

Mr. Harold W. Keiser  
 Chief Nuclear Officer & President-  
 Nuclear Business Unit  
 Public Service Electric & Gas  
 Company  
 Post Office Box 236  
 Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, ISSUANCE OF  
 AMENDMENTS RE: PRIMARY CONTAINMENT INTEGRITY (TAC NOS. MA6170  
 AND MA6171)

Dear Mr. Keiser:

The Commission has issued the enclosed Amendment Nos. 227 and 208 to Facility  
 Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating Station, Unit  
 Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in  
 response to your application dated July 29, 1999, as supplemented November 30, 1999. These  
 supplements provided clarifying information that did not change the initial proposed no  
 significant hazards consideration determination.

These amendments revise TS Surveillance Requirement 4.6.1.1 to clarify when verification of  
 primary containment integrity may be performed by administrative means and to change the  
 surveillance interval for verification of manual valves and blind flanges inside of containment.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the  
 Commission's biweekly Federal Register notice.

Sincerely,

/RA/

William C. Gleaves, Project Manager, Section 2  
 Project Directorate I  
 Division of Licensing Project Management  
 Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosures: 1. Amendment No. 227 to License No. DPR-70  
 2. Amendment No. 208 to License No. DPR-75  
 3. Safety Evaluation

cc w/encls: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 29, 2000

Mr. Harold W. Keiser  
Chief Nuclear Officer & President-  
Nuclear Business Unit  
Public Service Electric & Gas  
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Post Office Box 236  
Hancocks Bridge, NJ 08038

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These amendments revise TS Surveillance Requirement 4.6.1.1 to clarify when verification of primary containment integrity may be performed by administrative means and to change the surveillance interval for verification of manual valves and blind flanges inside of containment.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

William C. Gleaves, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
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Docket Nos. 50-272 and 50-311

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License No. DPR-70  
2. Amendment No. 208 to  
License No. DPR-75  
3. Safety Evaluation

cc w/encls: See next page

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

PUBLIC SERVICE ELECTRIC & 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

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 227  
License No. DPR-70

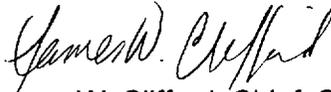
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated July 29, 1999, as supplemented November 30, 1999, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-70 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 227 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: February 29, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 227

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 6-1  
B 3/4 6-1  
B 3/4 6-1a  
B 3/4 6-1b

Insert Pages

3/4 6-1  
B 3/4 6-1  
B 3/4 6-1a  
B 3/4 6-1b

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

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3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

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4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a1. At least once per 31 days by verifying that each containment manual valve or blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.
- a2. Prior to entering Mode 4 from Mode 5 if not performed within the last 92 days by verifying that each containment manual valve or blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.
- b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.
- c. At least once per 12 hours by verifying that the surveillance requirements of 4.6.2.3.a are met for penetrations associated with the containment fan coil units.
- d. At least once per 18 months by verifying that the surveillance requirements of 4.6.2.3.d are met for penetrations associated with the containment fan coil units.

## 3/4.6 CONTAINMENT SYSTEMS

### BASES

#### 3/4.6.1 PRIMARY CONTAINMENT

##### 3/4 6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR 100 during accident conditions.

The purpose of this surveillance requirement (4.6.1.1a) is not to perform any testing or valve manipulations, but to verify that containment isolation valves capable of being mispositioned are in their proper safety position (closed).

Physical verification (hands on verification) that these penetrations (containment isolation valves) are in the proper position is performed prior to entering Mode 4 from Mode 5 and documented in the appropriate valve line-up. Allowing the use of administrative means to verify compliance with the surveillance requirement for these valves is acceptable based on the limited access to these areas in Modes 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified in the proper position, is small.

The service water accumulator vessel and discharge valves function to maintain water filled, subcooled fluid conditions in the containment fan coil unit (CFCU) cooling loops during accident conditions. The service water accumulator vessel and discharge valves were installed to address the Generic Letter 96-06 issues of column separation waterhammer and two phase flow during an accident involving a loss of offsite power. The operability of each service water accumulator vessel and discharge valve is required to ensure the integrity of containment penetrations associated with the containment fan coil units during accident conditions. If a service water accumulator vessel does not meet the vessel surveillance requirements, or if the discharge valve response time does not meet design acceptance criteria when tested in accordance with procedures, the containment integrity requirements of the CFCU cooling loops exclusively supplied by the inoperable accumulator vessel or discharge valve are not met. Limiting Condition for Operation 3.6.1.1 is applicable, and the cooling loops for the two CFCU's exclusively supplied by the inoperable accumulator are to be removed from service and isolated to maintain containment integrity.

