AUG 1 3 1976

Docket No. 50-272

Public Service Electric and Gas Company
ATTN: Mr. F. P. Librizzi
General Manager - Electric Production
Production Department
80 Park Place, Room 7221
Newark, New Jersey 07101

Gentlemen:

ISSUANCE OF FACILITY OPERATING LICENSE FOR SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

The Nuclear Regulatory Commission has issued the enclosed Facility Operating License No. DPR-70 including Attachment 1 and Technical Specifications (Appendices A and B) to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company. As indicated in the enclosed documents entitled, "Negative Declaration Regarding Issuance of a Limited Facility License DPR-70, Salem Nuclear Generating Station, Unit No. 1," and "Environmental Impact Appraisal of Issuance of Fuel Loading, Criticality Low-Power Testing Operating License for Salem Nuclear Generating Station Unit No. 1," the Commission has concluded that an environmental impact statement for this particular action is not warranted because there will be no environmental impact significantly affecting the quality of the human environment. Accordingly, License No. DPR-70 authorizes the Public Service Electric and Gas Company to operate the Salem Nuclear Generating Station, Unit No. 1, located in Salem County, New Jersey, at a reactor core power level of 33.38 megawatts thermal, or one percent of the core thermal power rating of 3338 megawatts, for testing purposes. License No. DPR-70 is conditioned to provide a sequential approach to power which takes into account a series of incomplete construction items, preoperational tests, startup tests and other items, and provides for further Commission approval at various stages of these activities.

Also enclosed are copies of the Notice of Issuance of License No. DPR-70 and Supplement No. 2 to the Safety Evaluation Report prepared by the Division of Project Management, concerning the Salem Nuclear Generating Station, Units Nos. 1 and 2.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

Five signed originals of Amendment No. 2 to Indemnity Agreement No. B-74, which covers the activities authorized under Facility Operating License No. DPR-70 are enclosed. Please have all licensees sign each copy and return one copy to this office.

Sincerely,

Original signed by R. C. DeYoung

Karl Kniel, Chief
Light Water Reactors
Branch No. 2
Division of Project Management

Enclosures:
1. Facility Operating License No. DPR-70, with Attachment 1 and Technical Specifications (Appendices A & B)
2. Federal Register Notice
3. Safety Evaluation Report, Supplement No. 2
4. Negative Declaration
5. Environmental Impact Appraisal
6. Amendment No. 2 to Indemnity Agreement No. B-74

cc: See page 3

ELD	OAI	DSEE
8/17/76	8/13/76	8/13/76

OFFICE	LWR 2	LWR 2	LWR	DPM:DLR/DD	DPM:DLR
SURNAME	JLee:mt	IVillalva	KKniel for	RCDeYoung	RSBoyd
DATE	8/13/76	8/13/76	8/13/76	8/13/76	8/13/76

cc: Fred Broadfoot, Esq.
Public Service Electric & Gas Company
80 Park Place
Newark, New Jersey 07101

Joseph B. Knotts, Jr., Esq.
Conner & Knotts
Suite 1050
1747 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19105

Delmarva Power & Light Company
800 King Street
Wilmington, Delaware 19899

Atlantic City Electric Company
1600 Pacific Avenue
Atlantic City, New Jersey 08401

State House Annex
ATTN: Deputy Attorney General
State of New Jersey
36 West State Street
Trenton, New Jersey 08625

Department of Natural Resources
and Environmental Control
ATTN: Director, Division of
Environmental Control
Tatnall Building
Dover, Delaware 19901

Governor's Office of State Planning
and Development
ATTN: Coordinator, Pennsylvania
State Clearinghouse
P. O. Box 1323
Harrisburg, Pennsylvania 17120
(w/o enclosures)

Department of Environmental Resources
ATTN: Director, Office of
Radiological Health
P. O. Box 2063
Harrisburg, Pennsylvania 17105
(w/2 enclosures)

Honorable David A. Fogg
Mayor, Lower Alloways Creek Township
Salem County, New Jersey 08079

Dr. Neill Thomasson (AW-459)
Chief, Energy Systems Analysis Branch
Office of Radiation Programs
U. S. Environmental Protection Agency
401 M. Street, S. W.
Washington, D. C. 20460

Mr. Paul A. Giardina
Regional Radiation Representative
U. S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10007

Mr. Bruce Blanchard
Environmental Projects Review
U. S. Department of the Interior
Room 5321
18th and C Streets, N. W.
Washington, D. C. 20240

OFFICE ➤						
SURNAME ➤						
DATE ➤						

DISTRIBUTION FOR FACILITY OPERATING LICENSE NO. DPR-70 DATED August 13, 1976

Docket File
NRC PDR
Local PDR
LWR #2 File*
Attorney, ELD
R. C. DeYoung*
K. Kniel*
Project Manager
J. Lee
F. J. Williams*
H. Smith*
B. Scott, PM*
IE (5)
N. Dube, MIPC*
M. Jinks, OA (w/4 enclosures)
W. Miller, ADM*
ACRS (16)
H. Denton, DSE*
V. A. Moore, DSE*
R. H. Vollmer, DSE*
M. L. Ernst, DSE*
W. P. Gammill, DSE*
R. Heineman, SS*
J. Knight, SS*
D. F. Ross, SS*
R. L. Tedesco, SS*
A. Toalston, AIG*
B. Scharf, OA (15 copies)
D. Skovholt
E. Hughes*
EP Project Manager
EP Licensing Assistant
H. Bristow, NMSS*
V. Stello, OR*
K. Goller, OR
J. McGough, OR
D. Eisenhut, OR*
W. Pasciak, OR (Appendix B Tech Specs only)
J. R. Buchanan, NSIC
Thomas B. Abernathy, TIC
A. Rosenthal, ASLAB
N. H. Goodrich, ASLBP

*w/o tech specs

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

FACILITY OPERATING LICENSE - LIMITED OPERATION FOR TESTING

License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The application for license filed by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees) complies with the standards and requirements of the Atomic Energy Act (the Act) of 1954, as amended, and the Commission's rules and 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 No. 1 (facility) has been substantially completed in conformity with Provisional Construction Permit No. CPPR-52 and the application, as amended, the provisions of the Act and the rules and regulations of the Commission;

   C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and 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 rules and regulations of the Commission;

   E. The licensees are technically and financially qualified to engage in the activities authorized by this operating license in accordance with the rules and regulations of the Commission;

OFFICE ➤						
SURNAME ➤						
DATE ➤						

F. The licensees have 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 operating license will not be inimical to the common defense and security or to the health and safety of the public;

H. The issuance of Facility Operating License No. DPR-70 subject to the conditions 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

I. 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 Section 30.33, 40.32, and 70.23 and 70.31.

2. Facility Operating License No. DPR-70 is hereby issued to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company to read as follows:

A. This license applies to the Salem Nuclear Generating Station, Unit No. 1, a pressurized water nuclear reactor and associated equipment (the facility), owned by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company and operated by Public Service Electric and Gas Company. The facility is located on the applicants' site in Salem County, New Jersey, on the southern end of Artificial Island on the east bank of the Delaware River in Lower Alloways Creek Township, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 10 through 39) and the Environmental Report as supplemented and amended (Amendments 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, "Licensing of Production and Utilization Facilities," to possess, use and operate the facility;

(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; and

(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 is authorized to operate the facility for testing at reactor core power levels not in excess of 33.38 megawatts (one percent of rated core power) limited to a cumulative fuel exposure of 300 megawatt days. Prior to attaining the power level, Public Service Electric and Gas Company shall complete the preoperational tests, startup tests and other items identified in Attachment 1 to this license in the sequence specified. Attachment 1 is an integral part of this license.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto are hereby incorporated in this license. Public Service Electric and Gas Company shall operate the facility in accordance with the Technical Specifications.

(3) Steam Generator Water Rise Rate

Except for the purpose of performing secondary side flow stability tests, Public Service Electric and Gas Company shall, whenever the secondary side water level in a steam generator is below the level of the feedwater sparger, limit the secondary side water level rise rate in each steam generator to less than 1.2 inches per minute and shall reduce the rise rate to within this limit within two (2) minutes. This condition will be removed by amendment of this license when Public Service Electric and Gas Company demonstrates to the satisifaction of the Commission that secondary side flow instability (water hammer) does not result in unacceptable consequences.

D. The licensees shall maintain in effect and fully implement all provisions of the NRC Staff-approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved security plan consists of proprietary documents, collectively titled Salem Nuclear Generating Station "Industrial Security Plan" as follows:

Original, submitted with letter dated June 29, 1973

Revision 1, submitted with letter dated November 26, 1973

Revision 2, submitted with letter dated July 20, 1976

E. This license is subject to the following additional conditions for the protection of the environment:

(1) The licensees shall establish a baseline study to determine the seasonal plankton densities in the region of the cooling water intake and, subsequently, the zooplankton losses due to passage through the cooling system, the impact of such losses on the aquatic ecosystem, and the need for corrective action to mitigate losses if they are significant (see Sections 5.4.2 and 6.2 of the Final Environmental Statement).

