

December 1, 1996

Mr. Robert G. Byram  
Senior Vice President-Nuclear  
Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, PA 18101

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 (TAC NOS. M93269 & M93270)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 162 to Facility Operating License No. NPF-14 and Amendment No. 133 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 28, 1995, as supplemented October 25, 1995, and August 9, 1996.

These amendments revise the 250 volt DC profiles in the Technical Specifications for the two units to reflect new load profile calculations.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly Federal Register Notice.

Sincerely,

/s/

Chester Poslusny, Senior Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387/388

- Enclosures: 1. Amendment No. 162 to License No. NPF-14  
2. Amendment No. 133 to License No. NPF-22  
3. Safety Evaluation

cc w/encls: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 17, 1996

Mr. Robert G. Byram  
Senior Vice President-Nuclear  
Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, PA 18101

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These amendments revise the 250 volt DC profiles in the Technical Specifications for the two units to reflect new load profile calculations.

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Sincerely,

*Chester Poslusny*

Chester Poslusny, Senior Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387/388

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License No. NPF-14  
2. Amendment No. 133 to  
License No. NPF-22  
3. Safety Evaluation

cc w/encls: See next page

Mr. Robert G. Byram  
Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,  
Units 1 & 2

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

PENNSYLVANIA POWER & LIGHT COMPANY

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-387

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 162  
License No. NPF-14

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for the amendment filed by the Pennsylvania Power & Light Company, dated July 28, 1995, as supplemented October 25, 1995, and August 9, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

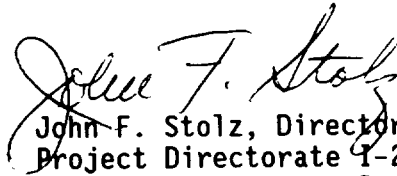
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-14 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 162 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PP&L shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and is to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate 1-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 17, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 162

FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following page of the Appendix A Technical Specifications with enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

REMOVE

3/4 8-13

INSERT

3/4 8-13

## **ELECTRICAL POWER SYSTEMS**

### **SURVEILLANCE REQUIREMENTS (Continued)**

---

- 5) Channel "A" battery 2D610:
    - 323 amperes for 60 seconds
    - 96 amperes for the remainder of the 4 hour test
  - 6) Channel "B" battery 2D620:
    - 324 amperes for 60 seconds
    - 96 amperes for the remainder of the 4 hour test
  - 7) Channel "C" battery 2D630:
    - 297 amperes for 60 seconds
    - 80 amperes for the remainder of the 4 hour test
  - 8) Channel "D" battery 2D640:
    - 300 amperes for 60 seconds
    - 83 amperes for the remainder of the 4 hour test
  - 9) Channel "H" battery OD595:
    - 253 amperes for the first 60 seconds
    - 75 amperes for the remainder of the 4 hour test
- c) For 250-volt batteries:
- 1) Battery bank 1D650:
    - 800 amperes for 60.0 seconds
    - 610 amperes for 9.0 minutes
    - 535 amperes for 20.0 minutes
    - 27 amperes for 210.0 minutes
  - 2) Battery bank 1D660:
    - 1040 amperes for 60.0 seconds
    - 575 amperes for 9.0 minutes
    - 350 amperes for 20.0 minutes
    - 175 amperes for 210.0 minutes
- e. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test.
- f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

PENNSYLVANIA POWER & LIGHT COMPANY  
ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.133  
License No. NPF-22

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for the amendment filed by the Pennsylvania Power & Light Company, dated July 28, 1995, as supplemented October 25, 1995, and August 9, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.



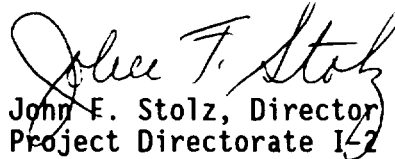
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-22 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 133 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PP&L shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and is to be implemented prior to the startup following the Eighth Refueling and Inspection Outage for Unit 2, which is scheduled for the Spring of 1997.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 17, 1996

ATTACHMENT TO LICENSE AMENDMENT NO.133

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following page of the Appendix A Technical Specifications with enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

REMOVE\*

3/4 8-13a

INSERT

3/4 8-13a

\*Remove page after TS change is implemented.

## **ELECTRICAL POWER SYSTEMS**

### **SURVEILLANCE REQUIREMENTS (Continued)**

---

- 7) Channel "C" battery 2D630:
    - 297 amperes for 60 seconds
    - 80 amperes for the remainder of the 4 hour test
  - 8) Channel "D" battery 2D640:
    - 300 amperes for 60 seconds
    - 83 amperes for the remainder of the 4 hour test
  - 9) Channel "H" battery OD595:
    - 253 amperes for the first 60 seconds
    - 75 amperes for the remainder of the 4 hour test
- c) For 250-volt batteries:
- 1) Battery bank 2D650:
    - 270 amperes for 60 seconds\*
    - 245 amperes for 9 minutes\*
    - 155 amperes for 230 minutes\*
  - 2) Battery bank 2D660:
    - 700 amperes for 60 seconds\*
    - 410 amperes for 9 minutes\*
    - 150 amperes for 230 minutes\*
- e. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval, this performance discharge test may be performed in lieu of the battery service test.
- f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

\*Effective as of the date of issuance and is to be implemented prior to the startup following the Eighth Refueling and Inspection Outage for Unit 2 which is scheduled for the Spring of 1997



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 162 TO FACILITY OPERATING LICENSE NO. NPF-14  
AMENDMENT NO. 133 TO FACILITY OPERATING LICENSE NO. NPF-22  
PENNSYLVANIA POWER & LIGHT COMPANY  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2  
DOCKET NOS. 50-387 AND 388

**1.0 INTRODUCTION**

By letter dated July 28, 1995, as supplemented October 25, 1995, and August 9, 1996, the Pennsylvania Power and Light Company (the licensee) submitted a request for changes to the Susquehanna Steam Electric Station, Units 1 and 2, Technical Specifications (TSs). The requested changes would revise the 250 volt DC profiles in the Technical Specifications for the two units to reflect new load profile calculations.

