses. Currently, when a Unit 1 4160 V bus is de-energized for maintenance, the requirement that two qualified circuits and the DG's to be operable are not met, resulting in entry into LCO 3.8.1 Conditions A, B, and D. As stated above, the Completion Time for Condition D is 12 hours, which is not sufficient to perform bus maintenance activities. Accordingly, for a Unit 1 4160 V bus outage, new Unit 2 LCO 3.8.1 ACTIONS Note 3 is proposed to allow an exception to the requirement for two qualified circuits and an OPERABLE DG.

This exception will only be applied when Unit 1 is in Modes 4 or 5 and Unit 2 is in Modes 1, 2, or 3, during a Unit 1 4160 V subsystem outage in which both the primary and alternate offsite sources remain energized and four diesel generators remain capable of supplying the electrical AC power requirements of the combination of the remaining or unaffected Unit 1 4160 V ESS buses (common loads) and all four Unit 2 4160 V ESS buses (both Divisions). While in the Unit 1 bus maintenance configuration, sufficient power supplies are still available to meet all the necessary accident mitigation and safe shutdown requirements for Susquehanna, in accordance with General Design Criterion 17 as discussed in FSAR Section 8.3.1.11.

The following table shows how the proposed Unit 2 TS will be implemented compared to the current TS implementation:

Initial Conditions: Unit 1, Modes 4 or 5  
Unit 2, Modes 1, 2, or 3

Desired work: A Unit 1 4160 V ESS subsystem bus is deenergized for bus maintenance (4160 V bus OOS).

Inoperable Equipment	Current U2 TS Condition Entries	Proposed U2 TS Condition Entries	Comments
Unit 1 4160 V Subsystem	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr	<u>3.8.7</u> <u>3.0.6</u> <u>CT</u> C1 72 hr	When the U1 4160 V subsystem is inoperable to perform bus maintenance, there is ½ of a Division of Common equipment out of service. The shortest completion time for this equipment in this condition is 7 days. (See the table above) Thus 72 hrs is reasonable.
Unit 1 4160 V Subsystem and subsequent DG (associated with the same 4160 V subsystem)	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr	Same as Current U2 TS Entries	The loss of a DG requires entry into LCO 3.8.1 and Note 3 is no longer applicable. Action D.2 establishes the 12 hour completion time.
Unit 1 4160 V Subsystem and subsequent DG (other than the DG associated with the 4160 V subsystem)	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr G1 LCO 3.0.3	Same as Current U2 TS Entries	The loss of a DG requires entry into LCO 3.8.1 and Note 3 is no longer applicable. LCO 3.0.3 entry required immediately because one offsite source and 2 DG's are inoperable.
Unit 1 4160 V Subsystem and a subsequent Offsite Source	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D1 12 hr C1 72 hr	Same as Current U2 TS Entries	The loss of an offsite source requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. LCO 3.8.1 Action D.1 establishes the 12 hr completion time.
Unit 1 4160 V Subsystem and a subsequent ESS Transformer	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D1 12 hr C1 72 hr	Same as Current U2 TS Entries	The loss of an ESS Transformer (part of an offsite source) requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. LCO 3.8.1 Action D.1 establishes the 12 hr completion time to restore the inoperable offsite circuit.
Unit 1 4160 V Subsystem and a subsequent loss of 2 ESS Transformers connected to the same Startup Transformer	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D1 12 hr C1 72 hr	Same as Current U2 TS Entries	The loss of two ESS Transformers connected to the same Startup Transformer requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. This loss is equivalent to the loss of one offsite source. Therefore, LCO 3.8.1 Action D.1 establishes the 12 hr completion time to restore the inoperable offsite circuit.
Unit 1 4160 V Subsystem and a subsequent loss of 2 ESS Transformers not connected to the same Startup Transformer	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr G1 LCO 3.0.3	Same as Current U2 TS Entries	The loss of two ESS Transformers connected to different Startup Transformers requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. LCO 3.8.1 Action G1 is required because 2 offsite sources and a DG are inoperable.
Unit 1 4160 V Subsystem and a subsequent Unit 2 4160 V Subsystem de-energized.	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D1, D2 12 hr C1 72 hr A1 8 hr	Same as Current U2 TS Entries	The loss of a subsequent Unit 2 4160 V subsystem requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. However, LCO 3.8.7 Action A.1 establishes the 8 hr completion Time to restore the Unit 2 bus.