(2) The licensees shall initiate a program to frequently monitor the water intake forebay and identify fish losses by number and species attributable to the intake screens during facility operations in order to determine the need, if any, for corrective action to protect aquatic life (see Sections 5.4.1 and 6.2 of the Final Environmental Statement).

(3) The licensees shall develop a plan to continue monitoring the fish, macroinvertebrates, and zooplankton after facility startup to quantify the effects on aquatic life attributable to the discharge of heated effluents and chemicals. Concurrently, field measurements shall be made to define the time-temperature-area characteristics of the thermal plume. The results of this program would determine the need for possible corrective action (see Sections 5.4.3, 5.4.4 and 6.2 of the Final Environmental Statement).

(4) The licensees shall undertake a program to measure actual residual chlorine concentrations at several sampling stations in the discharge conduit during facility operation. These measured concentrations will be used to determine what changes, if any, will be required in the facility's chlorination procedures (see Section 5.4.4 of the Final Environmental Statement).

(5) The licensees shall incorporate into the operational radiological monitoring program of milk sampling a weekly, rather than quarterly, schedule to detect any short-term increases of radioiodine. Also, high-efficiency iodine samplers shall be used for the detection of both organic and inorganic radioiodines in gases released from the facility (see Section 6.3 of the Final Environmental Statement).

(6) Comprehensive environmental monitoring programs specified above (for the facility operation), which are acceptable to the staff for determining environmental effects which may occur as a result of the operation of the facility, are defined in the Technical Specifications, Appendix B.

(7) If other harmful effects or evidence of irreversible damage are detected, the licensees will provide an analysis of the problem and a proposed course of action to alleviate the problem.

FOR THE NUCLEAR REGULATORY COMMISSION

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Incomplete Preoperational Tests, Startup Tests, and Other Items which Must be Completed
2. Appendices A & B - Technical Specifications

Date of Issuance: AUG 13 1976

(4) The licensees shall undertake a program to measure actual residual chlorine concentrations at several sampling stations in the discharge conduit during facility operation. These measured concentrations will be used to determine what changes, if any, will be required in the facility's chlorination procedures (see Section 5.4.4 of the Final Environmental Statement).

(5) The licensees shall incorporate into the operational radiological monitoring program of milk sampling a weekly, rather than quarterly, schedule to detect any short-term increases of radioiodine. Also, high-efficiency iodine samplers shall be used for the detection of both organic and inorganic radioiodines in gases released from the facility (see Section 6.3 of the Final Environmental Statement).

(6) Comprehensive environmental monitoring programs specified above (for the facility operation), which are acceptable to the staff for determining environmental effects which may occur as a result of the operation of the facility, are defined in the Technical Specifications, Appendix B.

(7) If other harmful effects or evidence of irreversible damage are detected, the licensees will provide an analysis of the problem and a proposed course of action to alleviate the problem.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Roger S. Boyd

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Incomplete Preoperational Tests, Startup Tests, and Other Items which Must be Completed
2. Appendices A & B - Technical Specifications

Date of Issuance: AUG 13 1976

OAL phone by JDinitz 8/13/76

DSEE DPM 8/13/76

OFFICE	LWR 2	LWR 2	LWR	ELD	DPM:DIR/DD	DPM:DIR
SURNAME	Lee:mt	IVillalva	KKniel for		RCDeYoung	RSBoyd
DATE	8/13/76	8/13/76	8/13/76	8/13/76	8/13/76	8/13/76

ATTACHMENT 1 TO LICENSE DPR-70

Incomplete Preoperational Tests, Startup Tests, and Other Items Which Must be Completed

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisifaction prior to proceeding to certain specified Operational Modes. Public Service Electric and Gas Company shall not proceed beyond the authorized Operational Modes without prior written authorization from the Commission.

A. Public Service Electric and Gas Company may at the license issue date proceed directly to Operational Mode 6 (initial fuel loading), and may subsequently proceed to Operational Mode 5 (cold shutdown).

B. Prior to proceeding to Operational Mode 4 (hot shutdown), Public Service Electric and Gas Company shall test the response times of primary sensors in the reactor coolant system per SUP 20.1, and complete the maintenance procedures required for facility operation as delineated in Inspection and Enforcement Report 50-272/76-25 Detail 12. Subsequent to the verification by the Office of Inspection and Enforcement of the acceptable completion of these items, and upon written authorization by the Commission, Public Service Electric and Gas Company may proceed to Operational Mode 4 (hot shutdown).

C. Prior to proceeding to Operational Modes 3 (hot standby) and 2 (initial criticality), Public Service Electric and Gas Company shall complete the following items:

1. Testing high temperature alarm TE463A on pressurizer relief line per SUP 50.6.

2. Testing control of steam generator blowdown flow by valves GB8 and GB10 per SUP 50.13.

3. Testing operational of RHR pump recirculation valves 11RH29 and 12RH29 per SUP 50.0.

4. Testing motor winding temperatures of RHR pump motors Nos. 11 and 12 per SUP 12.

5. Testing upper motor bearing of reactor coolant pump No. 14 per SUP 50.0.

6. Testing pump seal of reactor coolant pump No. 11 per SUP 50.0.

7. Testing RTD's Nos. 423B, 431A, 433B, and 440B in the reactor coolant system per SUP 50.7.

8. Testing the following snubbers per SUP 50.4:

OFFICE ➤						
SURNAME ➤						
DATE ➤						

11-FWSN-12A	1-PRSN-1	1-PRSN-28	RHRH 11-29A
11-FWSN-12B	1-PRSN-2	1-PRSN-29	RHRH 11-29B
11-FWSN-16	1-PRSN-3	1-PRSN-30	RHRH 12-34B
12-FWSN-13A	1-PRSN-3A	1-PRSN-32A	RHRH 12-34C
12-FWSN-13B	1-PRSN-4	1-PRSN-32B	
12-FWSN-15	1-PRSN-5	1-PRSN-33	
13-FWSN-15A	1-PRSN-5A	1-PRSN-34	
13-FWSN-15B	1-PRSN-7	1-PRSN-36	
13-FWSN-17A	1-PRSN-9	1-PRSN-37	
13-FWSN-17B	1-PRSN-10	1-PRSN-38A	
14-FWSN-13A	1-PRSN-11	1-PRSN-38B	
14-FWSN-13B	1-PRSN-12	1-PRSN-39	
14-FWSN-15A	1-PRSN-13	1-PRSN-42	
14-FWSN-15B	1-PRSN-16	1-PRSN-400	
	1-PRSN-17	1-PRSN-401	
1 - PRA-146	1-PRSN-19	1-PRSN-402	
1 - PRA-150	1-PRSN-20	1-PRSN-405	
1 - PRA-154	1-PRSN-23	1-PRSN-405A	
1 - PRA-158	1-PRSN-25	1-PRSN-406	
1 - PRA-162	1-PRSN-27	1-PRSN-406A	

9. Testing the boron recycle system per SUP 10.5.

10. Demonstrate beta dosimetry capability.

11. Testing process radiation monitors, excluding those required for fuel loading, per SUP 21.

12. Testing service water system per SUP 28.

13. Testing chilled water portion of the control room air conditioning system per SUP 19.7.

14. Prepare the following radiochemistry procedures:

    (a) PD 3.3.010 - procedure to determine the average energy of gamma emitting isotopes;

    (b) PD 3.3.011 - procedure for detecting fission gases by gamma spectroscopy in the presence of other gases;

    (c) PD 3.3.003 - procedure to determine the dose equivalent Iodine 131 in the primary coolant.

15. Replace the existing standby charcoal filters in the auxiliary building ventilation system with charcoal filters capable of removing 90 percent of the organic iodines.

Subsequent to verification by the Office of Inspection and Enforcement of the acceptable completion of the above listed items, and upon written authorization from the Commission, the Public Service Electric and Gas Company may proceed to Operational Modes 3 (hot standby) and 2 (initial criticality).

The power level of Operational Mode 2 shall be limited to one percent of rated core thermal power.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

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

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

FACILITY OPERATING LICENSE - LIMITED OPERATION FOR TESTING

License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The application for license filed by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees) complies with the standards and requirements of the Atomic Energy Act (the Act) of 1954, as amended, and the Commission's rules and 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 No. 1 (facility) has been substantially completed in conformity with Provisional Construction Permit No. CPPR-52 and the application, as amended, the provisions of the Act and the rules and regulations of the Commission;

   C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and 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 rules and regulations of the Commission;

   E. The licensees are technically and financially qualified to engage in the activities authorized by this operating license in accordance with the rules and regulations of the Commission;

F. The licensees have 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 operating license will not be inimical to the common defense and security or to the health and safety of the public;

H. The issuance of Facility Operating License No. DPR-70 subject to the conditions 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

I. 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 Section 30.33, 40.32, and 70.23 and 70.31.

2. Facility Operating License No. DPR-70 is hereby issued to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company to read as follows:

A. This license applies to the Salem Nuclear Generating Station, Unit No. 1, a pressurized water nuclear reactor and associated equipment (the facility), owned by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company and operated by Public Service Electric and Gas Company. The facility is located on the applicants' site in Salem County, New Jersey, on the southern end of Artificial Island on the east bank of the Delaware River in Lower Alloways Creek Township, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 10 through 39) and the Environmental Report as supplemented and amended (Amendments 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, "Licensing of Production and Utilization Facilities," to possess, use and operate the facility;

(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; and

(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 is authorized to operate the facility for testing at reactor core power levels not in excess of 33.38 megawatts (one percent of rated core power) limited to a cumulative fuel exposure of 300 megawatt days. Prior to attaining the power level, Public Service Electric and Gas Company shall complete the preoperational tests, startup tests and other items identified in Attachment 1 to this license in the sequence specified. Attachment 1 is an integral part of this license.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto are hereby incorporated in this license. Public Service Electric and Gas Company shall operate the facility in accordance with the Technical Specifications.