##### 3/4 6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure  $P_a$ . As an added conservatism, the measured overall integrated leakage rate (Type A test) is further limited to less than or equal to  $0.75 L_a$  or less than or equal to  $0.75 L_t$ , as applicable, during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The surveillance testing for measuring leakage rates are consistent with the Containment Leakage Rate Testing Program.

##### 3/4.6.1.3 CONTAINMENT AIR LOCKS

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, 10 feet in diameter, with a door at each end. The doors are interlocked during normal operation to prevent simultaneous opening.

### 3/4.6 CONTAINMENT SYSTEMS

#### BASES

During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. To effect a leak tight seal, the air lock design uses pressure-seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door).

Each personnel air lock is provided with limit switches on both doors that provide control room indication of door position. Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated.

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analysis.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident and a rod ejection accident. In the analysis of each of these accidents, it is assumed that containment is OPERABLE such that release of fission products to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of 0.1% of containment air weight per day. This leakage rate is defined in 10CFR50, Appendix J as  $L_a = 0.1\%$  of containment air weight per day, the maximum allowable containment leakage rate at the calculated peak containment internal pressure  $P_a = 47.0$  psig following a DBA. The allowable leakage rate forms the basis for the acceptance criteria imposed on the surveillance requirements associated with the air locks.

Each containment air lock forms part of the containment pressure boundary. As part of containment, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into and exit from containment.

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.4, "Containment Building Penetrations".

The ACTIONS are modified by five notes. Note (1) allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock.

BASES

However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

Note (2) adds clarification that separate condition entry is allowed for each air lock. This is acceptable, since the required ACTIONS provide appropriate compensatory measures for each inoperable air lock. Complying with the Required Actions may allow for continued operation. A subsequent inoperable air lock is governed by condition entry for that air lock.

Notes (3) and (4) ensure that only the required ACTIONS and associated completion times of condition c. are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required ACTIONS c.1 and c.2 are the appropriate remedial actions. The exception of these Notes does not affect tracking the completion time from the initial entry into condition a., only the requirement to comply with the required ACTIONS.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note (5) directs entry into the applicable Conditions and required ACTIONS of LCO 3.6.1, "Primary Containment."

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (ACTION a.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This ACTION must be completed within 1 hour. The specified time period is consistent with the ACTIONS of LCO 3.6.1.1 that requires that containment be restored to OPERABLE status within 1 hour. OPERABILITY of the air lock interlock is not required to support the OPERABILITY of an air lock door.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour completion time (ACTION a.2). The 24 hour completion time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required ACTION a.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The completion time of once per 31 days is based on engineering judgement and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls.

ACTION a.3 allows the use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7-day restriction begins when the second air lock is discovered to be inoperable. Containment entry may be required on a periodic basis to perform Technical Specification Surveillances and required ACTIONS, as well as other activities on equipment inside containment that are required by Technical Specifications or activities on equipment that support Technical Specification required equipment. This Note is not intended to preclude performing other activities (i.e., non-Technical Specification required activities) if the containment is entered, using the inoperable air lock, to perform an allowed entry listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.



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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-311

SALEM NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 208  
License No. DPR-75

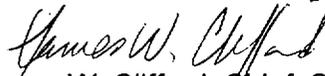
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated July 29, 1999, as supplemented November 30, 1999, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-75 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 208 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: February 29, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 208

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 6-1  
B 3/4 6-1  
B 3/4 6-1a  
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B 3/4 6-1c  
B 3/4 6-1d

Insert Pages

3/4 6-1  
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B 3/4 6-1a  
B 3/4 6-1b  
B 3/4 6-1c  
B 3/4 6-1d

### 3/4.6 CONTAINMENT SYSTEMS

#### 3/4.6.1 PRIMARY CONTAINMENT

##### CONTAINMENT INTEGRITY

##### LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

##### SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a1. At least once per 31 days by verifying that each containment manual valve or blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.
- a2. Prior to entering Mode 4 from Mode 5 if not performed within the last 92 days by verifying that each containment manual valve or blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.
- b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.
- c. After each closing of a penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing in accordance with the Containment Leakage Rate Testing Program.
- d. At least once per 12 hours by verifying that the surveillance requirements of 4.6.2.3.a are met for penetrations associated with the containment fan coil units.
- e. At least once per 18 months by verifying that the surveillance requirements of 4.6.2.3.d are met for penetrations associated with the containment fan coil units.