<b>Inoperable Equipment</b>	<b>Current U2 TS Condition Entries</b>	<b>Proposed U2 TS Condition Entries</b>	<b>Comments</b>
Unit 1 4160 V Subsystem and a subsequent Unit 1 4160 V Subsystem de-energized on either the same or other Division	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr G1 LCO 3.0.3	Same as Current U2 TS Entries	The loss of a subsequent Unit 1 4160 V subsystem (either the same or other division) requires entry into LCO 3.8.1 and the exception in Note 3 is no longer applicable. Entry into LCO 3.0.3 is required because this Condition is either covered by Action G1 (other Division) or it is not covered by TS 3.8.1 (same Division).
Unit 1 4160 V Subsystem and a subsequent Unit 2 4160 V Subsystem (energized but inoperable)	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D1, D2 12 hr C1 72 hr A1 8 hr	<u>3.8.7</u> <u>CT</u> C1 72 hr A1 8 hr	The loss of a subsequent Unit 2 4160 V subsystem does not necessarily result in the loss of an offsite source which requires entry into LCO 3.8.1 if the Unit 2 bus remains energized but inoperable. Note 3 still applies. LCO 3.8.7 Action A.1 establishes the 8 hr completion time.
Unit 1 4160 V Subsystem and a subsequent Unit 1 4160 V Subsystem either same or other Division (energized but inoperable)	<u>3.8.1</u> <u>3.8.7</u> <u>CT</u> A3 72 hr B4 72 hr D2 12 hr C1 72 hr G1 LCO 3.0.3	<u>3.8.7</u> <u>CT</u> C1 72 hr LCO 3.0.3	The loss of a subsequent Unit 1 4160 V subsystem (either the same or other division) does not necessarily result in the loss of an offsite source which requires entry into LCO 3.8.1 if the bus remains energized but inoperable. Note 3 still applies. Entry into LCO 3.0.3 is required because this Condition is not covered by TS.

The above table demonstrates that, except for the condition which the proposed new ACTIONS Note 3 is intended to address (i.e. a Unit 1 4160 V subsystem de-energized to perform bus maintenance), the proposed LCO Conditions that would be entered and Required ACTIONS are not less restrictive than the current TS LCO Conditions and Required ACTIONS.

When new ACTIONS Note 3 is applicable, the three power supplies to the bus, i.e., the offsite primary and alternate supplies which are connected through the startup transformers and the DG associated with the affected bus, remain OPERABLE and capable of supplying power to the loads connected to the remaining seven 4160 V buses. In this configuration, Note 3 requires immediate entry into LCO 3.8.7, "Distribution Systems – Operating" Condition C. A loss of Safety Function Evaluation is required by LCO 3.0.6 and performed to support entry into this condition. If any other required supported equipment becomes inoperable, the safety function determination program would be implemented and would assure the appropriate conditions and Required ACTIONS would be taken.

Since a Unit 1 4160 V bus outage does not prevent any DG from connecting to its associated Unit 2 AC distribution subsystem, if a design basis loss of coolant accident (LOCA) and loss of offsite power occur on Unit 2 during performance of the Unit 1 bus outage, the DG would start and load as necessary to provide AC power to the necessary loads to mitigate the accident.

If a loss of offsite power event alone were to occur to one or both units during the Unit 1 4160 V bus outage, all remaining AC distribution subsystems not associated with the inoperable subsystem remain capable of supporting the minimum safety functions necessary to shutdown the reactor(s) and maintain them in a safe shutdown condition based on receiving power from the four DGs.