(3) Steam Generator Water Rise Rate

Except for the purpose of performing secondary side flow stability tests, Public Service Electric and Gas Company shall, whenever the secondary side water level in a steam generator is below the level of the feedwater sparger, limit the secondary side water level rise rate in each steam generator to less than 1.2 inches per minute and shall reduce the rise rate to within this limit within two (2) minutes. This condition will be removed by amendment of this license when Public Service Electric and Gas Company demonstrates to the satisifaction of the Commission that secondary side flow instability (water hammer) does not result in unacceptable consequences.

D. The licensees shall maintain in effect and fully implement all provisions of the NRC Staff-approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved security plan consists of proprietary documents, collectively titled Salem Nuclear Generating Station "Industrial Security Plan" as follows:

Original, submitted with letter dated June 29, 1973

Revision 1, submitted with letter dated November 26, 1973

Revision 2, submitted with letter dated July 20, 1976

E. This license is subject to the following additional conditions for the protection of the environment:

(1) The licensees shall establish a baseline study to determine the seasonal plankton densities in the region of the cooling water intake and, subsequently, the zooplankton losses due to passage through the cooling system, the impact of such losses on the aquatic ecosystem, and the need for corrective action to mitigate losses if they are significant (see Sections 5.4.2 and 6.2 of the Final Environmental Statement).

(2) The licensees shall initiate a program to frequently monitor the water intake forebay and identify fish losses by number and species attributable to the intake screens during facility operations in order to determine the need, if any, for corrective action to protect aquatic life (see Sections 5.4.1 and 6.2 of the Final Environmental Statement).

(3) The licensees shall develop a plan to continue monitoring the fish, macroinvertebrates, and zooplankton after facility startup to quantify the effects on aquatic life attributable to the discharge of heated effluents and chemicals. Concurrently, field measurements shall be made to define the time-temperature-area characteristics of the thermal plume. The results of this program would determine the need for possible corrective action (see Sections 5.4.3, 5.4.4 and 6.2 of the Final Environmental Statement).

(4) The licensees shall undertake a program to measure actual residual chlorine concentrations at several sampling stations in the discharge conduit during facility operation. These measured concentrations will be used to determine what changes, if any, will be required in the facility's chlorination procedures (see Section 5.4.4 of the Final Environmental Statement).

(5) The licensees shall incorporate into the operational radiological monitoring program of milk sampling a weekly, rather than quarterly, schedule to detect any short-term increases of radioiodine. Also, high-efficiency iodine samplers shall be used for the detection of both organic and inorganic radioiodines in gases released from the facility (see Section 6.3 of the Final Environmental Statement).

(6) Comprehensive environmental monitoring programs specified above (for the facility operation), which are acceptable to the staff for determining environmental effects which may occur as a result of the operation of the facility, are defined in the Technical Specifications, Appendix B.

(7) If other harmful effects or evidence of irreversible damage are detected, the licensees will provide an analysis of the problem and a proposed course of action to alleviate the problem.

FOR THE NUCLEAR REGULATORY COMMISSION

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Incomplete Preoperational Tests, Startup Tests, and Other Items which Must be Completed
2. Appendices A & B - Technical Specifications

Date of Issuance: AUG 13 1976

ATTACHMENT 1 TO LICENSE DPR-70

Incomplete Preoperational Tests, Startup Tests, and Other Items Which Must be Completed

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisifaction prior to proceeding to certain specified Operational Modes. Public Service Electric and Gas Company shall not proceed beyond the authorized Operational Modes without prior written authorization from the Commission.

A. Public Service Electric and Gas Company may at the license issue date proceed directly to Operational Mode 6 (initial fuel loading), and may subsequently proceed to Operational Mode 5 (cold shutdown).

B. Prior to proceeding to Operational Mode 4 (hot shutdown), Public Service Electric and Gas Company shall test the response times of primary sensors in the reactor coolant system per SUP 20.1, and complete the maintenance procedures required for facility operation as delineated in Inspection and Enforcement Report 50-272/76-25 Detail 12. Subsequent to the verification by the Office of Inspection and Enforcement of the acceptable completion of these items, and upon written authorization by the Commission, Public Service Electric and Gas Company may proceed to Operational Mode 4 (hot shutdown).

C. Prior to proceeding to Operational Modes 3 (hot standby) and 2 (initial criticality), Public Service Electric and Gas Company shall complete the following items:

1. Testing high temperature alarm TE463A on pressurizer relief line per SUP 50.6.

2. Testing control of steam generator blowdown flow by valves GB8 and GB10 per SUP 50.13.

3. Testing operational of RHR pump recirculation valves 11RH29 and 12RH29 per SUP 50.0.

4. Testing motor winding temperatures of RHR pump motors Nos. 11 and 12 per SUP 12.

5. Testing upper motor bearing of reactor coolant pump No. 14 per SUP 50.0.

6. Testing pump seal of reactor coolant pump No. 11 per SUP 50.0.

7. Testing RTD's Nos. 423B, 431A, 433B, and 440B in the reactor coolant system per SUP 50.7.

8. Testing the following snubbers per SUP 50.4:

11-FWSN-12A	1-PRSN-1	1-PRSN-28	RHRH 11-29A
11-FWSN-12B	1-PRSN-2	1-PRSN-29	RHRH 11-29B
11-FWSN-16	1-PRSN-3	1-PRSN-30	RHRH 12-34B
12-FWSN-13A	1-PRSN-3A	1-PRSN-32A	RHRH 12-34C
12-FWSN-13B	1-PRSN-4	1-PRSN-32B	
12-FWSN-15	1-PRSN-5	1-PRSN-33	
13-FWSN-15A	1-PRSN-5A	1-PRSN-34	
13-FWSN-15B	1-PRSN-7	1-PRSN-36	
13-FWSN-17A	1-PRSN-9	1-PRSN-37	
13-FWSN-17B	1-PRSN-10	1-PRSN-38A	
14-FWSN-13A	1-PRSN-11	1-PRSN-38B	
14-FWSN-13B	1-PRSN-12	1-PRSN-39	
14-FWSN-15A	1-PRSN-13	1-PRSN-42	
14-FWSN-15B	1-PRSN-16	1-PRSN-400	
	1-PRSN-17	1-PRSN-401	
1 - PRA-146	1-PRSN-19	1-PRSN-402	
1 - PRA-150	1-PRSN-20	1-PRSN-405	
1 - PRA-154	1-PRSN-23	1-PRSN-405A	
1 - PRA-158	1-PRSN-25	1-PRSN-406	
1 - PRA-162	1-PRSN-27	1-PRSN-406A	

9. Testing the boron recycle system per SUP 10.5.

10. Demonstrate beta dosimetry capability.

11. Testing process radiation monitors, excluding those required for fuel loading, per SUP 21.

12. Testing service water system per SUP 28.

13. Testing chilled water portion of the control room air conditioning system per SUP 19.7.

14. Prepare the following radiochemistry procedures:

    (a) PD 3.3.010 - procedure to determine the average energy of gamma emitting isotopes;

    (b) PD 3.3.011 - procedure for detecting fission gases by gamma spectroscopy in the presence of other gases;

    (c) PD 3.3.003 - procedure to determine the dose equivalent Iodine 131 in the primary coolant.

15. Replace the existing standby charcoal filters in the auxiliary buidling ventilation system with charcoal filters capable of removing 90 percent of the organic iodines.

Subsequent to verification by the Office of Inspection and Enforcement of the acceptable completion of the above listed items, and upon written authorization from the Commission, the Public Service Electric and Gas Company may proceed to Operational Modes 3 (hot standby) and 2 (initial criticality).

The power level of Operational Mode 2 shall be limited to one percent of rated core thermal power.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-272

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

NOTICE OF ISSUANCE OF A FACILITY OPERATING LICENSE

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has issued Facility Operating License No. DPR-70 to Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company. License No. DPR-70 authorizes operation of the Salem Nuclear Generating Station, Unit No. 1 by the Public Service Electric and Gas Company in accordance with the provisions of the license and the Technical Specifications. The Salem Nuclear Generating Station, Unit No. 1 is a pressurized water nuclear reactor located at the licensees' site in Lower Alloways Creek Township, Salem County, New Jersey.

