

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of  
LONG ISLAND LIGHTING COMPANY  
(Shoreham Nuclear Power Station,  
Unit 1)

Docket No. 50-322-1  
(OL)

AFFIDAVIT OF JERRY L. MAUCK  
IN RESPONSE TO ALAB-788

I, Jerry L. Mauck, depose and say:

1. I am a Reactor Engineer (Instrumentation) within the Instrumentation and Control Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation, United States Nuclear Regulatory Commission. My Professional Qualifications are already a matter of record in this proceeding. This Affidavit is submitted in response to that portion of ALAB-788 dealing with Unresolved Safety Issue (USI) A-47 and as a supplement to the Affidavit of Andrew J. Szukiewicz (Szukiewicz Affidavit).

2. Sections 7.7.1, 7.7.2, and 7.5 of Shoreham SSER 4 referenced in the Szukiewicz Affidavit were prepared by me. I hereby certify that the statements contained therein are true and correct to the best of my knowledge and belief. All documents relied on by me in my review are set forth in the above referenced sections of SSER 4.

B41116001B B41114  
PDR ADDCK 05000322  
G PDR

3. As stated in the above referenced SSER Sections, the applicant was requested to (1) review the possibility of consequential control system failures that exacerbate the effects of high-energy line breaks (HELBs) and adopt new procedures or perform design changes, where needed, to ensure that the postulated events would be adequately mitigated; (2) review and identify any power sources or sensors (sensor lines) that provide power or signals to two or more control systems and to demonstrate that failures or malfunctions of these power sources or sensors will not result in consequences beyond the bounds of the FSAR Chapter 15 analyses or beyond the capability of operators or safety systems; and (3) review the adequacy of emergency operational procedures used by control room operators to attain safe shut down upon loss of any class 1E or non-class 1E buses supplying power to safety- or non safety-related instruments and to control systems (IEB 79-27). The applicant responded to these three requests for information and the conclusions of the staff review of this information are set forth in the above referenced SSER Sections. There we concluded that (1) HELB's would not cause control system malfunctions such that resulting dose consequences would exceed 10% of 10 CFR 100 criteria and complicate events beyond the FSAR analysis; (2) the consequences of failures of power sources or sensors (sensor lines) that provide power or signals to two or more control systems were bounded by previous analyses presented in FSAR Chapter 15; and (3) Shoreham procedures provide adequate, sufficient and detailed instructions for the operator to attain safe shutdown upon loss of any Class 1E or non-class 1E buses supplying power

to safety-related or nonsafety-related instruments and to control systems.

4. In summary, the staff has reviewed the applicant's responses to these concerns and, as stated in the above references SSER sections, has found them an acceptable means to resolve these staff concerns.

*Jerry L. Mauck*  
Jerry L. Mauck

Subscribed and sworn to before me  
this, 3<sup>rd</sup> day of November, 1984

*Melinda L. McDonald*  
Notary Public

My commission expires: 7/1/86

ATTACHMENT 16



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

3/23/84

LICENSING DIVISION  
LIBRARY  
PENNSYLVANIA POWER & LIGHT COMPANY  
ALLEGHENY ELECTRIC COOPERATIVE, INC.

Attachment 16

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

FACILITY OPERATING LICENSE

License No. NPF-22

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for a license filed by the Pennsylvania Power & Light Company and the Allegheny Electric Cooperative, Inc. (the licensees) 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, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Susquehanna Steam Electric Station, Unit 2 (the facility), has been substantially completed in conformity with Construction Permit No. CPPR-102 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license 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;
  - E. The Pennsylvania Power & Light Company\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;

---

\*The Pennsylvania Power & Light Company is authorized to act as agent for the Allegheny Electric Cooperative, Inc. and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

8404080388 840323  
PDR ADOCK 05000388  
P PDR

- (6) Inservice Inspection Program (Section 5.2.4 and 6.6, SER, SSER #1, SSER #3)

By March 1, 1985, PP&L shall submit a revised inservice inspection program for NRC review and approval.

- (7) Environmental Qualification (Section 3.11, SER, SSER #1, SSER #2, SSER #3, SSER #4, SSER #5, SSER #6)

Prior to March 31, 1985, PP&L shall environmentally qualify all electrical equipment according to the provisions of 10 CFR 50.49.

- (8) Seismic and Dynamic Qualification (Section 3.10, SER, SSER #1, SSER #3, SSER #4, SSER #5, SSER #6)

(a) Prior to exceeding five percent of rated power, PP&L shall complete qualification and documentation, as well as installation for:

- (1) RCIC backup power supply and inverter
- (2) A/E-added devices to NSSS panels

(b) Prior to the first refueling outage, PP&L shall complete qualification and documentation, as well as installation for the in-vessel rack.

- (9) Surveillance of Control Blade (Section 4.2.3, SER)

Within 30 days after plant startup following the first refueling outage, PP&L shall comply with Items 1, 2, and 3 of IE Bulletin No. 79-26, Revision 1, "Boron Loss from BWR Control Blades", and submit a written response on Item 3.

