



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

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT 2

DOCKET NO. 50-311

LICENSE FOR FUEL LOADING AND LOW POWER TESTING

License No. DPR-75

1. The Nuclear Regulatory Commission (the Commission) having found that:
 - A. The application for license filed by the Public Service Electric and Gas Company for itself and the Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (herein after 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 Salem Nuclear Generating Station, Unit 2 (facility) has been substantially completed in conformity with Construction Permit No. CPPR-53 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility requires an exemption from certain requirements of Appendix J to 10 CFR Part 50. This exemption is described in the Office of Nuclear Reactor Regulation's Safety Evaluation Report, Supplement No. 4. This exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. The exemption is, therefore, hereby granted. With the granting of this exemption, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

- D. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - E. There is reasonable assurance: (i) that the activities authorized by this 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 regulations of the Commission;
 - F. Public Service Electric and Gas Company is technically qualified to engage in the activities authorized by this license in accordance with the regulations of the Commission;
 - G. The licensees are financially qualified to engage in the activities authorized by this license in accordance with the regulations of the Commission;
 - H. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;
 - I. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
 - J. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of License No. DPR-75 subject to a condition for protection of the environment set forth herein is in accordance with 10 CFR Part 51, of the Commission's regulations and all applicable requirements have been satisfied; and
 - K. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, and 70, including 10 CFR Sections 30.33, 40.32, 70.23 and 70.31.
2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting on April 16, 1980, License No. DPR-75 is hereby issued to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company (licensees) to read as follows:

- A. This license applies to the Salem Nuclear Generating Station, Unit 2, a pressurized water nuclear reactor and associated equipment (the facility), owned by the licensees. The facility is located in Salem County, New Jersey, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 10 through 44) and the Environmental Report as supplemented and amended (Supplements 1 through 3).
- B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:
- (1) Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company to possess the facility at the designated location in Salem County, New Jersey, in accordance with the procedures and limitations set forth in this license;
 - (2) Public Service Electric and Gas Company, pursuant to Section 104b of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in Salem County, New Jersey in accordance with the procedures and limitations set forth in this license;
 - (3) Public Service Electric and Gas Company, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
 - (4) Public Service Electric and Gas Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (5) Public Service Electric and Gas Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
 - (6) Public Service Electric and Gas Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Public Service Electric and Gas Company (PSE&G) is authorized to (a) load fuel, (b) proceed to initial criticality, (c) perform startup testing at zero power in Operational Mode 2, and (d) after prior written approval by the Director of Nuclear Reactor Regulation, operate the facility for testing at reactor core power levels not in excess of 171 megawatts thermal (five percent of rated power).

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto have hereby been incorporated into this license. PSE&G shall operate the facility in accordance with the Technical Specifications.

(3) Secondary Water Chemistry

PSE&G shall implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall include:

- a. Identification of a sampling schedule for the critical parameters and control points for these parameters;
- b. Identification of the procedures used to measure the values of the critical parameters;
- c. Identification of process sampling points;
- d. Procedure for the recording and management of data;
- e. Procedures defining corrective actions for off control point chemistry conditions;
- f. A procedure identifying (i) the authority responsible for the data and (ii) the sequence and timing of administrative events required to initiate corrective action; and

- g. Monitor the condensate at the effluent on the condensate pump. When leakage is confirmed repair or plug the leak in accordance with Branch Technical Position MTEB 5-3.

(4) Initial Test Program

PSE&G shall conduct the post-fuel-loading initial test program (set forth in Section 14 of the Final Safety Analysis Report and its Amendments) that has been reviewed and approved by the Commission at the time of issuance of this license without making any major modification of this program. Major modifications are deemed to involve unreviewed safety questions under 10 CFR Section 50.59 and are defined as:

- a. Elimination of any test identified in Section 14 of the Final Safety Analysis Report as essential.
- b. Modification of test objectives, methods or acceptance criteria for any test identified in Section 14 of the Final Safety Analysis Report as essential.
- c. Performance of any test at a power level different from there described.
- d. Failure to complete any tests included in the described program (planned or scheduled for power levels up to the authorized power level).

(5) Fuel Load and Zero Power (i.e., power required to perform physics testing) Testing Conditions

The following conditions shall be completed to the satisfaction of the Commission prior to fuel loading. The following conditions are related to matters specified in the TMI Action Plan, Near Term Operating License (NTOL) Requirements, dated February 6, 1980, and applicable to fuel load and zero power testing. Each of the following conditions references the appropriate section of Part II of Supplement No. 4 to the Safety Evaluation Report (NUREG-0517 Suppl. No. 4) for the Salem Nuclear Generating Station, Unit 2 and follows the numbering sequence utilized in the February 6, 1980 NTOL Requirements list.

a. Shift Technical Advisor (I.A.1.1)

PSE&G shall provide on each shift a Shift Technical Advisor (STA) whose principal duty shall be to act as an advisor to the shift supervisor primarily in assessing accident/transient occurrences. The Shift Technical Advisor (STA) shall be a degreed engineer possessing specialized training as specified below.

