

October 19, 2005

Mr. Britt T. McKinney  
Sr. Vice President and  
Chief Nuclear Officer  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSB3  
Berwick, PA 18603-0467

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) - SUSQUEHANNA STEAM  
ELECTRIC STATION, UNITS 1 AND 2 (SSES 1 AND 2) - DIRECT CURRENT  
(DC) ELECTRICAL POWER SYSTEMS TECHNICAL SPECIFICATION TASK  
FORCE (TSTF)-360 (TAC NOS. MC5153 AND MC5154)

Dear Mr. McKinney:

In reviewing your submittal of November 9, 2004, concerning the proposed changes to the SSES 1 and 2 Technical Specification (TS) sections: TS 3.8.4, "DC Sources - Operating," TS 3.8.5, "DC Sources - Shutdown," TS 3.8.6, "Battery Cell Parameters," and TS 5.5, "Programs and Manuals," consistent with TSTF-360, the Nuclear Regulatory Commission staff has determined that additional information contained in the enclosure to this letter is needed to complete its review. These questions were discussed with your staff during a teleconference on September 29, 2005. As agreed to by your staff, we request you respond within 60 days of the date of this letter.

If you have any questions, please contact me at 301-415-1030.

Sincerely,

*/RA/*

Richard V. Guzman, Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure: RAI

cc w/encl: See next page

October 19, 2005

Mr. Britt T. McKinney  
Sr. Vice President and  
Chief Nuclear Officer  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSB3  
Berwick, PA 18603-0467

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) - SUSQUEHANNA STEAM  
ELECTRIC STATION, UNITS 1 AND 2 (SSES 1 AND 2) - DIRECT CURRENT  
(DC) ELECTRICAL POWER SYSTEMS TECHNICAL SPECIFICATION TASK  
FORCE (TSTF)-360 (TAC NOS. MC5153 AND MC5154)

Dear Mr. McKinney:

In reviewing your submittal of November 9, 2004, concerning the proposed changes to the SSES 1 and 2 Technical Specification (TS) sections: TS 3.8.4, "DC Sources - Operating," TS 3.8.5, "DC Sources - Shutdown," TS 3.8.6, "Battery Cell Parameters," and TS 5.5, "Programs and Manuals," consistent with TSTF-360, the Nuclear Regulatory Commission staff has determined that additional information contained in the enclosure to this letter is needed to complete its review. These questions were discussed with your staff during a teleconference on September 29, 2005. As agreed to by your staff, we request you respond within 60 days of the date of this letter.

If you have any questions, please contact me at 301-415-1030.

Sincerely,

*/RA/*

Richard V. Guzman, Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure: RAI

cc w/encl: See next page

DISTRIBUTION:

PUBLIC	OGC	RGuzman	DLPM DPR
PDI-1 R/F	RLaufer	MO'Brien	ACRS
MMcConnell	RJenkins	Acting Branch Chief, Branch 4, Rgn-1	

RAI input provided by memo. No substantive changes made.  
Accession Number: ML052860288

OFFICE	PDI-1/PM	PDI-2/LA	EMEB/SC	PDI-1/SC
NAME	RGuzman	MO'Brien	RJenkins *	RLaufer
DATE	10/19/05	10/19/05	7/22/05	10/19/05

OFFICIAL RECORD COPY

REQUEST FOR ADDITIONAL INFORMATION  
RELATING TO DIRECT CURRENT (DC) ELECTRICAL POWER SYSTEMS  
TECHNICAL SPECIFICATION TASK FORCE (TSTF)-360 FOR  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 (SSES 1 AND 2)  
PPL SUSQUEHANNA, LLC (PPL)  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
DOCKET NOS. 50-387 AND 50-388

The Nuclear Regulatory Commission (NRC) staff is reviewing the proposed license amendment to Facility Operating License Nos. NPF-14 and NPF-22 proposing to revise Technical Specification (TS) 3.8.4, "DC Sources - Operating," TS 3.8.5, "DC Sources - Shutdown," TS 3.8.6, "Battery Cell Parameters," and the addition of new TS Section 5.5.13, "Battery Monitoring and Maintenance Program," dated November 9, 2004. The NRC staff has determined that the information requested below will be needed to complete its review.