- (10) Additional Instrumentation and Control Concerns (Section 7.7.2, SER, SSER #2; Section 3.11.3, SSER #6)

Prior to exceeding five percent of rated power, PP&L shall resolve the following concerns to the NRC's satisfaction:

- (a) whether common electrical power sources or sensor malfunctions may cause multiple control systems failures, and
- (b) whether high energy line breaks will result in unacceptable consequential control system failures.

ATTACHMENT 17



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

12/20/83

LICENSING DIVISION  
LIBRARY

Attachment 17

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

DOCKET NO. 50-397

WPPSS NUCLEAR PROJECT NO. 2

FACILITY OPERATING LICENSE

License No. NPF-21

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for license filed by the Washington Public Power Supply System (WPPSS, also the licensee), 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, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of Washington Public Power Supply System, Nuclear Project No. 2 (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-93 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D. below);
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license 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 (except as exempted from compliance in Section 2.D. below);
  - E. The Washington Public Power Supply System is technically qualified to engage in the activities authorized by this license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. The Washington Public Power Supply System has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;

840117056 831220  
PDR ADOCK 05000397  
PDR



(22) Control Systems Failures (Sections 7.7.2.1, 7.7.2.2, 7.5.2.3, SER, SSER=4)

Prior to startup following the first refueling outage, the licensee shall provide to NRC staff for review and approval any analysis or modifications needed to resolve the following items.

- (a) capability to attain a safe shutdown condition following the loss of any Class 1E instrument bus
- (b) the impact of control systems failures resulting from high energy line breaks on the transient and accident analyses
- (c) the impact of control systems failures due to the failure of common power sources, sensors, or instrument sensing lines on the transient analyses.

(23) Hydrodynamic Loads (Section 3.9.3.1 SER, SSER#4)

Prior to exceeding five (5) percent of rated thermal power, the licensee shall provide for NRC staff review and approval the results of the reconciliation of the hydrodynamic loads for all the safety-related piping, equipment and their supports.

(24) Emergency Planning Program (Section 13.3, SER, SSER#4)

Prior to exceeding five (5) percent of rated thermal power, functionally specific training in emergency response duties must be provided to the remaining members of the emergency organization staff who were not included in previous emergency preparedness training specified in the minimum staffing requirements of Table B-1 of NUREG-0654 (including on-shift and 30 and 60 minute augmentation capability).

(25) Offsite Emergency Preparedness (Section 13.3, SSER #4)

Prior to exceeding five (5) percent of rated thermal power, the licensee shall certify to the NRC that:

- (1) The distribution of tone alert radios, which are part of the alert and notification system, has been completed to residents within the plume exposure pathway Emergency Planning Zone (EPZ).
- (2) The distribution of public information brochures has been completed to the population within the plume exposure pathway EPZ.

ATTACHMENT 18



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

W/LTR.  
7-17-82

Attachment 18

Pennsylvania Power & Light Company  
Allegheny Electric Cooperative, Inc.  
Docket No. 50-387  
Susquehanna Steam Electric Station, Unit 1  
Facility Operating License

License No. NPF-14

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for a license filed by the Pennsylvania Power & Light Company and the Allegheny Electric Cooperative, Inc. (the licensees) 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, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Susquehanna Steam Electric Station, Unit 1 (the facility), has been substantially completed in conformity with Construction Permit No. CPPR-101 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license 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;
  - E. The Pennsylvania Power & Light Company\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;

---

\*The Pennsylvania Power & Light Company is authorized to act as agent for the Allegheny Electric Cooperative, Inc. and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

(25) Additional Instrumentation and Control Concerns (Section 7.7.2, SER, SSER #2)

Prior to startup following the first refueling outage, PP&L shall resolve the following concerns to the NRC's satisfaction:

- (a) whether common electrical power sources or sensor malfunctions may cause multiple control systems failures, and
- (b) whether high energy line breaks will result in unacceptable consequential control system failures.

(26) Surveillance of Control Blade (Section 4.2.3, SER)

Within 30 days after plant startup following the first refueling outage, PP&L shall comply with items 1, 2, and 3 of IE Bulletin No. 79-26, Revision 1, "Boron Loss from BWR Control Blades", and submit a written response on item 3.

(27) Emergency Diesel Engine Starting Systems (Section 9.6.3, SER)

Prior to startup following the first refueling outage, PP&L shall install air dryers upstream of the air receivers.

(28) NUREG-0737 Conditions (Section 22, SER)

PP&L shall complete the following conditions to the satisfaction of the NRC. These conditions reference the appropriate items in Section 22.2, "TMI Action Plan Requirements for Applicants for Operating Licenses," in the Safety Evaluation Report and Supplements 1, 2 and 3, NUREG-0776.

(a) Nuclear Steam Supply System Vendor Review of Procedures (I.C.7, SER, SSER #1)

Prior to beginning low-power testing, PP&L shall assure that the General Electric review of the power ascension test procedures has been completed and the General Electric recommendations have been incorporated.