During 1980, interim Shift Technical Advisors (STA) shall serve on shift. During 1980, these interim STAs shall receive training in plant systems including mechanical and control systems, thermal hydraulic, core design, technical specifications and transient and accident analyses.

Also during the same period of 1980, designated permanent STAs shall undergo an approximately 35 week training program. Training shall be provided in reactor theory and thermodynamics, reactor operation, health physics and chemistry, reactor systems, accident analysis, reactor simulator and metallurgy.

PSE&G shall develop shift turnover procedures which assure transferral of information between STAs.

b. Shift Supervisor Duties (I.A.1.2) and Shift Personnel Responsibilities (I.C.3)

PSE&G shall issue a management directive, signed by the General Manager, Electric Production, which emphasizes the assignment of primary management responsibility to the senior shift supervisor. This directive shall be reissued on an annual basis.

The responsibility of the shift supervisor shall be that defined in PSE&G Administrative Procedure AP-5, "Operating Practices".

The senior shift supervisor or shift supervisor shall remain in the control room area at all times when Unit 2 is

operating in Mode 1, 2, 3, or 4, except that he may be allowed to be absent provided an individual, other than the shift technical advisor, who possesses a valid senior reactor operator (SRO) license assumes the control room command function during his absence. The individual who assumes the control room command function shall remain in the control room until the senior shift supervisor or shift supervisor returns and reassumes the command function.

The senior shift supervisor or shift supervisor shall only be relieved by an individual who possesses a valid SRO license. Individuals who do not possess a valid SRO license, including members of station management, shall not relieve the shift supervisor, nor shall they direct the licensed activities of licensed operators.

c. Shift Manning (I.A.1.3)

The PSE&G's shift crew composition for the operation of Salem Unit 2, in conjunction with Unit 1 shall be in accordance with Table 6.2-1 of the Technical Specifications.

PSE&G shall have administrative procedures to assure that qualified individuals to man the operational shifts are readily available in the event of an abnormal or emergency situation. These administrative procedures shall include provisions which limit the amount of overtime worked by licensed operators.

The need for a licensed operator to exceed the limits in overtime shall be infrequent. The limits on overtime hours are:

- (1) An individual should not be permitted to work more than 12 hours straight (not including shift turnover time).
- (2) There should be at least a 12-hour break between all work periods (shift turnover time is included in this 12-hour break).
- (3) An individual should not work more than 72 hours in any 7-day period.
- (4) An individual should not work more than 14 consecutive days without having two consecutive days off.

However, for those circumstances which arise requiring deviation from the above, such deviation may be authorized by the plant manager or high levels of PSE&G management in accordance with established procedures and with appropriate documentation of the cause.

d. Revised Scope and Criteria for Licensing Examinations
(I.A.3.1)

PSE&G shall train all shift personnel (licensed and non-licensed) at Salem Nuclear Generating Station, Units 1 and 2 in all the TMI related design changes which have been incorporated in the station.

e. Organization and Management Criteria (I.B.1.1)

With respect to offsite technical support to the plant staff in the event of an emergency, PSE&G shall develop procedures delineating the responsibility and authority of corporate office personnel in providing technical support.

f. Safety Engineering Group and Onsite Evaluation Capability
(I.B.1.2)

PSE&G shall establish an onsite Safety Engineering Group which shall be technically responsible to offsite management. The Safety Engineering Group shall be independent of the station staff and shall perform independent reviews of station operational activities. This group shall be composed of at least five persons; one supervisor and four additional persons with collective expertise in the areas of nuclear engineering, heat transfer, mechanical engineering and instrumentation and controls. The group shall report technically offsite to the General Manager, Licensing and Environment. The duties and responsibilities of this group shall be as follows:

1. Be cognizant of the scope and intent of the test program.
2. Be cognizant of the tests being conducted.
3. Be familiar with the operation of a pressurized water type reactor.
4. Provide daily status reports to the General Manager, Licensing and Environment at the corporate office.

PSE&G shall establish an onsite capability to evaluate operating history of Salem Unit 2, in conjunction with that of Salem Unit 1, and also plants of similar design.

g. Licensee Onsite Operating Experience Evaluation Capability (I.B.1.4) and License Dissemination of Operating Experience (I.C.5)

PSE&G shall develop procedures for assessing and disseminating operating experience to operators and other personnel involved with plant operation, both in plant and at PSE&G's corporate office.

h. Shift Relief and Turnover Procedure (I.C.2)

PSE&G shall implement the shift and relief turnover procedure in accordance with PSE&G Administrative Procedure AP-5 "Operating Practices", Operating Memo 20, and in the Operations Department Manual.