The October 25, 1995, and August 9, 1996 letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination nor the Federal Register notice.

**2.0 BACKGROUND**

Two Class 1E 250 Vdc subsystems are provided for each unit and identified as Division I and II. The Division I 250 Vdc subsystem is provided with one 250 V battery bank, one load center, two equal capacity chargers, and motor control centers (MCCs). The Division II 250 Vdc subsystem is provided with one 250 V battery bank, one distribution load center, one battery charger, and MCCs. The Class 1E 250 Vdc battery banks consist of 120 Type LCR-25 cells, manufactured by Charter Power Systems. Each Class 1E 250 Vdc battery bank is rated at 1800 ampere-hours (8 hours to 1.75 V per cell at 77°F). The Class 1E 250 Vdc batteries supply power for portions of the high pressure core injection (HPCI) system, the reactor core isolation cooling (RCIC) system, and the safety parameter display system (SPDS) power supplies. They also supply the main turbine emergency seal oil pump, reactor feed pump turbine emergency lube oil pumps, reactor recirculation motor-generator set emergency lube oil pump, and the plant computer, which are not considered safety-related and do not perform any safety functions. During a station black out (SBO) event, loads that are not required are manually shed at 30 minutes.

The licensee installed larger horsepower motors due to concerns related to Generic Letter 89-10. These larger motors resulted in higher loading on the batteries. During this design modification, the licensee found that the previous calculations for the Class 1E 250 Vdc batteries had not taken into account temperature and aging effects. Also, some Non-Class 1E loads on the Unit 2 250 Vdc batteries had been removed but the Technical Specification (TS) battery load profiles had not reflected this load reduction. Therefore, the Class 1E 250 battery load profiles were revised to reflect these changes and findings.

By letter dated July 28, 1995, Pennsylvania & Light Company (PP&L) submitted a proposed amendment to the Susquehanna Steam Electric Station Unit 1 and 2 TS. The proposed changes would revise the Class 1E 250 Vdc battery load profiles in TS 4.8.2.1(d)(2c) to reflect the new load profile calculations. The licensee also provided additional information by letters dated October 25, 1995, and August 9, 1996.

### 3.0 EVALUATION

The Class 1E 250 Vdc battery load profiles are used for surveillance testing and are to include the worst case loading plus margin. This testing assures that the Class 1E 250 Vdc batteries have sufficient stored energy to operate all required emergency loads for the times assumed in the analysis.

Load profiles were developed for the large break loss of coolant accident (LOCA), large break LOCA with HPCI or RCIC in pressure control, small break LOCA, small break LOCA with HPCI or RCIC in pressure control, and SBO. The load currents and timing for sequencing the loads on the Class 1E 250 Vdc batteries were tabulated into discrete time segments for each of the events. The maximum possible load profiles for each event were then developed by determining the maximum loads that could possibly start/operate simultaneously due to the predicted operating times of the connected equipment. Composite battery load profiles were developed using the heaviest loaded discrete time segments from the maximum load profiles for each event. The composite load profiles do not correspond to any single operating mode, however, these profiles envelope all the operating modes of the batteries. These load profiles also take into account the loads that are manually shed at 30 minutes during an SBO event. Margins were then added to the composite load profiles to establish the proposed TS Class 1E 250 Vdc battery load profiles.

As part of the evaluation, the staff reviewed Calculations EC-088-1008, "Battery 2D660 Load Profile," and EC-088-0506, "250 VDC - Battery and Battery Charger Sizing Calculation," dated July 1994 to determine that the capacity of battery is sufficient to supply the load profile and the capacity of the charger is sufficient to re-charge the battery. The staff found errors in these calculations. These errors did not have a big impact on the results of the calculation since sufficient margin was included in the original battery sizing. However, the staff requested the licensee to recheck their sizing calculations for accuracy and submit them for staff review. After the review of a submittal dated August 9, 1996, the staff found that these calculations

were satisfactory and the staff concluded that the Class 1E 250 Vdc batteries and Class 1E 250 Vdc battery chargers have been sized to handle the load profiles. Calculations showed that the 120 cell, 12 positive plates per cell battery banks are sufficient to supply the proposed TS load profiles and to maintain at least 210 Vdc at the Class 1E MCC corrected for temperature and aging. It was also shown that the Class 1E 250 Vdc battery chargers have sufficient capacity to re-charge the batteries from the proposed TS emergency discharge conditions to fully charged condition in 12 hours while continuing to supply the plant normal continuous loads.

On the basis of the above, the staff concludes that the proposed changes to the 250 Vdc battery TS load profiles are acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 47622). Accordingly, the amendments meet eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Nguyen

Date: December 17, 1996