## 3/4.6 CONTAINMENT SYSTEMS

### BASES

#### 3/4.6.1 PRIMARY CONTAINMENT

##### 3/4 6.1.1 CONTAINMENT INTEGRITY

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR 100 during accident conditions.

The purpose of this surveillance requirement (4.6.1.1a) is not to perform any testing or valve manipulations, but to verify that containment isolation valves capable of being mispositioned are in their proper safety position (closed).

Physical verification (hands on verification) that these penetrations (containment isolation valves) are in the proper position is performed prior to entering Mode 4 from Mode 5 and documented in the appropriate valve line-up. Allowing the use of administrative means to verify compliance with the surveillance requirement for these valves is acceptable based on the limited access to these areas in Modes 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified in the proper position, is small.

The service water accumulator vessel and discharge valves function to maintain water filled, subcooled fluid conditions in the containment fan coil unit (CFCU) cooling loops during accident conditions. The service water accumulator vessel and discharge valves were installed to address the Generic Letter 96-06 issues of column separation waterhammer and two phase flow during an accident involving a loss of offsite power. The operability of each service water accumulator vessel and discharge valve is required to ensure the integrity of containment penetrations associated with the containment fan coil units during accident conditions. If a service water accumulator vessel does not meet the vessel surveillance requirements, or if the discharge valve response time does not meet design acceptance criteria when tested in accordance with procedures, the containment integrity requirements of the CFCU cooling loops exclusively supplied by the inoperable accumulator vessel or discharge valve are not met. Limiting Condition for Operation 3.6.1.1 is applicable, and the cooling loops for the two CFCU's exclusively supplied by the inoperable accumulator are to be removed from service and isolated to maintain containment integrity.

##### 3/4 6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure  $P_a$ . As an added conservatism, the measured overall integrated leakage rate (Type A test) is further limited to less than or equal to  $0.75 L_a$  or less than or equal to  $0.75 L_t$ , as applicable, during performance of the periodic test to account for possible degradation of the containment leakage barriers between leakage tests.

The surveillance testing for measuring leakage rates are consistent with the Containment Leakage Rate Testing Program.

##### 3/4.6.1.3 CONTAINMENT AIR LOCKS

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, 10 feet in diameter, with a door at each end. The doors are interlocked during normal operation to prevent simultaneous opening.

### 3/4.6 CONTAINMENT SYSTEMS

#### BASES

During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. To effect a leak tight seal, the air lock design uses pressure-seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door).

Each personnel air lock is provided with limit switches on both doors that provide control room indication of door position. Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated.

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analysis.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident and a rod ejection accident. In the analysis of each of these accidents, it is assumed that containment is OPERABLE such that release of fission products to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of 0.1% of containment air weight per day. This leakage rate is defined in 10CFR50, Appendix J as  $L_a = 0.1\%$  of containment air weight per day, the maximum allowable containment leakage rate at the calculated peak containment internal pressure  $P_a = 47.0$  psig following a DBA. The allowable leakage rate forms the basis for the acceptance criteria imposed on the surveillance requirements associated with the air locks.

Each containment air lock forms part of the containment pressure boundary. As part of containment, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into and exit from containment.

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.4, "Containment Building Penetrations".

The ACTIONS are modified by five notes. Note (1) allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

Note (2) adds clarification that separate condition entry is allowed for each air lock. This is acceptable, since the required ACTIONS provide appropriate compensatory measures for each inoperable air lock. Complying with the Required Actions may allow for continued operation. A subsequent inoperable air lock is governed by condition entry for that air lock.

Notes (3) and (4) ensure that only the required ACTIONS and associated completion times of condition c. are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required ACTIONS c.1 and c.2 are the appropriate remedial actions. The exception of these Notes does not affect tracking the completion time from the initial entry into condition a., only the requirement to comply with the required ACTIONS.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note (5) directs entry into the applicable Conditions and required ACTIONS of LCO 3.6.1, "Primary Containment".