## **5. REGULATORY SAFETY ANALYSIS**

### **5.1 No Significant Hazards Consideration**

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

A new ACTIONS Note 3 is added to the Unit 2 Technical Specification 3.8.1 to allow a Unit 1 4160 V subsystem to be de-energized and removed from service to perform bus maintenance.

#### **1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No

This change does not involve any physical change to structures, systems, or components (SSCs) and does not alter the method of operation of any SSCs. The current assumptions in the safety analysis regarding accident initiators and mitigation of accidents are unaffected by these changes. No SSC failure modes or mechanisms are being introduced, and the likelihood of previously analyzed failures remains unchanged.

Operation in accordance with the proposed new ACTIONS Note 3 in Unit 2 Technical Specification 3.8.1 ensures that the AC distribution system and supported equipment remain capable of performing their functions as described in the Final Safety Analysis Report (FSAR). There are no changes to any accident initiators or to the mitigating capability of safety-related equipment supported by the Class 1E Electrical AC system. The protection provided by these safety-related systems will continue to be provided as assumed by the safety analysis.

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

**2. Do the proposed changes 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 any plant equipment. 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 does 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.

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

**3. Do the proposed changes 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 new ACTIONS Note 3 has been established to be consistent with the existing completion times for declaring required equipment inoperable that has no offsite power or DG power available. Therefore, the plant response to analyzed events is not affected by this change and will continue to provide the margin of safety assumed by the safety analysis.

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

Based on the above, PPL concludes that the proposed changes do 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.

## 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.

Susquehanna conformance with the applicable General Design Criteria (GDC) related to the proposed Unit 2 TS 3.8.1 change is provided as follows:

### *GDC 5 – Sharing of Structures, Systems and Components*

Offsite power supplies – The two preferred offsite power supplies are shared by both units 1 and 2. The capacity of each offsite power supply is sufficient to operate the Engineered Safety Features (ESF) of one unit and safe shutdown of the other unit. Additional details are provided in FSAR Section 8.2.

Diesel Generators - The Diesel Generators are shared systems important to safety. Loss of one of the four aligned diesel generators will not impair the capability to safely shutdown both units, since this can be done with three diesel generators. Additional details are provided in FSAR Section 8.3.1.4.

Unit 1 AC Distribution System - The Unit 1 AC Distribution system is a shared system between both units 1 and 2 since the common equipment (Emergency Service Water, Standby Gas Treatment System, Control Structure HVAC, and Control Room Floor Cooling) is energized only from the Unit 1 AC Distribution System. The capacity of the Unit 1 AC Distribution System is sufficient to operate the engineered safety features on one unit and the safe shutdown loads of the other unit.

### *GDC 17 – Electric Power Systems*

Two offsite power transmission systems and four onsite standby diesel generators (A, B, C and D) with their associated battery systems are provided. Either of the two offsite transmission power systems or any three of the four onsite standby diesel generator systems have sufficient

capability to operate safety related equipment for cooling the reactor core and maintaining primary containment integrity and other vital functions in the event of a postulated accident in one unit with a safe shutdown of the other unit.

Additionally, a fifth diesel generator 'E' with its associated battery system is provided as a replacement, and has the capability of supplying the emergency loading for any one of the other four diesel generators (A, B, C or D). Diesel generator 'E' must be manually aligned to replace any one of the other four diesel generators in the event of a failure.

The two independent offsite power systems supply electric power to the onsite power distribution system via the 230 kV transmission grid. Each of the offsite power sources is supplied from a transmission line which terminates in switchyards (or Substations) not common to the other transmission line. The two transmission lines are on separate rights-of-way. These two transmission circuits are physically independent and are designed to minimize the possibility of their simultaneous failure under operating and postulated accident and environment conditions.

Each offsite power source can supply all Engineered Safety Feature (ESF) buses through the associated transformers. Power is available to the ESF buses from their preferred offsite power source during normal operation and from the alternate offsite power source if the preferred power is unavailable. Each diesel generator (A, B, C, or D) supplies standby power to one of the four ESF buses in each unit. Loss of both offsite power sources to an ESF bus results in automatic starting and connection of the associated diesel generator (A, B, C, or D) within 10 seconds. Loads are progressively and sequentially added to avoid generator instabilities.

There are four independent AC load groups provided to assure independence and redundancy of equipment function. These meet the safety requirements assuming a single failure since any three of the four load groups have sufficient capacity to supply the minimum loads required to safely shut down the unit. Independent routing of the preferred and alternate offsite power source circuits to the ESF buses are provided to meet the single failure safety requirements.

Additional discussion and details are provided in FSAR Sections 8.2 and 8.3.

Based on compliance with the General Design Criteria 5 and 17 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. ENVIRONMENTAL CONSIDERATION**

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. REFERENCES**

FSAR Sections 3.1, 3.13, 8.1, 8.2 and 8.3

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**Attachment 1 to PLA-6148**

**PPL Susquehanna, LLC**

**Proposed Change to Unit 2  
Technical Specification 3.8.1  
“Electrical Power Systems –  
AC Sources Operating”  
(Markups)**

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### 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.  <u>AND</u>	1 hour  <u>AND</u>  Once per 8 hours thereafter  (continued)

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**Attachment 2 to PLA-6148**

**PPL Susquehanna, LLC**

**Proposed Change to Unit 2  
Technical Specification Bases 3.8.1  
“Electrical Power Systems –  
AC Sources Operating”  
(Markups provided for Information Only)**

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## BASES

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LCO  
(continued)

capable of supplying the required loads. If no OPERABLE offsite circuit is capable of supplying any of the 4.16 kV ESS Buses, provided that the offsite circuits otherwise meet the above requirements, one offsite source shall be declared inoperable. Unit 2 also requires Unit 1 offsite circuits to be OPERABLE.

If a Unit 1 4.16 kV bus is de-energized solely for the purpose of performing maintenance, it is not required to declare an offsite source or diesel generator inoperable.

Four of the five DGs are required to be Operable to satisfy the initial assumptions of the accident analyses. Each required DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESS bus on detection of bus undervoltage after the normal and alternate supply breakers open. This sequence must be accomplished within 10 seconds. If a Unit 1 4.16 kV bus is isolated from its DG solely for the performance of bus maintenance, the DG is not required to be declared inoperable. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the ESS buses. These capabilities are required to be met from a variety of initial conditions, such as DG in standby with the engine hot and DG in normal standby conditions. Normal standby conditions for a DG mean that the diesel engine oil is being continuously circulated and engine coolant is circulated as necessary to maintain temperature consistent with manufacturer recommendations. Additional DG capabilities must be demonstrated to meet required Surveillances, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.

Although not normally aligned as a required DG, DG E is normally maintained OPERABLE (i.e., Surveillance Testing completed) so that it can be used as a substitute for any one of the four DGs A, B, C or D.

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

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

(continued)

## BASES

LCO (continued)	have OPERABLE automatic transfer interlock mechanisms to each ESS bus to support OPERABILITY of that offsite circuit. <u>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.</u>
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## 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.”

## ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

The ACTIONS are modified by a Note, which allows entry into associated Conditions and Required Actions to be delayed for up to 8 hours when an OPERABLE diesel generator is placed in an inoperable status for the alignment of diesel generator E to or from the Class 1E distribution system. Use of this allowance requires both offsite circuits to be OPERABLE. Entry into the appropriate Conditions and Required Actions shall be made immediately upon the determination that substitution of a required diesel generator will not or can not be completed.

Note 3 modifies the ACTIONS by allowing a Unit 1 4160 V subsystem (4.16 kV bus) to be de-energized for bus maintenance when Unit 1 is in Modes 4 or 5 and Unit 2 is in Modes 1,2, or 3 without requiring either offsite circuit or the associated diesel generator to be declared inoperable. Only entry into LCO 3.8.7 Condition C is required for this maintenance activity. While in this configuration, immediate entry into LCO 3.8.1 is required for any offsite circuit or DG that becomes inoperable. Note 3 then no longer applies.

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## BASES

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### ACTIONS (continued)

#### A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the availability of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.