The Commission has made appropriate findings regarding the environmental impact associated with issuing an operating license for testing purposes. These findings are contained in documents entitled, "Negative Declaration Regarding Issuance of a Limited Facility License DPR-70, Salem Nuclear Generating Station, Unit No. 1," and "Environmental Impact Appraisal of Issuance of Fuel Loading, Criticality Low-Power Testing Operating License for Salem Nuclear Generating Station Unit No. 1." Pursuant to the findings in these documents, Facility Operating License No. DPR-70 authorizes

operation of the Salem Nuclear Generating Station, Unit No. 1 at a reactor core power level not to exceed 33.38 megawatts thermal for testing purposes. License No. DPR-70 is conditioned to provide a sequential approach to one percent power by accounting for a series of incomplete construction items, preoperational tests, startup tests and other items which must be completed prior to attaining one percent power, and provides for further Commission approval at various stages of these activities.

The Commission has made appropriate findings as required by the Atomic Energy Act (the Act) of 1954, as amended, and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license. The application for the license complies with the standards and requirements of the Act and the Commission's rules and regulations.

A copy of (1) Facility Operating Licensing No. DPR-70, complete with Attachment 1 and Technical Specifications (Appendices "A" and "B"); (2) the "Negative Declaration Regarding Issuance of a Limited Facility License DPR-70, Salem Nuclear Generating Station, Unit No. 1," (3) the "Environmental Impact Appraisal of Issuance of Fuel Loading, Criticality Low-Power Testing Operating License for Salem Nuclear Generating Station Unit No. 1," (4) the report of the Advisory Committee on Reactor Safeguards, dated February 14, 1975; (5) the Office of Nuclear Reactor Regulation's Safety Evaluation Report and Supplements Nos. 1 and 2 thereto, dated October 11, 1974, June 28, 1976, and August 13, 1976 respectively; (6) the Final Safety Analysis Report and amendments thereto; (7) the applicants' Environmental

Report dated June 30, 1970 and supplements thereto; (8) the Draft Environmental Statement dated October 1972; and (9) the Final Environmental Statement dated April 1973, are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C and the Salem Free Public Library, 112 West Broadway, Salem, New Jersey. Single copies of items (1), (2), (3), (4), (5) and (9) may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C., 20555, Attention: Director, Division of Project Management.

Dated at Bethesda, Maryland, this 13th day of August, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

R. C. DeYoung, Deputy Director
Division of Project Management
Office of Nuclear Reactor Regulation

August 13, 1976

SUPPLEMENT NO. 2

TO THE

SAFETY EVALUATION REPORT

BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF

PUBLIC SERVICE ELECTRIC AND GAS COMPANY,

PHILADELPHIA ELECTRIC COMPANY,

DELMARVA POWER AND LIGHT COMPANY, AND

ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION,

UNITS NO. 1 AND NO. 2

DOCKET NOS. 50-272 AND 50-311

TABLE OF CONTENTS

1.0 INTRODUCTION

On October 11, 1974, the Nuclear Regulatory Commission (the Commission) issued its Safety Evaluation Report regarding the application by the Public Service Electric and Gas Company, et al (applicants) for licenses to operate the Salem Nuclear Generating Station, Units No. 1 and No. 2 (Salem facility). On June 28, 1976, the Commission issued Supplement No. 1 to the Safety Evaluation Report providing evaluations of matters not included in the Safety Evaluation Report, and identifying certain outstanding issues that required resolution prior to the issuance of an operating license.

This supplement is in support of our conclusions relative to the decision for issuing an operating license for Salem Nuclear Generating Station, Unit No. 1. This supplement therefore includes a discussion of those matters identified in Supplement No. 1 as requiring resolution prior to the issuance of an operating license and other matters relevant to issuing an operating license.

By letter dated July 14, 1976, and a subsequent letter dated July 20, 1976, the applicants have identified certain items for which they request a deferment of completion until after core fuel loading and other items until after initial criticality has been attained. We have reviewed the safety considerations associated with the deferment of each item, and we are conditioning the operating license for the Salem Nuclear Generating Station, Unit No. 1 to allow the deferment of completion of those items whose completion has been demonstrated to not be required for safety purposes. These deferments notwithstanding, power operation shall not be undertaken until each deferred item has been acceptably completed and verified by our Office of Inspection and Enforcement.

Each section of this supplement is numbered the same as the section of the Safety Evaluation Report and Supplement No. 1 to the Safety Evaluation Report that is being updated. The material contained in this report, therefore, is supplementary to and not in lieu of the discussion in the Safety Evaluation Report. Appendix A is a continuation of the chronology of the principal actions related to the processing of the application.

Our Office of Inspection and Enforcement has informed us that the axial flux difference monitor alarms used to show compliance with Section 3.2.1 of the Technical Specifications, and which we consider necessary to the acceptable implementation of constant axial offset control, have not been provided. Therefore, until such time as these alarms are acceptably implemented, we are conditioning the operating license for the Salem Nuclear Generating Station, Unit No. 1 to a power operation level not to exceed 50 percent of rated power, the power level permitted by Section 3.2.1 of the Technical Specifications without axial flux difference monitor alarms.

In light of the recommendations of our Office of Inspection and Enforcement and in conjunction with the deferring of certain items until after initial core fuel loading and other items until after initial criticality, and considering the status of the axial flux difference alarms, we are conditioning the operating license for the Salem Nuclear Generating Station, Unit No. 1 to permit the applicants to proceed as follows:

1. The applicants may at the license issue date proceed directly to Operational Mode 6 (initial fuel loading) and subsequently proceed to Operational Mode 5 (cold shutdown) and Operational Mode 4 (hot shutdown). Operation beyond these modes shall not proceed until the prerequisite items delineated in the operating license and the applicable subcritical tests have been acceptably completed and verified by our Office of Inspection and Enforcement.

2. Upon completion of the prerequisite items mentioned above, the applicants may proceed to Operational Mode 3 (hot standby) and Operational Mode 2 (initial criticality or startup). Operation beyond these modes shall not proceed until the prerequisite items delineated in the operating license and the applicable initial criticality and startup tests have been acceptably completed and verified by our Office of Inspection and Enforcement.

3. Upon completion of the prerequisite items mentioned above, the applicants may proceed to Operational Mode 1 (power operation). Operation in this mode shall be initially limited to 50 percent of rated thermal power until the axial flux difference alarms required for constant axial offset control have been acceptably implemented and verified by our Office of Inspection and Enforcement. Upon the acceptable implementation of the axial flux difference alarms, power operation may proceed to 100 percent of rated thermal power.

We have reviewed the recommendations of our Office of Inspection and Enforcement and have concluded that all items of construction and testing necessary for fuel loading and subcritical testing have been acceptably completed. In addition, subject to the acceptable completion of the deferred items and the acceptable implementation of the axial flux difference alarms, we also conclude that the Salem Nuclear Generating Station, Unit No. 1 can be operated at up to 100 percent of rated thermal power without undue risk to the health and safety of the public.

3.0 DESIGN CRITERIA - STRUCTURES, COMPONENTS, EQUIPMENT AND SYSTEMS

3.9 Mechanical Systems and Components

3.9.4 Supports - Steam Generators, Reactor Coolant Pumps and Pressurizer

Sun Shipbuilding and Dry Dock Company (Sun Shipbuilding), the fabricator of the supports for the steam generators and reactor coolant pumps used at North Anna, Units No. 1 and No. 2 (Docket Nos. 50-338 and 50-339) has made allegations concerning the structural acceptability of these supports with respect to materials and design. Since the supports for the steam generators, reactor coolant pumps and pressurizer used at the Salem facility are somewhat similar to those used at North Anna with respect to configuration and materials of construction, and since Sun Shipbuilding fabricated the supports for the steam generators used at the Salem facility, the staff has been pursuing the applicability of these allegations to the Salem facility.

Briefly, the North Anna situation is as follows. Subsequent to delivery of the supports to the plant site, the supports were found to have numerous weld cracks and eventually all welds were cut out and repaired. The allegations made by Sun Shipbuilding assert that the problems encountered in fabrication stemmed from the inherent restraint of the welds in the supports, and that the unavoidable presence of cracks, coupled with a lack of fracture toughness and a propensity for lamellar tearing in the ASTM A-36 material specified, combine to result in an unacceptable structure for the intended service due to the potential for brittle fracture.

The staff investigated the design and fabrication history of the supports for the steam generators, reactor coolant pumps, and pressurizers used at the Salem facility. As a result of the investigation, the staff has identified the following significant conditions and factors that alleviate the concern for potential brittle fracture of these supports. The material of construction for the supports of the steam generators and reactor coolant pumps used at the Salem facility was A441-68, whereas the material of construction for these supports at North Anna was ASTM A-36 and A-572. A supplementary requirement for Charpy V notch testing (20 foot pounds minimum at 20 degrees Fahrenheit) was imposed on the support material used at the Salem facility and the material used met this requirement with ample margin, whereas no supplementary testing requirements were originally imposed on the North Anna supports.

Onsite inspections of the Salem facility supports by the magnetic particle method have shown only minor surface defects, none of which were critical from the standpoint of structural integrity. Despite the non critical aspects of these surface defects, all such indications were removed. Other phenomena, aside from the effect of significant flaws that could lead to concern of failure due to brittle fracture, are not present at the temperatures of service conditions for the supports during plant operation. Since the minimum service temperature of the supports is

about 90 degrees Fahrenheit, the probability of brittle behavior at this temperature is very remote because adequate fracture toughness is available. Additionally, since the design of the supports at the Salem facility results in the supports being loaded almost entirely in compression during normal plant operation, fatigue crack initiation and propagation would not occur. The supports for the Salem facility have been designed to a conservative stress limit of 90 percent of the minimum required yield strength for the design basis accident, i.e., the postulated instantaneous rupture of a primary coolant pipe.

In light of the markedly different fabrication history with respect to the North Anna supports, the absence of significant flaws as demonstrated by inspections, the compressive loading to be experienced in service, the related absence of significant fatigue growth forcing functions and the relatively high service temperature, the extent of the toughness testing performed and the adequacy of the results of that testing, we conclude that the supports for the steam generators and coolant pumps installed at the Salem facility are acceptable for service.

5.0 REACTOR COOLANT SYSTEM

5.2 Integrity of Reactor Coolant Pressure Boundary

5.2.6 Steam Generator Head Cladding

We stated in Supplement No. 1 to the Safety Evaluation Report that the applicants had provided information regarding metallurgical indications in the stainless steel cladding in the heads of the Salem Nuclear Generating Station, Unit No. 1 steam generators. We also stated that the applicants were to verify that the cracks are confined to the cladding, and that we would report on our evaluation of this matter in a future supplement.

By letter dated June 30, 1976, the applicants submitted a report which provides additional information regarding these metallurgical indications. The submitted report includes (1) a description of the ultrasonic examinations of the cladding cracks in the No. 14 steam generator, (2) results of the examinations and conclusions, and (3) a proposed inservice inspection program to evaluate crack propagation. The cladding cracks were examined from the outside diameter surface, and the applicants conclude that the cracks examined do not penetrate into the base metal.

Although evidence of crack extension into the base metal was not detected, we have conservatively postulated, as we did for Indian Point Unit No. 3 (Docket No. 50-286), that a corrosion of 0.075 inch into the base metal would exist after forty years of service life. Since this conservatively postulated corrosion of 0.075 inch is considerably less than one-tenth the critical flaw, and since it is reasonable to expect that the postulated corrosion penetration into the base metal would be in the form of rounded pitting rather than as a sharp discontinuity, we conclude that the integrity of the channel heads will not be affected as a result of corrosion assisted fatigue.

Based on our review of the information submitted by the applicants, we conclude that operation of the Salem Nuclear Generating Station, Unit No. 1 with the cladding on the steam generator channel heads in their present condition is acceptable. To ensure that the integrity of the channel heads is not affected by plant operation, we require that an inservice inspection program be implemented to monitor the cladding cracks on a schedule consistent with the first three refueling outages as proposed by the applicants in their letter of June 30, 1976, i.e., the area to be monitored, and the equipment and procedures to be used will be the same as those used to generate the baseline data submitted with the report of June 30, 1976. In addition to monitoring the condition of the cladding after plant operation, we require that the augmented inservice inspection program include provisions to videotape the 100 percent visual inspection of the steam generator channel heads with a television camera. The technical specifications have been revised to require the performance of the above inservice inspection program in a manner acceptable to the staff.

Based on our evaluation, we conclude that operation of the Salem Nuclear Generating Station, Unit No. 1 with steam generator channel heads in their present conditions will not create undue risk to the health and safety of the public, and is therefore acceptable.

6.0 ENGINEERED SAFETY FEATURES

6.3 Emergency Core Cooling System

6.3.3.2 Single Failure Criterion

In Supplement No. 1 to the Safety Evaluation Report, we identified several motor operated valves which required design modifications to meet the single failure criterion. The principal modification was to incorporate the ability to restore power to the following valves from the control room: 11SJ44, 12SJ44, 11SJ49, 12SJ49, 1SJ67 and 1SJ68. We stated in Supplement No. 1 to the Safety Evaluation Report that our Office of Inspection and Enforcement would verify that these modifications had been implemented prior to our approval of plant startup. Our Office of Inspection and Enforcement has confirmed that the above modifications have been implemented; therefore, we consider this matter resolved.

6.3.4 Tests and Inspections

We stated in Supplement No. 1 to the Safety Evaluation Report that the functional flow capability of the emergency core cooling system would be considered acceptable after demonstrations by the applicants of proper actuation and flow delivery of all components, and that the actuation times of components and flow deliveries meet or exceed the values assumed in the Final Safety Analysis Report. We further stated that our Office of Inspection and Enforcement would verify that the requirements have been satisfied prior to approval of plant startup as defined in the technical specifications. Our Office of Inspection and Enforcement has confirmed that the above requirements have been met; therefore, we consider this matter resolved.

22.0 CONCLUSIONS

Based on our evaluation of the application as set forth in the Safety Evaluation Report, and in Supplement No. 1 and this supplement to the Safety Evaluation Report, we reaffirm our conclusions as stated in the Safety Evaluation Report.

In addition, we conclude that the prerequisite items of construction and testing have been acceptably completed such that fuel loading and subcritical testing of the Salem Nuclear Generating Station, Unit No. 1 can be conducted without undue risk to the health and safety of the public. We further conclude that, subject to the acceptable completion of the deferred items identified in the operating license and the acceptable implementation of the axial flux difference monitor alarms, that the Salem Nuclear Generating Station, Unit No. 1 can be operated at up to 100 percent of rated power without undue risk to the health and safety of the public.

APPENDIX A

CONTINUATION OF CHRONOLOGY OF RADIOLOGICAL REVIEW OF SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2

June 25, 1976	Letter from applicant transmitting Reactor Containment Building Integrated Leak Rate Test Report and Structural Test Report
June 28, 1976	Supplement No. 1 to Safety Evaluation Report issued
June 30, 1976	Letter from applicant transmitting report regarding ultrasonic examination of steam generator clad cracking
July 14, 1976	Letter from applicant transmitting list of items that will not be completed prior to scheduled core load date
July 15, 1976	Letter from applicant concerning participation in augmented startup test program
July 19, 1976	Letter from applicant requesting exemption for Unit No. 1 to certain code requirements of 10 CFR Part 50.55a
July 20, 1976	Letter from applicant providing additional information concerning incomplete items
July 20, 1976	Letter from applicant transmitting Revision 2 to Security Plan
July 28, 1976	Letter from applicant transmitting Annual Reports
July 30, 1976	Submittal of Amendment No. 39, consisting of revised and additional information
July 30, 1976	Letter from applicant providing list of additional items to be deferred until after core loading

NEGATIVE DECLARATION

REGARDING ISSUANCE OF

A LIMITED FACILITY LICENSE DPR-70

SALEM NUCLEAR GENERATING STATION UNIT NO. 1

DOCKET NO. 50-272

The U.S. Nuclear Regulatory Commission (the Commission) is issuing a limited Facility Operating License No. DPR-70 to Public Service Electric and Gas Company, for authorizing certain operations of the Salem Nuclear Generating Station Unit No. 1, located in Salem County, New Jersey.

The license would authorize operation of the facility at not more than 1 percent of full power for the purpose of testing the facility.

The Commission has prepared an environmental impact appraisal for the limited license and has concluded that an environmental impact statement for this particular action is not warranted because there will be no environmental impact significantly affecting the quality of the human environment.

The environmental impact appraisal is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Salem Free Public Library, 112 West Broadway, Salem, New Jersey 08079.

A copy may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Project Management.

Dated at Bethesda, Maryland, this 13th day of August, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Daniel R. Muller

Daniel R. Muller, Deputy Director
Division of Site Safety and
Environmental Analysis
Office of Nuclear Reactor Regulation

DSEE
DRMuller
8/13/76

ELD
8/13/76

Environmental Impact Appraisal Of Issuance Of Fuel Loading, Criticality And Low-Power Testing Operating License for Salem Nuclear Generating Station Unit No. 1

1. Description of Proposed Action

The action proposed is the issuance of an operating license for the Salem Nuclear Generating Station Unit No. 1 whereunder the licensee would be authorized to operate the facility at not more than 1 percent of full power for the purpose of testing the facility. Within the scope of this authorization, various alternative restrictions could be imposed, which would limit the generation of high level waste to pre-determined amounts, which are appraised to be of no significant environmental impact. These alternatives are:

a. The loading of nuclear fuel into the reactor pressure vessel and the maintenance of the configuration in a non-critical, non-power-producing array. This operation, along with the reassembly of the reactor vessel components and the performance of precritical, preoperational tests, is expected to take 35 days.

b. The completion of (a) above and operation of the reactor to achieve criticality to verify the reactivity status of the core components at very low power levels (in the order of 10^{-4} of full power). This operation is expected to take 18 days.

c. The completion of (a) and (b) above plus the operation of the reactor at power levels not to exceed 1 percent of full power for the purpose of performing physics testing. Operation would be limited such that the total power generation would not produce significant high level waste nor foreclose alternative use of the fuel by generation of significant fission product or activation product radioactivity. Tests to be performed would take about 12 days for Salem.

Of these alternatives, alternative c, with a limitation of 300 MW days integrated power generation, is proposed to provide utilization of the already constructed facility for the purpose of checkout and testing operations without the generation of significant high level waste. Although the duration of fuel loading and testing is expected to be about two months, the discovery of problems, which is the purpose of such testing, may result in a prolonged testing period. In any event, the limitation of 300 MW days integrated power generation would be in effect. The proposed action would allow the completion of operations, which are necessary prior to full power operation, and would thus allow full power operation to commence earlier than would otherwise be the case if such

authorization was not granted. Further, this proposed action would not commit the reactor fuel to be processed in the event further operations were not authorized for, as will be discussed in Section 2, fuel radiation levels and heat generation rates subsequent to the proposed operation would allow transport and use in other facilities where power operation is authorized. Therefore, no additional commitment of high level waste would be incurred.

2. Environmental Impacts of the Proposed Actions

The potential environmental impacts associated with this proposed action are a small fraction of those which have been fully described and found acceptable in the Final Environmental Statement dated April 1973. The impacts associated with waste management and chemical reprocessing are specifically described below. The other environmental impacts associated with this proposed action are also extremely limited. During the authorized activity the condenser cooling water system may be operated fully. This may result in the chemical and mechanical effects discussed at Section 5 and 12 of the FES. For the short period of testing operation authorized by this license the low concentration of chemical effluents from these facilities will have an insignificant effect on the ecology of the river. The stresses imposed by passage through the plant intake screens and through the cooling system, at a time when the cooling system will have little or no added heat, will have no significant effect on the aquatic ecology. During this limited testing small amounts of steam may be routed from the steam generator through the condenser cooling system. The principle source of heat during this operation will be that associated with operation of the reactor pumps. However, this amounts to less than two percent of the total heat rejected during full power operation. This quantity of heat would result in less than one degree F increase in temperature of the full cooling system flow or a proportional amount of a lesser flow. The radiological inventory accumulated during the authorized testing is extremely limited and no fuel clad damage is anticipated that could result in any significant release of radioactivity to the environment. No other environmental impacts are associated with the limited testing authorized by this license. On this basis we conclude that all such impacts are insignificant.

The issue of chemical reprocessing and the quantities of high-level waste generated and an assessment of their environmental impact for each of the alternatives discussed above follows for the Salem Nuclear Generating Station Unit No. 1:

a. Fuel loading, pre-critical testing, and criticality testing - the operations of fuel loading, pre-critical testing, and criticality testing are performed with the reactor operating at source level power (10^{-6} of full power) or at criticality power levels (self-sustaining nuclear reaction at 10^{-4} of full power). If the fuel were exposed to these levels of operation for 2 months and 1 week, respectively, the cumulative generation of high level waste would be equivalent to that generated in less than 0.001 full power day of operation. This is equivalent to the high level waste which is contained in 0.0003 cubic foot of solidified high level waste, which is part of the reprocessing effluent.

b. Testing at power levels not to exceed 1 percent of full power - for the performance of physics testing at very low power levels (commonly called "zero" power testing), the operation would be limited to 1 percent of full power and a cumulative fuel exposure of 300 MW days. Such operation would produce a cumulative generation of high level waste equivalent to about 0.1 full power day of operation which is the amount contained in 0.03 cubic foot of solidified high level waste.

   Although the commitment of high level waste by the proposed operation is negligible in comparison with those wastes already generated and accruing, this commitment in itself is not irretrievable. The proposed operation would result in low heat generation rates and radiation levels several months subsequent to the operation, such that the fuel could be transported to another facility with minimal cooling and shielding provisions. The fuel could then be utilized in currently licensed operating reactors. Therefore, no environmental impacts associated with chemical reprocessing are attributable to the action proposed here. Since the fuel to be used in Salem Nuclear Generating Station Unit No. 1 is authorized for use in currently licensed operating reactors, it can be removed following testing and transported to such a facility. The environmental impacts associated with such transportation are substantially less than those evaluated and found acceptable in the Final Environmental Statement dated April 1973.

c. Impact of proposed operations - the proposed operations would generate high level waste equivalent to about 0.1 full power day of operation. Plants already licensed for operation are capable of generating about

500 times this amount of waste each day. Thus, the quantity of high level waste generated as a result of the proposed action represents a small fraction of the waste being generated in the 58 nuclear power plants currently licensed to operate.

A staff analysis has been made of the cost of delay in the issuance of operating licenses for 10 nuclear plants scheduled to go into operation in the period of 1976 through 1978. The increased cost of fuel when electrical energy is supplied from fossil plants instead of the nuclear plant, normalized to a 1000 MWe plant, is on the average about $4 million for each month of delay. The staff has not considered the increased cost of interest associated with construction capitalization since this cost during the short term is not a part of the rate base but is carried solely by company shareholders. However, the staff estimates that this cost averages about $2.5 million per month of delay.

The fuel cost figure may be low in that it does not take account of increases in the costs of operation and maintenance when older fossil plants are called into service and increases in costs due to inflation during the period of the delay. In fact, Public Service Electric and Gas has indicated that the difference in fuel cost only to generate their share of the power produced by Salem (PSE&G owns 42.5%) will be in the range of $5.4 to $5.8 million per month. Thus, the difference in fuel cost for Salem projects to $10 to $11 million per month.

The potential cost savings attributable to the minimum time saving of 2 months allowed by proposed action is conservatively estimated by the staff to be $8 million and by the applicant to be about $20 million.

3. Conclusions and Basis for Negative Declaration

On the basis of the foregoing analysis, it is concluded that:

a. the potential environmental impacts associated with the proposed action do not significantly affect the quality of the human environment;

b. the potential environmental impacts associated with the quantities of high-level waste, which will be generated as a result of the proposed action, do not represent an irreversible and irretrievable commitment of resources in that fuel from Salem Nuclear Generating Station Unit No. 1 could and can be utilized in currently licensed nuclear power plants;

c. the small increment of waste generated as a result of the proposed action will not foreclose alternatives for adequately addressing and analyzing the environmental impacts associated with reprocessing and waste management, attributable to the licensing of Salem Nuclear Generating Station Unit No. 1; and

Having made these conclusions, the Commission has further concluded that no environmental impact statement for the proposed action need to be prepared and that a negative declaration to this effect is appropriate.

d. the potential environmental impacts of the proposed action are a small fraction of those which have been fully described and found acceptable in the Final Environmental Statement for Salem Nuclear Generating Station dated April 1973.

Having made these conclusions, the Commission has further concluded that no environmental impact statement for the proposed action need to be prepared and that a negative declaration to this effect is appropriate.

DSEE ELD

DRMuller

8/13/76 8/13/76

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

Docket No. 50-272

AMENDMENT TO INDEMNITY AGREEMENT NO. B-74

AMENDMENT NO. 2

Effective AUG 13 1976, Indemnity Agreement No. B-74, between Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, Atlantic City Electric Company, and the Atomic Energy Commission, dated November 5, 1974, as amended, is hereby further amended as follows:

Item 2a. of the Attachment to the indemnity agreement is deleted in its entirety and the following substituted therefor:

Item 2 - Amount of financial protection

a.	$1,000,000	(From 12:01 a.m., November 5, 1974, to 12:00 midnight, AUG 12 1976, inclusive)
	$125,000,000	(From 12:01 a.m., AUG 13 1976)

Item 3 of the Attachment to the indemnity agreement is deleted in its entirety and the following substituted therefor:

Item 3 - License number or numbers

SNM-1480	(From 12:01 a.m., November 5, 1974 to 12:00 midnight, AUG 12 1976 inclusive)
DPR-70	(From 12:01 a.m., AUG 13 1976)

Item 5 of the Attachment to the indemnity agreement is amended by adding the following:

Nuclear Energy Liability Policy (Facility Form) No. MF-90 issued by Mutual Atomic Energy Liability Underwriters.

FOR THE UNITED STATES NUCLEAR REGULATORY COMMISSION

Angie Saltzman for

Jerome Saltzman, Chief
Antitrust & Indemnity Group
Nuclear Reactor Regulation

Accepted_____, 1976

By_____
PUBLIC SERVICE ELECTRIC AND GAS COMPANY

Accepted_____, 1976

By_____
PHILADELPHIA ELECTRIC COMPANY

Accepted_____, 1976

By_____
DELMARVA POWER AND LIGHT COMPANY

Accepted_____, 1976

By_____
ATLANTIC CITY ELECTRIC COMPANY

Docket No. 50-272

Public Service Electric and Gas Company
ATTN: Mr. F. P. Librizzi
General Manager - Electric Production
Production Department
80 Park Place, Room 7221
Newark, New Jersey 07101

Gentlemen:

ISSUANCE OF FACILITY OPERATING LICENSE FOR SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

The Nuclear Regulatory Commission has issued the enclosed Facility Operating License No. DPR-70 including Attachment 1 and Technical Specifications (Appendices A and B) to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company. License No. DPR-70 ultimately authorizes the Public Service Electric and Gas Company to operate the Salem Nuclear Generating Station, Unit No. 1, located in Salem County, New Jersey, at a steady state reactor core power level of 3338 megawatts thermal. However, License No. DPR-70 is conditioned to provide a sequential approach to full power which takes into account a series of incomplete construction items, preoperational tests, startup tests and other items, and provides for further Commission approval at various stages of these activities. In addition, License No. DPR-70 limits initial power operation to one percent of the rated core thermal power pending a Commission policy decision regarding the evaluation of the environmental impact of nuclear waste storage and disposal.

Also enclosed are copies of the Notice of Issuance of License No. DPR-70 and Supplement No. 2 to the Safety Evaluation Report prepared by the Division of Project Management, concerning the Salem Nuclear Generating Station, Units Nos. 1 and 2.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

Five signed originals of Amendment No. 2 to Indemnity Agreement No. B-74, which covers the activities authorized under Facility Operating License No. DPR-70 are enclosed. Please have all licensees sign each copy and return one copy to this office.

Sincerely,

Karl Kniel, Chief
Light Water Reactors
Branch No. 2
Division of Project Management

Enclosures:
1. Facility Operating License No. DPR-70, with Attachment 1 and Technical Specifications (Appendices A & B)
2. Federal Register Notice
3. Amendment No. 2 to Indemnity Agreement No. B-74

cc: See page 3

ELD

8/ /76

OFFICE	DPM:LWR #2 mt	DPM:LWR #2	EP	OAI	DD:DPM	DPM
SURNAME	JLee/IVillalva	KKniel			RCDeYoung	RSBoyd
DATE	8/12/76	8/ /76	8/ /76	8/ /76	8/ /76	8/ /76

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

FACILITY OPERATING LICENSE

License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The application for license filed by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees) complies with the standards and requirements of the Atomic Energy Act (the Act) of 1954, as amended, and the Commission's rules and 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 No. 1 (facility) has been substantially completed in conformity with Provisional Construction Permit No. CPPR-52 and the application, as amended, the provisions of the Act and the rules and regulations of the Commission;

   C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and 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 rules and regulations of the Commission;

   E. The licensees are technically and financially qualified to engage in the activities authorized by this operating license in accordance with the rules and regulations of the Commission;

OFFICE ➤						
SURNAME ➤						
DATE ➤						

F. The licensees have 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 operating license will not be inimical to the common defense and security or to the health and safety of the public;

H. After weighing the environmental, economic, technical, and other benefits of the facility against the environmental consequences and other costs and considering available alternatives, the issuance of Facility Operating License No. DPR-70 subject to the conditions for protection of the environment set forth herein is in accordance with 10 CFR Part 51 (formerly Appendix D to 10 CFR Part 50) of the Commission's regulations and all applicable requirements have been satisfied; and

I. 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 Section 30.33, 40.32, and 70.23 and 70.31.

2. Facility Operating License No. DPR-70 is hereby issued to the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company to read as follows:

A. This license applies to the Salem Nuclear Generating Station, Unit No. 1, a pressurized water nuclear reactor and associated equipment (the facility), owned by the Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company and operated by Public Service Electric and Gas Company. The facility is located on the applicants' site in Salem County, New Jersey, on the southern end of Artificial Island on the east bank of the Delaware River in Lower Alloways Creek Township, and is described in the "Final Safety Analysis Report" as supplemented and amended (Amendments 10 through 39) and the Environmental Report as supplemented and amended (Amendments 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, "Licensing of Production and Utilization Facilities," to possess, use and operate the facility;

(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; and

(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 is authorized to operate the facility at steady state reactor core power levels not in excess of 3338 megawatts (thermal), provided that the preoperational tests, startup tests and other items identified in Attachment 1 to this license have been completed in the sequence specified. Attachment 1 is an integral part of this license.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto are hereby incorporated in this license. Public Service Electric and Gas Company shall operate the facility in accordance with the Technical Specifications.

(3) Less Than Four Loop Operation

Public Service Electric and Gas Company shall not operate the reactor at power levels above P-7 (as defined in Table 3.3-1 of Specification 3.3.1.1 of Appendix A to this license) with less than four (4) reactor coolant loops in operation until safety analyses for less than four loop operation have been submitted by the licensees and approval for less than four loop operation at power levels above P-7 has been granted by the Commission by Amendment of this license.

(4) Steam Generator Water Rise Rate

Except for the purpose of performing secondary side flow stability tests, Public Service Electric and Gas Company shall, whenever the secondary side water level in a steam generator is below the level of the feedwater sparger, limit the secondary side water level rise rate in each

steam generator to less than 1.2 inches per minute and shall reduce the rise rate to within this limit within two (2) minutes. This condition will be removed by amendment of this license when Public Service Electric and Gas Company demonstrates to the satisfaction of the Commission that secondary side flow instability (water hammer) does not result in unacceptable consequences.

D. The licensees shall maintain in effect and fully implement all provisions of the NRC Staff-approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.54(p). The approved security plan consists of proprietary documents, collectively titled Salem Nuclear Generating Station "Industrial Security Plan" as follows:

Original, submitted with letter dated June 29, 1973

Revision 1, submitted with letter dated November 26, 1973

Revision 2, submitted with letter dated July 20, 1976

E. This license is subject to the following additional conditions for the protection of the environment:

(1) The licensees shall establish a baseline study to determine the seasonal plankton densities in the region of the cooling water intake and, subsequently, the zooplankton losses due to passage through the cooling system, the impact of such losses on the aquatic ecosystem, and the need for corrective action to mitigate losses if they are significant (see Sections 5.4.2 and 6.2 of the Final Environmental Statement).

(2) The licensees shall initiate a program to frequently monitor the water intake forebay and identify fish losses by number and species attributable to the intake screens during facility operations in order to determine the need, if any, for corrective action to protect aquatic life (see Sections 5.4.1 and 6.2 of the Final Environmental Statement).

(3) The licensees shall develop a plan to continue monitoring the fish, macroinvertebrates, and zooplankton after facility startup to quantify the effects on aquatic life attributable to the discharge of heated effluents and chemicals. Concurrently, field measurements shall be made to define the time-temperature-area characteristics of the thermal plume. The results of this program would determine the need for possible corrective action (see Sections 5.4.3, 5.4.4 and 6.2 of the Final Environmental Statement).

OFFICE➤						
SURNAME➤						
DATE➤						

(4) The licensees shall undertake a program to measure actual residual chlorine concentrations at several sampling stations in the discharge conduit during facility operation. These measured concentrations will be used to determine what changes, if any, will be required in the facility's chlorination procedures (see Section 5.4.4 of the Final Environmental Statement).

(5) The licensees shall incorporate into the operational radiological monitoring program of milk sampling a weekly, rather than quarterly, schedule to detect any short-term increases of radioiodine. Also, high-efficiency iodine samplers shall be used for the detection of both organic and inorganic radioiodines in gases released from the facility (see Section 6.3 of the Final Environmental Statement).

(6) Comprehensive environmental monitoring programs specified above (for the facility operation), which are acceptable to the staff for determining environmental effects which may occur as a result of the operation of the facility, are defined in the Technical Specifications, Appendix B.

(7) If other harmful effects or evidence of irreversible damage are detected, the licensees will provide an analysis of the problem and a proposed course of action to alleviate the problem.

F. This license is effective as of the date of issuance and shall expire at midnight, September 25, 2008.

FOR THE NUCLEAR REGULATORY COMMISSION

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Incomplete Preoperational Tests, Startup Tests, and Other Items which Must be Completed
2. Appendices A & B - Technical Specifications

Date of Issuance:

	ELD	OAI	DSEE
		JSaltzman	VAMoore
	8/ /76	8/ /76	8/ /76

OFFICE ➔	LWR 2	LWR 2	LWR 2	DPM:DD	DPM:DIR	
SURNAME ➔	JLee	HRood	KKniel	RCDeYoung	RSBoyd	
DATE ➔	8/12/76	8/ /76	8/ /76	8/ /76	8/ /76	

ATTACHMENT 1 TO LICENSE DPR-70

Incomplete Preoperational Tests, Startup Tests, and Other Items Which Must be Completed

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to certain specified Operational Modes. Public Service Electric and Gas Company shall not proceed beyond the authorized Operational Modes without prior written authorization from the Commission.

A. Public Service Electric and Gas Company may at the license issue date proceed directly to Operational Mode 6 (initial fuel loading), and may subsequently proceed to Operational Mode 5 (cold shutdown).

B. Prior to proceeding to Operational Mode 4 (hot shutdown), Public Service Electric and Gas Company shall test the response times of primary sensors in the reactor coolant system per SUP 20.1, and complete the maintenance procedures required for facility operation as delineated in Inspection and Enforcement Report 50-272/76-25 Detail 12. Subsequent to the verification by the Office of Inspection and Enforcement of the acceptable completion of these items, and upon written authorization by the Commission, Public Service Electric and Gas Company may proceed to Operational Mode 4 (hot shutdown).

C. Prior to proceeding to Operational Modes 3 (hot standby) and 2 (initial criticality), Public Service Electric and Gas Company shall complete the following items:

1. Testing high temperature alarm TE463A on pressurizer relief line per SUP 50.6.

2. Testing control of steam generator blowdown flow by valves GB8 and GB10 per SUP 50.13.

3. Testing operational of RHR pump recirculation valves 11RH29 and 12RH29 per SUP 50.0.

4. Testing motor winding temperatures of RHR pump motors Nos. 11 and 12 per SUP 12.

5. Testing upper motor bearing of reactor coolant pump No. 14 per SUP 50.0.

6. Testing pump seal of reactor coolant pump No. 11 per SUP 50.0.

7. Testing RTD's Nos. 423B, 431A, 433B, and 440B in the reactor coolant system per SUP 50.7.

8. Testing the following snubbers per SUP 50.4:

OFFICE ➤						
SURNAME ➤						
DATE ➤						

11-FWSN-12A	1-PRSN-1	1-PRSN-28	RHRH 11-29A
11-FWSN-12B	1-PRSN-2	1-PRSN-29	RHRH 11-29B
11-FWSN-16	1-PRSN-3	1-PRSN-30	RHRH 12-34B
12-FWSN-13A	1-PRSN-3A	1-PRSN-32A	RHRH 12-34C
12-FWSN-13B	1-PRSN-4	1-PRSN-32B	
12-FWSN-15	1-PRSN-5	1-PRSN-33	
13-FWSN-15A	1-PRSN-5A	1-PRSN-34	
13-FWSN-15B	1-PRSN-7	1-PRSN-36	
13-FWSN-17A	1-PRSN-9	1-PRSN-37	
13-FWSN-17B	1-PRSN-10	1-PRSN-38A	
14-FWSN-13A	1-PRSN-11	1-PRSN-38B	
14-FWSN-13B	1-PRSN-12	1-PRSN-39	
14-FWSN-15A	1-PRSN-13	1-PRSN-42	
14-FWSN-15B	1-PRSN-16	1-PRSN-400	
	1-PRSN-17	1-PRSN-401	
1 - PRA-146	1-PRSN-19	1-PRSN-402	
1 - PRA-150	1-PRSN-20	1-PRSN-405	
1 - PRA-154	1-PRSN-23	1-PRSN-405A	
1 - PRA-158	1-PRSN-25	1-PRSN-406	
1 - PRA-162	1-PRSN-27	1-PRSN-406A	

9. Testing the boron recycle system per SUP 10.5.

10. Demonstrate beta dosimetry capability.

11. Testing process radiation monitors, excluding those required for fuel loading, per SUP 21.

12. Testing service water system per SUP 28.

13. Testing chilled water portion of the control room air conditioning system per SUP 19.7.

14. Prepare the following radiochemistry procedures:

    (a) PD 3.3.010 - procedure to determine the average energy of gamma emitting isotopes;

    (b) PD 3.3.011 - procedure for detecting fission gases by gamma spectroscopy in the presence of other gases;

    (c) PD 3.3.003 - procedure to determine the dose equivalent Iodine 131 in the primary coolant.

15. Replace the existing standby charcoal filters in the auxiliary building ventilation system with charcoal filters capable of removing 90 percent of the organic Iodines.

Subsequent to verification by the Office of Inspection and Enforcement of the acceptable completion of the above listed items, and upon written authorization from the Commission, the Public Service Electric and Gas Company may proceed to Operational Modes 3 (hot standby) and 2 (initial criticality).

The power level of Operational Mode 2 shall be limited to one percent of rated core thermal power pending a Commission policy decision regarding the evaluation of the environmental impact of nuclear waste storage and disposal.

D. Prior to proceeding to Operational Mode 1 (power operation) the Public Service Electric and Gas Company shall complete the following items:

1. Provide an additional permanent opening in the pipe alley as required to alleviate the effects of high energy pipe break conditions.

2. Provide limit switches to the cask handling crane.

3. Visually inspect the weld joint on drain valve MS909 with system under pressure.

Subsequent to verification by the Office of Inspection and Enforcement of the acceptable completion of the above listed items, and upon written authorization from the Commission, the Public Service Electric and Gas Company may proceed to Operational Mode 1 (power operation). Operation in this mode shall be limited to fifty (50) percent of rated reactor core thermal power.

E. Prior to operating at above fifty (50) percent of rated reactor core thermal power, Public Service Electric and Gas Company shall implement the axial flux difference alarms required for constant axial offset control. Subsequent to the verification by the Office of Inspection and Enforcement that these alarms have been acceptably implemented, and upon written authorization from the Commission, Public Service Electric and Gas Company may operate the facility at levels up to 100 percent of rated reactor core thermal power.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-272

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

NOTICE OF ISSUANCE OF A FACILITY OPERATING LICENSE

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has issued Facility Operating License No. DPR-70 to Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company. License No. DPR-70 authorizes operation of the Salem Nuclear Generating Station, Unit No. 1 by the Public Service Electric and Gas Company in accordance with the provisions of the license and the Technical Specifications. The Salem Nuclear Generating Station, Unit No. 1 is a pressurized water nuclear reactor located at the licensees' site in Lower Alloways Creek Township, Salem County, New Jersey.

Facility Operating License No. DPR-70 ultimately authorizes full power operation; however, it is conditioned to provide a sequential approach to full power which takes into account a series of incomplete construction items, preoperational tests, startup tests and other items, and provides for further Commission approval at various stages of these activities. In addition, License No. DPR-70 limits initial power operation to one percent of the rated core thermal power pending a Commission policy decision

OFFICE ➔						
SURNAME ➔						
DATE ➔						

regarding the evaluation of environmental impact of nuclear waste storage and disposal.

The Commission has made appropriate findings as required by the Atomic Energy Act (the Act) of 1954, as amended, and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license. The application for the license complies with the standards and requirements of the Act and the Commission's rules and regulations.

The license is effective as of its date of issuance and shall expire on September 25, 2008.

A copy of (1) Facility Operating Licensing No. DPR-70, complete with Attachment 1 and Technical Specifications (Appendices "A" and "B"); (2) the report of the Advisory Committee on Reactor Safeguards, dated February 14, 1975; (3) the Office of Nuclear Reactor Regulation's Safety Evaluation Report and Supplements Nos. 1 and 2 thereto, dated October 11, 1974, June 20, 1976, and August , 1976 respectively; (4) the Final Safety Analysis Report and amendments thereto; (5) the applicants' Environmental Report dated June 30, 1970 and supplements thereto; (6) the Draft Environmental Statement dated October 1972; and (7) the Final Environmental Statement dated April 1973, are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C and the Salem Free Public Library, 112 West Broadway, Salem, New Jersey. Single

OFFICE ➤						
SURNAME ➤						
DATE ➤						

copies of Items (1), (2), (3) and (7) may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C., 20555, Attention: Director, Division of Project Management.

Dated at Bethesda, Maryland, this day of

FOR THE NUCLEAR REGULATORY COMMISSION

Karl Kniel, Chief
Light Water Reactors
Branch No. 2
Division of Project Management

OFFICE ➤	DPM:LWR #2	DPM:LWR #2	OELD	DPM:LWR #2		
SURNAME ➤	JLee:mt	IVillalva		KKniel		
DATE ➤	8/12/76	8/ /76	8/ /76	8/ /76		

Docket File

11-5

CHECKLIST FOR ISSUANCE OF FACILITY OPERATING LICENSE

8/13/76

Applicant Public Service Electric and Gas Company Docket No. 50-272

Facility Salem Nuclear Generating Station, Unit No. 1

Project Manager I. Villalva Licensing Assistant J. Lee

	DATE
Notice of Consideration of Issuance of License:	
Published in FEDERAL REGISTER	10/20/72
Action Date	11/19/76
OR	
Initial Decision or Order	N/A
Safety Review:	
Safety Evaluation	10/11/74
ACRS Letter	2/14/75
Environmental Review:	
Final Environmental Statement	4/73
Published in FEDERAL REGISTER	4/5/73 - 38 FR 8686)
Antitrust Review:	
OAI Concurrences	N/A
Notifications Required by Act & Commission Rules*:	
State Official	4/7/72
Local Official	10/12/72
Water Quality Certification: 401 Type	
Submitted by Applicant	10/29/70
Transmitted to EPA	1/31/73
License Fee:	
Amount: $256,105 Paid	8/13/76
Indemnity Agreement: (attach copy to letter)	
OAI Concurrence	8/13/76
Status of Outstanding Construction Items Checked w/IE	
QA Program: Required to be operational**	✓
In Effect	✓
Inspection Final Report; (If Available)	
Technical Specifications:	
RL Concurrence	8/76
EP Concurrence	8/76
Public Announcement (to be released): (If Available Attach Copy)	
Issuance Package: ELD Concurrence	
1. License	8/13/76
2. FEDERAL REGISTER Notice	8/13/76
3. Letter to Applicant	8/13/76
4. ~~Information Report~~	

* Date Initial Application Forwarded

** 90 days prior to fuel loading or 30 days prior to hearing if QA item in contention