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (ACTION a.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This ACTION must be completed within 1 hour. The specified time period is consistent with the ACTIONS of LCO 3.6.1.1 that requires that containment be restored to OPERABLE status within 1 hour. OPERABILITY of the air lock interlock is not required to support the OPERABILITY of an air lock door.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour completion time (ACTION a.2). The 24 hour completion time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required ACTION a.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The completion time of once per 31 days is based on engineering judgement and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls.

ACTION a.3 allows the use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7-day restriction begins when the second air lock is discovered to be inoperable.

### 3/4.6 CONTAINMENT SYSTEMS

#### BASES

Containment entry may be required on a periodic basis to perform Technical Specification Surveillances and required ACTIONS, as well as other activities on equipment inside containment that are required by Technical Specifications or activities on equipment that support Technical Specification required equipment. This Note is not intended to preclude performing other activities (i.e., non-Technical Specification required activities) if the containment is entered, using the inoperable air lock, to perform an allowed entry listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

Because of ALARA considerations, ACTION a.3 also allows air lock doors located in high radiation areas to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

With an air lock interlock mechanism inoperable in one or more air locks, the required ACTIONS and associated completion times are consistent with those specified in Condition a. In addition, ACTION b.3 allows entry into and exit from containment under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock). In addition, ACTION b.3 allows air lock doors located in high radiation areas to be verified locked closed by use of administrative means.

ACTION c.1 requires that with one or more air locks inoperable for reasons other than those described in condition a. or b., action must be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1.1) would be provided to restore the air lock door to OPERABLE status prior to requiring plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

Required ACTION c.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour completion time. This specified time period is consistent with the ACTIONS of LCO 3.6.1.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour completion time. This completion time begins at the time that the air lock is discovered to be inoperable. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

If the inoperable containment air lock cannot be restored to OPERABLE status within the required completion time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least Hot Standby within 6 hours and to Cold Shutdown within the following 30 hours. The allowed completion times are reasonable based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

### 3/4.6 CONTAINMENT SYSTEMS

#### BASES

Maintaining containment airlocks OPERABLE requires compliance with the leakage rate test requirements of 10CFR50, Appendix J, as modified by approved exemptions. This Surveillance Requirement reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The frequency is required by Appendix J, as modified by approved exemptions. Thus, the provision of Specification 4.0.2 (which allows frequency extensions) does not apply.

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is only challenged when the containment air lock door is opened, this test is only required to be performed upon entering or exiting a containment air lock but is not required more frequently than every six months. The six-month frequency is based on engineering judgement and is considered adequate in view of other indications of door and interlock mechanism status available to operations personnel.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 227 AND 208 TO 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, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-272 AND 50-311

## 1.0 INTRODUCTION

By letter dated July 29, 1999, the Public Service Electric & Gas Company (the licensee) submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2, Technical Specifications (TSs). These amendments would revise TS Surveillance Requirement (SR) 4.6.1.1 to clarify when verification of primary containment integrity may be performed by administrative means and to change the surveillance interval for verification of manual valves and blind flanges inside of containment. During a telephone conversation with the licensee on November 23, 1999, the NRC staff discussed an editorial correction to the proposed SR 4.6.1.1.a. In its letter dated November 30, 1999, the licensee submitted the correction. The November 30, 1999, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

## 2.0 EVALUATION

### 2.1 Background

The primary containment completely encloses the reactor coolant system and ensures that the leakage from the containment atmosphere will be limited to those paths and associated leak rates assumed in the accident analysis described in the Updated Final Safety Analysis Report (UFSAR). A steel liner and leak-tight penetrations are provided to ensure that the leakage limits are not exceeded. The containment isolation valves, blind flanges, and air locks also isolate the environment in the event of a design basis accident (DBA). These features ensure that the 10 CFR Part 100 dose limits will not be exceeded at the site boundary during DBA conditions.

## 2.2 Proposed Change

Salem Units 1 and 2 TS SR 4.6.1.1.a requires the periodic demonstration of containment integrity, in part, by verifying at least once per 31 days that (1) all containment penetrations that are not capable of being closed by operable containment isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except for valves opened under administrative control as permitted by TS 3.6.3.1, and (2) all equipment hatches are closed and sealed. In a note to SR 4.6.1.1.a, an exception is made for vents, drains, test connections, etc. which are (1) 1-inch nominal pipe diameter or less in size, (2) located inside containment, and (3) locked, sealed, or otherwise secured in the closed position to allow verification once per 92 days. In its letter of July 29, 1999, the licensee proposed to replace this SR with two new SRs, 4.6.1.1.a.1 and 4.6.1.1.a.2, as follows:

- a.1 At least once per 31 days by verifying that each containment manual valve or blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.
- a.2 Prior to entering Mode 4 from Mode 5 if not performed within the last 92 days by verifying that each containment manual valve or blind flange that is located inside containment and required to be closed during accident condition is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.

