DRAFT REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED LICENSE AMENDMENT REQUEST TO

CHANGE TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

TO INCREASE DIESEL GENERATOR MINIMUM STEADY STATE VOLTAGE

SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-387 AND 50-388

By letter to the Nuclear Regulatory Commission (NRC) dated September 18, 2012,[1] as supplemented by letter dated, May 10, 2013,[2] PPL Susquehanna, LLC (PPL, the licensee) submitted a license amendment request (LAR) for Susquehanna Steam Electric Station (SSES), Units 1 and 2. The proposed amendments would change Technical Specification (TS) Surveillance Requirements (SRs) 3.8.1.9, 3.8.1.11, 3.8.1.12 and 3.8.1.19 in TS 3.8.1, "AC Sources-Operating." Specifically, the proposed amendments would increase the Diesel Generator (DG) acceptable minimum steady state voltage when operating in emergency/isochronous mode.

The NRC staff has reviewed the information that the licensee provided in support of its proposed license amendments. In order for the staff to complete its review, the licensee is requested to address the following requests for additional information.

Background:

In order to be considered operable, structures, systems and components (SSCs) must be capable of performing the safety functions specified by its design, within the required range of design physical conditions, initiation times, and mission times. In addition, TS operability considerations require that SSCs meet all surveillance requirements. In order to be considered operable, SSCs must be capable of performing the safety functions specified by their design, within the required range of design physical conditions, initiation times, and mission times. For operability determination purposes, the mission time is the duration of SSC operation that is credited in the design basis for the SSC to perform its specified safety function.

The staff considers that all SRs with specific parameters including proper DG output voltage demonstrate the capability of the DGs to satisfy the specified safety function as credited in the design basis accident conditions delineated in the Final Safety Analyses Report.

The staff has made following observations:

- The response to NRC Question 3 in the licensee's submittal dated, May 10, 2013,states "SSES DG loading calculations, in general, are based on nominal voltages."

- The license amendment request dated September 18, 2012, for changing minimum allowable frequency states "An SSES calculation and cable data confirms that the

[1] Agencywide Documents Access and Management System Accession No. ML12262A322
[2] ADAMS Accession No. ML13130A130.

voltage drop between Diesel Generator E and the 4.16 k V buses is significantly higher than that for Diesel Generators A-D. The increased voltage drop corresponds with an increase in current, causing the Diesel Generator to increase power output, which causes a frequency dip. "

- Calculation EC-024-1031, attached to letter dated May 10, 2013, states "It is appropriate to base the maximum steady state current on the DG-A through D rating rather than the higher rating of DG-E. This is because steady state loads must stay within the capability of the lower machine rating. The highest DG load shown in the FSAR diesel loading tables is in FSAR table 8.3-3 which shows a maximum steady state diesel load of 3976.85 KW (DG-A). This is close to the 4000 KW machine nominal rating. For purposes of determining the maximum steady state current, a steady state loading of 4000 KW will be used."

Requests for Additional Information:

RAI 4: The response to RAI 1 stated that "The steady state output voltage when operating in the droop (test) mode is not being changed because when operating in the test configuration the DG output voltage is determined by the electrical power grid to which it is connected." SR 3.8.1.3 requires each DG to be synchronized, loaded and operated for ≥ 60 minutes at a load ≥ 3600 kW and ≤ 4000 kW. The staff concurs that this SR requires operation of the DG in droop mode and as such verification of DG voltage is not required. However, SRs 3.8.1.7, 3.8.1.15 and 3.8.1.20 do not require the DG to be synchronized to the grid but have voltage parameters to be validated. Explain how these SRs demonstrate the operability of the DGs when the LAR states that these parameters are non conservative.

RAI 5: Assuming that DGs A-D are operating at the proposed allowable voltage of 4000V, provide details on the maximum DG load due to the increase in current at the lower voltage, as nominal voltage was used to calculate maximum steady state diesel load of 3976.85 KW.

RAI 6: Assuming DG E is substituting for one of the other DGs and is operating at the proposed allowable output voltage of 4000V, provide details on the maximum load that DG-E will be supplying in view of the increased current flow at a voltage below the nominal voltage.

RAI 7: At the onset of an event, some pumps may be operating under run out conditions for an extended duration, imposing a higher load on the associated motors. Validate that the consequential higher loading on DG-E, when operating at 4000V, will not result in steady state voltage less than the reset setpoint of degraded voltage relays.

RAI 8: Validate that the current value used in Calculation EC-024-1031 is still bounding based on responses to RAIs 5, 6 and 7 above.

RAI 9: Validate that plant procedures used to perform SRs verifying DG loading capability (e.g. SR 3.8.1.3) envelope the postulated accident loading based on limiting DG voltage.

RAI10: Validate that the consequences of the change in DG loading due to operation at 4000V has been considered for impact on other DG SRs such as fuel oil and lube oil storage requirements.