1. The license amendment application indicates that the SSES 1 and 2 250 volt-direct current (VDC) Division I subsystems were originally designed with two half-capacity battery chargers operating in parallel to equally share the connected loads. Recent analysis has determined that only one battery charger is necessary to supply these loads and it has the capacity to recharge the batteries within 24 hours. Therefore, credit is taken in this proposed change for these chargers as full capacity chargers. As such, either 250 VDC Division I subsystem battery charger is capable of performing the required design function and the other Division I battery charger is considered to be an installed spare charger.
  - a. Provide a draft revision to the SSES 1 and 2 Final Safety Analysis Report (FSAR) or a regulatory commitment to update the SSES 1 and 2 FSAR to address the above indicated new design for the 250 VDC Division I subsystem.
  - b. Provide the results of an evaluation/analysis demonstrating sufficient capacity and capability of the battery charger pursuant with the requirements of General Design Criterion (GDC)-17.
2. Section 8.3.2.1.1.4 of the SSES 1 and 2 FSAR states: "The capacity of each battery charger, or the combined capacity of both chargers in the case of Division I 250V DC subsystem, is based on the largest combined demand of all the steady-state loads and the charger current required to restore the battery from the design minimum charged state to the fully charged state within 12 hours for the plant batteries and within 8 hours for the emergency diesel generator (EDG) "E" battery except for the 18 hour recharge time required for 125V DC subsystems." To periodically demonstrate this capacity, proposed Change 4 adds the following alternative surveillance requirement (SR):

Enclosure

“Verify each battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.” GDC-17 of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, states: “...The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure...”. In addition, 10 CFR 50.36(b) states: “...the technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto,...”.

- a. The 12, 8, or 18-hour recharge time established from analyses and evaluation included in the SSES 1 and 2 FSAR is different from the 24-hour recharge time included in proposed TS change 4. Provide justification (or clarification) for the apparent non-compliance with 10 CFR 50.36(b).
  - b. Information presented in the SSES 1 and 2 FSAR and the proposed TS changes relating to the design basis capacity/capability requirements for the battery charger are not clearly and consistently stated. Provide clarification.
  - c. Provide the results of the evaluation and analysis demonstrating sufficient testability pursuant with GDC-17 when using the proposed alternative SR for testing the battery charger.
  - d. Describe why the proposed alternative SR for testing the battery charger meets 10 CFR 50.36(b).
3. Section 4, Change 1 and 7, of the amendment application states: “...The primary role of the battery charger is in support of maintaining operability of its associated battery. This is accomplished by the charger being of sufficient size to carry the normal steady state DC loads, with sufficient additional capacity to maintain the battery fully charged...” The SSES 1 and 2 FSAR conveys that (1) the primary safety function of the battery charger is to provide DC control power for restoration of alternating current (AC) power following a loss of offsite power or station blackout event and (2) the charger is of sufficient size to carry all steady state DC loads. Provide clarification with respect to these apparent inconsistencies between the application and SSES 1 and 2 FSAR.
4. The amendment application for Change 1 and 7 indicates that these changes allow the use of a spare 125 VDC or 250 VDC battery charger in the event of an inoperable charger, or in the event of performing online maintenance or testing of a charger.
- a. Provide a draft revision to the SSES 1 and 2 FSAR or a Regulatory Commitment to update the SSES 1 and 2 FSAR to address the design of the spare charger.
  - b. Provide the results of an evaluation/analysis demonstrating sufficient capacity, capability, independence, redundancy, and testability pursuant with the requirements of GDC-17 for the period of time when the spare charger is credited in the safety evaluation/analysis.

5. Section 4 of the application states: "...the battery can be restored from any discharge that may have occurred due to battery charger inoperability." Provide the bases and justification for this statement.
6. The technical bases presented for Change 13F is not consistent with the proposed TS change. Provide clarification and the technical basis for the TS change.
7. When electrolyte level is found below the top of the plates, the technical basis allowing continued battery operability has not been described as part of the technical basis for Change 13C. Provide the technical basis for the proposed change.
8. Proposed Change 12 conveys that Category C parameter values and the actions associated with restoration of these values will be relocated to a licensee-controlled program. Provide clarification or justification for the relocation of Category C parameter values.
9. Change 15 indicates that a licensee controlled program for maintenance and monitoring of batteries will be based on the recommendations of Institute of Electrical and Electronic Engineers, Inc. (IEEE) Standard 450-1995. The SSES 1 and 2 FSAR currently indicates that maintenance and monitoring of batteries is based on the recommendations of IEEE Standard 450-1972 (and 450-1980 for the EDG "E" building).