PSE&G shall establish a system to evaluate the effectiveness of the turnover procedures.

i. Control Room Access (I.C.4)

PSE&G shall implement control room access procedures in accordance with Administrative Procedure AP-5, "Operating Practices".

Lines of communication and authority for plant management personnel not in direct command of operations, including those who report to stations outside of the control room, shall be in accordance with the Emergency Plan Manual.

j. Degraded Core Training (II.B.4)

PSE&G shall initiate preparation of a program to ensure that all operating personnel are trained in the use of installed plant systems to control or mitigate an accident in which the core is severely damaged. The training program shall include the following topics:

Incore Instrumentation

1. Use of fixed or moveable incore detectors to determine extent of core damage and geometry changes.
2. Use of thermocouples in determining peak temperatures; methods for extended range readings; methods for direct readings at terminal junctions.

Excore Nuclear Instrumentation (NIS)

1. Use of NIS for determination of void formation; void location basis for NIS response as a function of core temperatures and density changes.

Vital Instrumentation

1. Instrumentation response in an accident environment; failure sequence (time to failure, method of failure); indication reliability (actual vs. indicated level).
2. Alternative methods for measuring flows, pressures, levels, and temperatures.
 - a. Determination of pressurizer level if all level transmitters fail.
 - b. Determination of letdown flow with a clogged filter (low flow).
 - c. Determination of other Reactor Coolant System parameters if the primary method of measurement has failed.

Primary Chemistry

1. Expected chemistry results with severe core damage; consequences of transferring small quantities of liquid outside containment; importance of using leak tight systems.
2. Expected isotopic breakdown for core damage; for clad damage.
3. Corrosion effects of extended immersion in primary water; time to failure.

Radiation Monitoring

1. Response of Process and Area Monitors to severe damages; behavior of detectors when saturated; method for detecting radiation readings by direct measurement at detector output (overranged detector); expected accuracy of detectors at different locations; use of detectors to determine extent of core damage.

2. Methods of determining dose rate inside containment from measurements taken outside containment.

Gas Generation

1. Methods of H₂ generation during an accident; other sources of gas (Xe, Kr); techniques for venting or disposal of noncondensibles.
2. H₂ flammability and explosive limit; sources of O₂ in containment of Reactor Coolant System.

k. Relief and Safety Valve Test (II.D.2)

PSE&G shall carry out a testing program to qualify the relief and safety valves under expected operating conditions for design basis transients and accidents in accordance with the requirements and schedule provided in NUREG-0578, Section 2.1.2, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

l. Relief and Safety Valve Position (II.D.5)

PSE&G shall provide reactor system relief and safety valves with a positive indication in the control room derived from a reliable valve position detection device or a reliable indication of flow in the discharge pipe. The indication shall comply with the requirements contained in NUREG-0578, Section 2.1.3.a, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

m. Auxiliary Feedwater Initiation and Indication (II.E.1.2)

PSE&G shall provide for automatic initiation of the auxiliary feedwater system and shall provide for indication, in the control room, of auxiliary feedwater flow to each steam generator. These requirements shall comply with NUREG-0578, Sections 2.1.7.a and 2.1.7.b, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

n. Inadequate Core Cooling - Subcooling Meter (II.F.2)

PSE&G shall provide a subcooling meter to provide on-line indication of coolant saturation condition. The meter shall comply with the requirements of NUREG-0578, Section 2.1.3.b, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

o. Inadequate Core Cooling - Additional Instrumentation (II.F.2)

PSE&G shall provide a design of additional instruments to provide an unambiguous indication of inadequate core cooling. This requirement shall comply with NUREG-0578, Section 2.1.3.b, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

p. Emergency Power for Pressurizer Equipment (II.G)

PSE&G shall provide emergency power for the power-operated relief valves (PORVs), the PORV block valves and pressurizer level instrument channels. This requirement shall comply with NUREG-0578, Section 2.1.1, sub-section 3.2, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

q. IE Bulletins on Measures to Mitigate Small Break LOCAs and Loss of Feedwater Accidents (II.K.1)

PSE&G shall review the operating procedures and operator training related to the measures to mitigate small-break LOCAs and loss-of-feedwater transients. These requirements shall comply with Items 1 through 13 of IE Bulletin No. 79-06A, as modified by IE Bulletin No. 79-06C. The requirements of Item 7(b) of IE Bulletin No. 79-06A have been superseded by the requirements set out in Section 2.D.6.a of this license.

r. Improve Licensee Facilities for Responding to Emergencies - Onsite Technical Support Center (III.A.1.2(a))