Further, the licensee proposed changes to TS Bases 3/4 6.1.1 to make it consistent with these proposed changes to the surveillance requirements. The licensee stated that the proposed changes are based on the guidance and requirements found in NUREG-1431, Revision 1, dated April 1995, "Standard Technical Specifications Westinghouse Plants."

## 2.3 Evaluation

As stated above, current SR 4.6.1.1.a requires specific penetrations to be verified closed at least once per 31 days. However, it allows vents, drains, test connections, etc. to be verified once per 92 days if they are (1) 1-inch nominal pipe diameter or less in size, (2) located inside containment, and (3) locked, sealed, or otherwise secured in the closed position. The SR also allows an exception to the closed verification for valves that are open under administrative control as permitted by TS 3.6.3.1 for the operability of containment isolation valves.

The NRC staff finds that the proposed change to SR 4.6.1.1.a is consistent with the current requirements and surveillance interval for those manual valves and blind flanges located outside containment including the allowance for valves to be open under administrative controls. Additionally, the licensee has proposed using administrative controls to verify the position of valves and blind flanges in high radiation areas. In the July 29, 1999, letter the licensee stated that the possible administrative means that may be used to determine proper valve position include: tagging requests, other TS surveillance procedures, and/or previously performed valve alignments.

The NRC staff finds that the use of administrative controls to verify valve and flange status in this situation is acceptable since access to these components is limited, reducing the likelihood of misposition. The use of administrative means also reduces the unnecessary radiological exposure to licensee employees associated with field verification.

Except for vents, drains, and test connections as noted above, the current SR states that valves and blind flanges located inside containment and required to be in the closed position shall be verified closed at least once per 31 days. The licensee proposed changing the surveillance interval such that the position would be verified prior to entering Mode 4 (hot shutdown) from Mode 5 (cold shutdown), if not performed within the previous 92 days. The licensee also proposed that valves and blind flanges in high radiation areas may be verified by use of administrative controls. The NRC staff finds that the change in surveillance frequency is acceptable since access to components located inside containment, once positioned and verified, is limited and controlled and the probability of their misalignment is low. As with those components located in high radiation areas outside containment, the staff finds that the use of administrative means to verify valves and flanges in high radiation areas inside containment will likewise reduce unnecessary radiological exposure to licensee employees associated with field verification and is also acceptable since the probability of their misalignment is also low.

The current SR 4.6.1.1.a.2 requires that all equipment hatches be verified closed and sealed at least once per 31 days. The licensee has proposed removing this SR. The NRC staff finds this to be acceptable since (1) the position of the hatches can only be verified from inside of containment, (2) the hatches are still required to be closed and sealed to ensure containment integrity, (3) the hatches are large blind flanges and, as such, their verification will still be included in the SR along with the other flanges, and (4) their size and closure design makes it unlikely that the status would change after being secured and sealed.

In addition, the licensee proposed eliminating the double asterisk notation (\*\*) associated with the applicability statement of limiting condition for operation (LCO) 3.6.1.1 for Salem Unit 1. This double asterisk note was associated with a one-time amendment that expired with the initial entry into Mode 2 following refueling outage 1R13. The NRC staff finds elimination of the note to be acceptable since the applicability of the statement no longer applies and the change is administrative in nature.

#### 2.4 Staff Conclusion

The NRC staff finds the proposed changes to SR 4.6.1.1.a do not alter any assumptions regarding the radiological consequences of accidents described in the UFSAR and are acceptable. The use of administrative controls to verify valves and flanges in high radiation areas reduces unnecessary radiological exposure. Additionally, the licensee's proposal is consistent with the applicable guidance and requirements for SRs and associated Bases in NUREG-1431. The staff did not review for approval the associated bases pages, since they are not part of the license. The staff is providing the associated bases pages for completeness.

The NRC staff concludes that the elimination of the double asterisk (\*\*) note associated with the applicability statement of LCO 3.6.1.1 for Salem Unit 1 is acceptable because the applicability of the statement no longer applies.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (64 FR 51349). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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