Provide a commitment that maintenance and monitoring of batteries is based on the recommendations of IEEE Standard 450-1995 in the SSES FSAR. Describe and justify any exceptions to IEEE Standard 450-1995.

10. Section 5.1 of the license amendment application indicates that a new program for maintenance and monitoring of batteries is being proposed and will be described in new TS Section 5.5.13, "Battery Monitoring and Maintenance Program." The description provided in the proposed new TS Section 5.5.13 limits itself to this program and is based on IEEE Standard 450-1995. Provide a description based on IEEE 450 for how each battery parameter will be maintained that is being transferred from TS to this new program.
11. The justification for Change 13 conveys that the battery is sized with margin such that while the battery is degraded, sufficient capacity exists to perform intended functions. Describe the extent of battery capacity margin available at the end of the batteries expected life (IEEE Standard 485 sizing criteria (design, aging, and temperature margins)). Explain why (or how it is known) that this capacity margin is sufficient to allow the battery to perform its intended safety function. Identify the location in the SSES 1 and 2 FSAR (or provide a draft revision to the FSAR or a Regulatory Commitment to update the SSES 1 and 2 FSAR) which conveys the results of an evaluation/analysis demonstrating that the batteries have been sized with sufficient capacity (including margin for a degraded battery) pursuant with the requirements of GDC-17.

Susquehanna Steam Electric Station, Units 1 and 2

cc:

Robert A. Saccone  
General Manager - Nuclear Operations  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSB3  
Berwick, PA 18603-0467

Aloysius J. Wrape, III  
General Manager - Performance  
Improvement and Oversight  
PPL Susquehanna, LLC  
Two North Ninth Street, GENPL4  
Allentown, PA 18101-1179

Terry L. Harpster  
General Manager - Plant Support  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSA4  
Berwick, PA 18603-0467

Richard D. Pagodin  
General Manager - Nuclear  
Engineering  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSB3  
Berwick, PA 18603-0467

Rocco R. Sgarro  
Manager - Nuclear Regulatory Affairs  
PPL Susquehanna, LLC  
Two North Ninth Street, GENPL4  
Allentown, PA 18101-1179

Walter E. Morrissey  
Supervising Engineer  
Nuclear Regulatory Affairs  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSA4  
Berwick, PA 18603-0467

Michael H. Crowthers  
Supervising Engineer  
Nuclear Regulatory Affairs  
PPL Susquehanna, LLC  
Two North Ninth Street, GENPL4  
Allentown, PA 18101-1179

Steven M. Cook  
Manager - Quality Assurance  
PPL Susquehanna, LLC  
769 Salem Blvd., NUCSB2  
Berwick, PA 18603-0467

Luis A. Ramos  
Community Relations Manager,  
Susquehanna  
PPL Susquehanna, LLC  
634 Salem Blvd., SSO  
Berwick, PA 18603-0467

Bryan A. Snapp, Esq  
Assoc. General Counsel  
PPL Services Corporation  
Two North Ninth Street, GENTW3  
Allentown, PA 18101-1179

Supervisor - Document Control Services  
PPL Susquehanna, LLC  
Two North Ninth Street, GENPL4  
Allentown, PA 18101-1179

Richard W. Osborne  
Allegheny Electric Cooperative, Inc.  
212 Locust Street  
P.O. Box 1266  
Harrisburg, PA 17108-1266

Director - Bureau of Radiation Protection  
Pennsylvania Department of  
Environmental Protection  
Rachel Carson State Office Building  
P.O. Box 8469  
Harrisburg, PA 17105-8469

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
P.O. Box 35, NUCSA4  
Berwick, PA 18603-0035

Regional Administrator, Region 1  
U.S. Nuclear Regulatory Commission  
475 Allendale Road

Susquehanna Steam Electric Station, Units 1 and 2

cc:

King of Prussia, PA 19406  
Board of Supervisors  
Salem Township  
P.O. Box 405  
Berwick, PA 18603-0035

Dr. Judith Johnsrud  
National Energy Committee  
Sierra Club  
443 Orlando Avenue  
State College, PA 16803