PSE&G shall establish an onsite technical support center to meet the January 1, 1980 requirements of NUREG-0578, Section 2.2.2.b, as clarified by NRC letter to operating license applicants, dated November 9, 1979.

s. Improve Licensee Facilities for Responding to Emergencies - Onsite Operational Support Center (III.A.1.2.(b))

PSE&G shall provide an onsite operational support center to meet the requirements of NUREG-0578, Section 2.2.2.c, as clarified by NRC letter to operating license applicants, dated November 9, 1979.

t. Emergency Preparedness of State and Local Governments - Near-Term Actions (III.B and III.B.1)

During the period of this license, PSE&G shall maintain in effect an emergency plan that meets:

- (1) Regulatory requirements of 10 CFR Part 50, Appendix E.
- (2) Regulatory Position Statements in Regulatory Guide 1.101 (March 1977).
- (3) The Essential Planning Elements in NUREG-75/111 and Supplement 1 hereto defined by NRR as significant for fuel load and low power testing.

u. In-Plant Radiation Monitoring - Partial (III.D.3.3)

PSE&G shall provide equipment and associated training and procedures for accurately determining the airborne iodine concentration throughout the plant under accident conditions.

v. Communications (III.A.3.3)

PSE&G shall install and maintain direct dedicated telephone lines between the Salem plant control room, site technical support center and NRC Incident Response Center in Bethesda, Maryland.

(6) Conditions on Operations Beyond Zero Power Testing

The following conditions shall be completed to the satisfaction of the Commission prior to proceeding beyond zero power testing. The following conditions are related to matters specified in the TMI Action Plan, and the Near Term Operating License (NTOL) requirements dated February 6, 1980, and are applicable to operation beyond zero power testing. Each of the following conditions references the appropriate section of Part II of Supplement No. 4 to the Safety Evaluation Report (NUREG-0517, Suppl. No. 4) for the Salem Generating Station, Unit 2 and follows the numbering sequence utilized in the February 6, 1980 NTOL Requirements list.

a. Short-Term Effort - Analysis and Procedure Modifications (I.C.1)

PSE&G shall revise its emergency operating instructions for dealing with small break LOCAs and inadequate core cooling based on its analysis of these events and the vendor guidelines derived from these analyses. These requirements supersede the requirements specified in Item 7(b) of IE Bulletin No. 79-06A.

b. NSSS Vendor Review of Low Power Test Procedures (I.C.7)

PSE&G's low power test procedures shall be reviewed by the nuclear steam supply system vendor, Westinghouse, and documentation of the review submitted to NRC.

c. Low Power Test Program (I.G.)

As set forth in Section I.G., PSE&G shall obtain staff approval of a low power test program.

d. Additional Accident Monitoring Instrumentation (II.F.1)

PSE&G shall comply with the requirements contained in NUREG-0578, Section 2.1.3.b, as clarified in NRC letter to operating license applicants, dated November 9, 1979.

- D. PSE&G shall report any violations of the requirements contained in Sections 2.C.(5) and (6) of this license in accordance with the prompt reporting requirements of Section 6.9.1.8 of Appendix A, which is attached to and is a part of this license.
- E. Prior to fuel loading, the licensees shall have fully implemented, to the satisfaction of the Commission, the final provisions of the physical security plan, withheld from public disclosure pursuant to 10 CFR Part 2.790(d), entitled "Salem Generating Station, Security Plan, Revision 4, Amendment 2", dated August 3, 1978.

The licensees shall maintain in effect the physical security plan, withheld from public disclosure pursuant to 10 CFR 2.790(d), entitled, "Salem Generating Station Security Plan, Revision 4, Amendment 2", dated August 3, 1978, as amended in accordance with the provisions of 10 CFR 50.54(p).

In addition to all other commitments contained in the physical security plan, all keys, locks, combinations, and related equipment used to control access to protected and vital areas shall be controlled to reduce the probability of compromise. Whenever there is evidence that any key, lock combination, or related equipment may have been compromised, it shall be changed. Upon termination of employment of any employee, keys, locks combinations, and related equipment to which that employee had access, shall be changed.

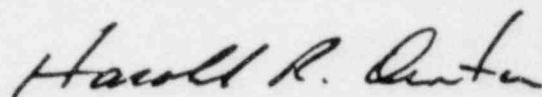
- F. This license is subject to the following condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensees will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater

than that evaluated, in the Final Environmental Statement or any addendum thereto, the licensees shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

- G. This license is effective as of the date of issuance and shall expire one year after that date.

FOR THE NUCLEAR REGULATORY COMMISSION



Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Attachment:
Appendices A and B Technical
Specifications

Date of Issuance: APR 18 1980