(b) Special Low Power Testing and Training (I.G.1, SER, SSER#3)

During the first fuel cycle, PP&L shall perform Simulated Loss of All AC Power Test. At least four weeks prior to the test, PP&L shall provide a safety analysis and test procedure to NRC.

ATTACHMENT 19

MISSISSIPPI POWER & LIGHT COMPANY  
MIDDLE SOUTH ENERGY, INC  
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

DOCKET NO. 416

GRAND GULF NUCLEAR STATION, UNIT 1

FACILITY OPERATING LICENSE

License No. MPF-13

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for a license, as amended, filed by Mississippi Power & Light Company, for itself and the Middle South Energy, Inc. and South Mississippi Electric Power Association (hereinafter referred to as the licensees) 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, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Grand Gulf Nuclear Station, Unit 1 (the facility), has been substantially completed in conformity with Provisional Construction Permit No. CPPR-118 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license 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;
  - E. The Mississippi Power & Light Company (MPSL)\* is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;

8807010518 B20616  
PDR ADDCA 05C00416  
P PDR

The MPSL is authorized to act as agent for the co-owners and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

OFFICE:				
SURNAME:				
DATE:				

OFFICIAL RECORD COPY

(23) Compliance with Regulatory Guide 1.97 (Sections 7.5.1, SER)

By July 15, 1982, MP&L shall provide a proposal including a proposed implementation schedule of meeting Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," dated December 1980.

(24) IE Bulletin 79-27, Loss of Non-Class IE Instrumentation and Control Power System Bus During Operation (Section 7.8B, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete any design changes found necessary as a result of this review.

(25) IE Information Notice 79-22, Qualification of Control System (Section 7.8.C, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete any design changes found necessary as a result of this review.

(26) Control System Failures (Section 7.8 D, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete any design changes found necessary as a result of this review.

(27) Failures in Vessel Level Sensing Lines (Section 7.9H, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall implement any design changes found necessary as a result of the NRC review of the MP&L evaluation of failures in vessel sensing lines contained in the MP&L letter dated September 10, 1991.

(28) Standby Service Water System (Section 9.2.1 SER, SSER #2)

No irradiated fuel may be stored in the Unit 1 spent fuel pool prior to completion of modifications to the standby service water (SSW) system and verification that the design flow can be achieved to all SSW system components. However, should a core offloading be necessary prior to completion of these modifications (scheduled for the first scheduled refueling outage), irradiated fuel may be placed in the spent fuel pool when the RMR system operating in the spent fuel pool cooling mode is available. Until the SSW system is modified, the spent fuel pool cooler shall be isolated from the SSW system by locked closed valves. The position of these valves shall be verified every 31 days until the design flowrate for SSW system is demonstrated.

OFFICE				
SURNAME				
DATE				

ATTACHMENT 20





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

Attachment 20

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-373

LA SALLE COUNTY STATION, UNIT 1

FACILITY OPERATING LICENSE

License No. NPF-11

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for a license filed by the Commonwealth Edison Company 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, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the La Salle County Station, Unit 1 (the facility), has been substantially completed in conformity with Construction Permit No. CPPR-99 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license 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;
  - E. The Commonwealth Edison Company is technically qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. The Commonwealth Edison Company has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
  - G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

(16) Containment Long Term Program Load Specifications (6.2.1.1, SSER #2)

Prior to October 1, 1982, the licensee shall submit its confirmatory assessment of the containment design adequacy for pool dynamic loads (chugging, vent lateral and diaphragm reverse pressure) developed in conjunction with the Long Term Program and reported in NUREG-0808.

(17) Pressure Interlocks on Valves Interfacing at Low and High Pressure (Section 6.3.4, SSER #2)

Prior to startup after the first refueling outage, the licensee shall implement isolation protection in conformance to the requirements of Section 6.3 of the Standard Review Plan against overpressurization of the low pressure emergency core cooling systems (RHR/LPCI and LPCS) at the high and low pressure interface containing a check valve and a closed motor-operated valve.

(18) Compliance with Regulatory Guide 1.97 (Sections 7.5.2, SER)

By July 1, 1982, the licensee shall provide a plan for implementing modifications necessary to comply with Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," dated December 1980.

(19) Additional Instrumentation and Control Concerns (Section 7.7.3.4, SSER #1)

The licensee shall resolve the following concerns to the NRC staff's satisfaction prior to startup after the first refueling outage:

- (a) whether common electrical power sources or sensor malfunctions may cause multiple control systems failures, and
- (b) whether high energy line breaks will result in unacceptable consequential control system failures.

(20) Low and/or Degraded Grid Voltage (Section 8.2.2.2, SER)

The licensee shall install a second level of undervoltage protection prior to startup after the first refueling outage.

(21) Reliability of Diesel-Generators (Sections 8.3.1.1, SER and 9.6.3.4, SER)

Prior to startup after the first refueling outage, the licensee shall implement the following design modifications with respect to diesel-generator reliability: