April 30, 1991

Docket Nos. 50-272
and 50-311

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric and Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

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SUBJECT: NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT, SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 (TAC NOS. 69267 AND 69268)

Enclosed for your information is a copy of a "Notice of Issuance of Environmental Assessment and Finding of No Significant Impact" related to your request dated August 3, 1987, as supplemented by letters dated August 10 and 21, 1990, for an amendment to Facility Operating License Nos. DPR-70 and DPR-75, for the Salem Nuclear Generating Station, Units 1 and 2, respectively. The proposed amendment would extend the expiration date for the Salem Unit 1 Operating License from September 25, 2008 to August 13, 2016 and for the Salem Unit 2 Operating License from September 25, 2008 to April 18, 2020. The original date is 40 years from the date of issuance of the Construction Permit. The revised date is 40 years from the date of issuance of the Operating License. Also enclosed is a copy of the Environmental Assessment related to this extension.

The notice has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/S/

James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. FEDERAL REGISTER Notice
2. Environmental Assessment

cc w/enclosures:
See next page

OFC	:PDI-2/LA	:PDI-2/PM	:PDI-2/PM	:PDI-2/D	:OGC
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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James C. Stone

James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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See next page

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Baltimore, MD 21202-3486

7590-01

UNITED STATES NUCLEAR REGULATORY COMMISSION

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NOS. 50-272 AND 50-311

NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT

AND FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of amendments to Facility Operating License Nos. DPR-70 and DPR-75 issued to Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power & Light Company, and Atlantic City Electric Company (the licensees) for operation of the Salem Nuclear Generating Station, Units 1 and 2, (the facility) located in Salem County, New Jersey.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The proposed amendment would change the expiration date for the Salem Unit 1 Operating License from September 25, 2008 to August 13, 2016 and for the Salem Unit 2 Operating License from September 25, 2008 to April 18, 2020. The original date is 40 years from the date of issuance of the Construction Permit. The revised date is 40 years from the date of issuance of the Operating License. The Commission's staff has prepared an Environmental Assessment of the proposed action, "Environmental Assessment by the Office of Nuclear Reactor Regulation Relating to the change in the Expiration Dates of Facility Operating License Nos. DPR-70 and DPR-75, Public Service Electric and Gas

Company, Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company, Salem Nuclear Generating Station, Units 1 and 2, Docket Nos. 50-272 and 50-311," dated April 30, 1991.

Summary of Environmental Assessment:

The Commission's staff has reviewed the potential environmental impact of the proposed change in the expiration dates of the Operating Licenses for the Salem Nuclear Generating Station, Units 1 and 2. This evaluation considered the previous environmental studies, including the "Final Environmental Statement related to operation of Salem Nuclear Generating Station, Units 1 and 2", dated April 1973, and more recent NRC policy related to evaluations of license extensions for similar nuclear power plants.

Radiological Impacts:

The staff concludes that the current Exclusion Area Boundary, Low Population Zone, and nearest population center distances will likely remain unchanged from those described in the April 1973 Final Environmental Statement (FES). The regional demography for Salem within a 25-mile radius is found to be about 48 percent woodlands, and 42 percent agriculture. The FES projected a 20 percent increase in population within 5 miles of the facility from 1970 to 1980, and a 23 percent increase within the 30-mile radial distance. Based on 1980 census data, the level of population projected in the FES for 1980 is close to the 1980 census data. The staff also projected an upward trend in the population of the region for the years 1990 and 2020. Based upon these population estimates, the staff therefore concludes that projected population distributions as related to the requested extension of the Salem operating licenses are adequately bounded by the FES.

The additional period of plant operation would not significantly affect the probability or consequences of any reactor accident. Salem Nuclear Generating Station, Units 1 and 2, radiological effluents to unrestricted areas during normal operation have been far below 10 CFR Part 50, Appendix I limits, and are indicative of future releases. The proposed additional years of reactor operation do not increase the annual public risk from reactor operation.

With regard to normal plant operation, the occupational exposures for the Salem Nuclear Generating Station, Units 1 and 2, is indicated to be in the upper 40 percent of all PWRs in achieving ALARA goals. In fact, Salem has reduced its total collective dose from 300 person-rems in 1987 to 252 person-rems in 1988, and then to 169 person-rems in 1989, as compared to the annual PWR averages of 371, 336, and 296 person-rems, respectively, for each corresponding year. The staff has determined that no changes to the amendment application with respect to occupational radiation protection is necessary for a 40-year operating life for Salem 1 and 2.

Accordingly, annual radiological impacts on man, both offsite and onsite, are not more severe than previously estimated in the FES, and the staff's previous cost-benefit conclusions remain valid.

The environmental impact attributable to transportation of fuel and waste to and from Salem Nuclear Generating Station, Units 1 and 2, with respect to normal conditions of transport and possible accidents in transport, are adequately bounded by those identified in Table S-4 of 10 CFR Part 51.52. The values in Table S-4 would continue to represent the contribution of transportation to the environmental cost associated with plant operations.

Non-Radiological Impact:

The Commission has concluded that the herein proposed extensions will not cause a significant increase in the impacts to the environment and will not change any conclusions reached by the Commission in the FES.

FINDING OF NO SIGNIFICANT IMPACT:

The Commission has reviewed the proposed change to the respective expiration dates of the Salem Nuclear Generating Station, Units 1 and 2, Operating Licenses relative to the requirements set forth in 10 CFR Part 51. Based upon the environmental assessment, the staff has concluded that there are no significant radiological or non-radiological impacts associated with the proposed action and that the proposed license amendments will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendment. For further details with respect to this action, see (1) the application for amendment dated August 3, 1987, as supplemented on August 10 and 21, 1990, (2) the Final Environmental Statement related to operation at Salem Nuclear Generating Station, Units 1 and 2, issued April 1973, and (3) the Environmental Assessment dated April 30, 1991. These documents are available for public inspection at the Commission's Public Document Room, the

Gelman Building, 2120 L Street, N. W., Washington, D. C. 20555, and at the Local Public Document Room located at Salem Free Public library, 112 West Broadway, Salem, New Jersey 08079.

Dated at Rockville, Maryland, this 30th day of April 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

Walter R. Butler

Walter R. Butler, Director
Project Directorate 1-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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

ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE CHANGE IN THE EXPIRATION DATE OF

FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-272 AND 50-311

TABLE OF CONTENTS

1.0 INTRODUCTION

The United States Nuclear Regulatory Commission (the Commission) is considering the issuance of proposed amendments which would extend the expiration dates for the Salem Nuclear Generating Station, Unit 1, Operating License No. DPR-70 from September 25, 2008 to August 13, 2016 and for the Salem Nuclear Generating Station, Unit 2, Operating License No. DPR-75 from September 25, 2008 to April 18, 2020. The Salem Units are operated by Public Service Electric and Gas Company (PSE&G), Philadelphia Electric Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees) and are located in the County of Salem, New Jersey.

2.0 IDENTIFICATION OF THE PROPOSED ACTION

The currently licensed term for both units is 40 years commencing with the issuance of the construction permit on September 25, 1968. Accounting for the time that was required for the construction of the units, this represents an effective operating license term of approximately 32.1 years and 28.4 years for Units 1 and 2, respectively. The licensees' application of August 3, 1987 requests an extension of the expiration dates for Units 1 and 2 operating licenses to reflect a 40-year operating term which would start with the issuance of the respective unit's operating license rather than issuance of the construction permit.

3.0 THE NEED FOR THE PROPOSED ACTION

The granting of the proposed license amendments would allow the licensees to operate Salem Units 1 and 2 for approximately 7.9 and 11.6 additional years, respectively, beyond the currently approved license expiration dates for the units. Without issuance of the proposed license amendments, the Salem units would be required to shutdown at the end of the currently approved licensing terms.

4.0 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

In April 1973, the United States Atomic Energy Commission issued the "Final Environmental Statement Related to Operation of Salem Nuclear Generating Station, Units 1 & 2". This document was issued in support of continuation of the Construction Permits CPPR-52 and CPPR-53 and the issuance of operating licenses to Public Service Electric and Gas Company. This document provides an evaluation of the environmental impact associated with Salem Units 1 and 2 operation. The staff has reviewed the Final Environmental Impact Statement (FES), and additional information provided by the licensees in support of their license amendment submittal, to determine the environmental impact of operation of the Salem Units 1 and 2 for the approximate 7.9 and 11.6 additional years, respectively, beyond the currently approved license expiration dates.

4.1 Radiological Impacts

The staff has considered potential radiological impacts for the general public in residence in the vicinity of the Salem Nuclear Generating Station. These impacts include accidents and normal radiological releases. In addition, the staff has considered the impact of radiation exposure to workers at the plant. Finally, the impact on the uranium fuel cycle and on the transportation of fuel and waste have been considered. These impacts are summarized in Sections 4.1.1 through 4.1.4 below.

4.1.1 Environmental Impacts - General Public

In the FES, the staff calculated dose commitments to the human population residing around the Salem Nuclear Generating Station to assess the impact on nearby residents from radioactive material released to the environment. As used in the FES, the dose commitment estimate was that dose which would be received over a 50-year period following the intake of radioactive materials for one year, based on the environmental concentrations that would exist 15 years after the plant began operation. The 15-year period was chosen as representing the midpoint of plant operation and was incorporated into the dose models to allow for buildup of long-lived radionuclides in the environment (e.g., soil and shoreline sediments). For a plant licensed for 40 years, increasing the buildup period from 15 to 20 years would increase the dose from long-lived radionuclides via the ingestion pathways by about one-third, assuming a constant annual release of effluents. It would have much less effect on the projected dose from shorter-lived radionuclides. The staff also concludes that the effluent releases near the end of plant life are not expected to differ significantly from current releases.

In the FES, maximum doses projected for a critical receptor indicated a thyroid dose of 0.05 mrem per year, via the inhalation pathway, for a child located about 3 miles east of the plant, and 0.035 mrem per year, via the water ingestion pathway. The thyroid dose is principally due to I-131, a relatively short-lived radionuclide. Offsite dose calculations based on actual effluent releases show offsite doses far below regulatory requirements (e.g., offsite doses from effluent releases for the period January 1, 1985 through December 31, 1989, are small fractions of allowed doses - see Table II). The calculated offsite dose values are typical of each year of operation of the Salem Units 1 and 2, and are expected to remain typical of plant operations through the year 2020.

The staff considered in the FES the radiological impacts expected as a result of hypothetical design basis accidents at Salem and from normal plant operation. The estimated impacts of postulated design basis accidents are related to power level and short-lived radionuclides, rather than to length of operation; thus, the previous results from the FES are not changed.

In previous documents (Safety Evaluation Report dated October 1974, and Final Environmental Statement dated April 1973), the staff evaluated the regional demography for Salem and found the land area within a 25-mile radius, as

indicated by the population statistics, to be about 48 percent woodlands and 42 percent agriculture. The FES projected a 20 percent increase in population within 5 miles of the facility from 1970 to 1980, and a 23 percent increase within the 30-mile radial distrance. Based on 1980 census data, the level of population projected in the FES for 1980 is about 8% higher for the 50 mile radius than the actual 1980 census data. Population projections for Hope Creek, based on actual 1980 census data, show that the population projections for Salem are conservative. The staff also projected an upward trend in the population of the region for years 1990 and 2020. In Table I this upward trend in the population is reflected.

The staff therefore, concludes that projected population distributions as related to the requested extension of the Salem operating license are adequately bounded by the FES. The staff further concludes, based upon these population estimates, that the current Exclusion Area Boundary, Low Population Zone, and nearest population center distances will likely remain unchanged in the foreseeable future. Therefore, the conclusion reached in the staff's Safety Evaluation that Salem meets the requirements of 10 CFR Part 100, remains unchanged.

4.1.2 Environmental Impacts - Uranium Fuel Cycle

The impacts of the uranium cycle as considered for the FES were originally based on 30 years of operation of a model light water reactor (LWR). The fuel requirements for the model LWR were assumed to be one initial core load and 29 annual refuelings (approximately 1/3 core per refueling). In considering the annual fuel requirements averaged for a 30-year operating life, the net result is approximately a 1.5 percent reduction in the annual fuel requirements for the model LWR, due to averaging of the initial core load over 40 years, instead of 30 years. This small reduction in fuel requirements would not lead to significant changes in the annual impacts of the uranium fuel cycle.

4.1.3 Environmental Impacts - Occupational Exposures

The staff has determined that no changes to the amendment application with respect to occupational radiation protection is necessary for a 40 year term for Salem 1 and 2. This is because the most recent three-year average collective dose per reactor indicates Salem to be in the upper 40 percent of all PWRs in achieving ALARA goals. In fact, during this period, Salem has reduced its total collective dose from 300 person-rem in 1987 to 252 person-rem in 1988, and then to 169 person-rem in 1989, as compared to the annual PWR averages of 371, 336 and 296 person-rems, respectively for each corresponding year.

4.1.4 Environmental Impacts - Transportation of Fuel and Waste

The staff has reviewed the environmental impacts attributable to the tranportation of spent fuel and waste and from the Salem site. With respect to the normal conditions of transport and posssible accidents in transport,

the staff concludes that the environmental impacts are adequately bounded by those identified in Table S-4, "Environmental Impact of Transportation of Fuel and Waste to and from One Light Water-Cooled Nuclear Power Reactor," of 10 CFR Part 51.52 which are based on a burnup level of 33,000 MWD/MTU and 4 weight percent (w/o) U-235; it also bounds the corresponding impacts for burnup levels up to 60,000 MWD/MTU and 5 w/o U-235 enrichment which are the anticipated future range of operation for Salem fuel cycles. (See Federal Register (53 FR 6040), dated February 29, 1988 and (53 FR 30355), dated August 11, 1988.)

Presently, both Salem Units 1 and 2 are operating on an 18-month refueling cycle containing a maximum of 4.0 w/o U-235 enrichment to obtain an average discharge burnup of about 40,000 MWD/MTU. The licensees plan to go to a higher discharge burnup in the future by increasing the fuel enrichment up to 4.4 w/o U-235 to optimize the fuel economy, and to mitigate the spent fuel storage concern. Sufficient onsite storage capacity currently exists at Salem Units 1 and 2 to permit continued plant operation until 1996 and 2000, respectively. After those dates there will no longer be sufficient space in the current spent fuel pool to completely off-load the core and maintain about a 100 storage space margin. Operation of the units beyond these dates would require installation of additional onsite storage capacity. Plans are underway to expand onsite storage capacity to ensure the availability of adequate capacity at all times for life of the plant storage if necessary, including plant life extension.

With respect to the environmental effects of transporting spent fuel and high level waste, PSE&G has neither shipped any spent fuel offsite in the past nor has any plans to make such shipments in the future. PSE&G has indicated that spent fuel would be shipped to the Allied Gulf Nuclear Services reprocessing plant located in Barnwell, South Carolina, and solid radioactive waste to West Valley burial site in New York. However, reprocessing of commercial nuclear fuel has since been banned by federal law, thus precluding the need for such offsite shipments. PSE&G will continue to store spent fuel onsite until the Department of Energy (DOE) comes to the site to pickup this fuel, under the terms of the contract signed between DOE and PSE&G for disposal of spent fuel and high level waste.

The staff therefore concludes that conditions of 10 CFR 51.52(c) will be met, and accordingly no new analysis of the environmental effects of transportation of fuel and waste to and from the reactor is necessary.

4.2 Non-Radiological Impacts

The staff has reevaluated the non-radiological impact associated with the extended operational life of the Salem Units 1 and 2 and has concluded that the herein proposed extensions will not cause a significant increase in the impacts to the environment and will not change any conclusions reached by the Commission in the FES.

All potential impacts have been identified, described and evaluated in previously issued environmental impact statements and/or appraisals by the staff and reviews by the U.S. Environmental Protection Agency under a National Pollutant Discharge Elimination System permit. All operational, non-radiological impacts on biological resources have been assessed by the staff in the FES on bases other than a life-of-plant basis and the requested extension of the operating license will not alter previous staff findings and conclusions.

We conclude, therefore, that the non-radiological impacts associated with the proposed changes in the license expiration dates for Salem Units 1 and 2 are acceptable.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

The principal alternative to issuance of the proposed license extension would be to deny the application. In this case, Salem Nuclear Generating Station, Units 1 and 2, would shut down upon expiration of the present operating licenses.

In Chapters 10 and 11 of the FES, alternatives to construction of Salem Units 1 and 2 and a cost-benefit analysis is presented. Included in the analysis is a comparison among various options for producing an equivalent electrical power capacity. Even considering significant changes in the economics of the alternatives, operation of Salem, Units 1 and 2 for the additional years requested would only require incremental yearly costs. These costs would be substantially less than the purchase of replacement power or the installation of new electrical generating capacity. Moreover, the overall cost per year of the facility would decrease since the large initial capital outlay would be averaged over a greater number of years. In summary, the cost-benefit advantage of Salem, Units 1 and 2 compared to alternative electrical power generating capacity improves with the extended unit operational lifetimes. Also, the environmental impact of the alternatives analyzed in the FES remains the same.

6.0 ALTERNATIVE USE OF RESOURCES

This action does not involve the use of resources not previously considered in connection with the "Final Environmental Statement Related to Operation of Salem Nuclear Generating Station, Units 1 and 2" dated April 1973.

7.0 AGENCIES AND PERSONS CONSULTED

The Commission's staff reviewed the licensee's request and did not consult other agencies or persons.

8.0 BASIS AND CONCLUSIONS FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The Commission has determined not to prepare an environmental impact statement for the proposed action. The staff has reviewed the proposed license amendment relative to the requirements set forth in 10 CFR Part 51. Based on

this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and it will not change any conclusions reached in the FES.

Therefore, pursuant to 10 CFR 51.31, an environmental impact statement need not be prepared for this action. Based upon this environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

Attachments: Tables I and II

Dated: April 30, 1991

Principal Contributors:
James J. Raleigh
John L. Minns

TABLE I

COMPARISON OF POPULATION PROJECTIONS (1, 2)
0 - 50 MILES
SALEM GENERATING STATIONS

MILES	1970(2)	1980	1990	2000	2010	2020
0 - 4	303	367	665	893	1207	1600
0 - 5	1177	1405	2551	3294	4300	5622
0 - 10	25144	29488	40807	49962	62101	76617
0 - 20	378589	475169	595272	695463	825722	962447
0 - 30	860159	1058119	1290071	1572220	1834465	2180329
0 - 40	2603598	2976478	3477743	3990381	4573681	5261695
0 - 50	4744551	5366006	6139181	6923869	7864519	8924121

Notes

1) Population projections have been excerpted from the Salem Safety Analysis Report

2) 1970 populations are actual census data.

Table II

Comparison Between Salem's Average Annual Offsite Individual Doses

and

FES-Projected Doses and 10 CFR 50 Appendix I Dose Design Objectives

Gaseous Effluents	SALEM[b] Average	FES	10 CFR 50 Appendix I
Noble Gases			
Gamma Air Dose (mrad/yr)	0.03	0.01[d]	10
Beta Air Dose (mrad/yr)	0.054	0.04[d]	20
Population (person-rem)	1.0	1.1[e]	NA[c]
Iodines and Particulates			
Thyroid (mrem/yr)	0.13	0.58	15
Liquid Effluent			
Total Body (mrem/yr)	0.3	0.4[d]	3
Organ[a] (mrem/yr)	1.6	3.9[d]	10
Population (person-rem)	0.7	3.2[e]	NA[c]

a. Includes thyroid, liver and bone dose received from water and fish ingestion pathways.

b. Based on effluent releases for the period January 1, 1985 through December 31, 1990, (except data for 1986 not available).

c. Not applicable

d. FES Table 5.2

e. FES Table 5.5