Docket File

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

December 16. 1993

Docket Nos. 50-272
and 50-311

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

Dear Mr. Miltenberger:

SUBJECT: TECHNICAL SPECIFICATION CHANGES TO ACCOUNT FOR INCREASED AUXILIARY FEEDWATER FLOW AND SYSTEM RESPONSE TIMES, SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M83585 AND M83586)

The Commission has issued the enclosed Amendment Nos. 149 and 127 to Facility Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated May 26, 1992.

These amendments increase the shutdown margin requirements for the eleventh and seventh operating cycle at Salem 1 and 2, respectively; reduce the containment pressure high-high setpoint and allowable value; and change the containment spray system, containment fan cooler, and service water system response times. These changes were necessitated by the discovery of containment fan cooler unit and containment spray system response times greater than originally assumed for Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB) analysis, and auxiliary feedwater system flow greater than assumed for the MSLB analysis.

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DF01

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. You are requested to notify the NRC, in writing, when the amendments have been implemented at Salem 1 and 2.

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. Amendment No. 149 to
   License No. DPR-70
2. Amendment No. 127 to
   License No. DPR-75
3. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION:

Docket File	MO'Brien(2)	CGrimes, 11E21	LCunningham, 10D4
NRC & Local PDRs	JStone	FOrr	RJones, 8E23
PDI-2 Reading	OGC	ACRS(10)	JWermiel, 8H3
SVarga	DHagan, 3206	OPA	RBarrett, 8H7
JCalvo	GHill(4), P1-22	OC/LFDCB	WLong
LNicholson	JRhow	EWenzinger, RI	JWhite, RI

OFC	:PDI-2/LA	:PDI-2/PM	:OGC	:PDI-2/D	:PRPB/BC	
	mls for					
NAME	:MO'Brien	:JStone:tlc:	R Bachmann	:LNicholson	:LCunningham:	
DATE	: 11/17/93	: 11/18/93	: 12/1 /93	: 12/15/93	: 11/29/93	:

OFFICIAL RECORD COPY
FILENAME: A:\SA83585.AMD

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. You are requested to notify the NRC, in writing, when the amendments have been implemented at Salem 1 and 2.

Sincerely,

James C. Stone

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

Enclosures:
1. Amendment No. 149 to
   License No. DPR-70
2. Amendment No. 127 to
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3. Safety Evaluation

cc w/enclosures:
See next page

Mr. Steven E. Miltenberger
Public Service Electric & Gas
Company

Salem Nuclear Generating Station,
Units 1 and 2

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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. 149
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 May 26, 1992, 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. 149, 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 45 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Larry E. Nicholson

Larry E. Nicholson, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 16, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 149

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 1-1	3/4 1-1
3/4 3-24	3/4 3-24
3/4 3-25	3/4 3-25
3/4 3-27	3/4 3-27
3/4 3-29	3/4 3-29

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - T_{avg} > 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be ≥ 1.6% $\Delta k/k^{\#\#\#}$.

APPLICABILITY: MODES 1, 2*, 3, and 4.

ACTION:

With the SHUTDOWN MARGIN < 1.6% $\Delta k/k^{\#\#\#}$, immediately initiate and continue boration at ≥ 33 gpm of a solution containing ≥ 6,560 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be ≥ 1.6% $\Delta k/k^{\#\#\#}$:

a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be increased by an amount at least equal to the withdrawn worth of the immovable or untrippable control rod(s).

b. When in MODES 1 or $2^{\#}$, at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.5.

c. When in MODE $2^{\#\#}$, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of specification 3.1.3.5.

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*See Special Test Exception 3.10.1

#With K_{eff} ≥ 1.0

##With K_{eff} < 1.0

1.85% delta k/k during Cycle 11 of operation.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	≤ 15.0 psig	≤ 16.0 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation Logic	Not Applicable	Not Applicable
b. Phase "B" Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure--High-High	≤ 15.0 psig	≤ 16.0 psig
c. Containment Ventilation Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
3. Containment Atmosphere Gaseous Radioactivity	Per Table 3.3-6	
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	≤ 15.0 psig	≤ 16.0 psig
d. Steam Flow in Two Steam Lines--High Coincident with Tavg -- Low-Low or Steam Line Pressure -- Low	≤ A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load.	≤ A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load.
	T avg ≥ 543°F ≥ 600 psig steam line pressure	T avg ≥ 541°F ≥ 579 psig steam line pressure

TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION		RESPONSE TIME IN SECONDS
1.	**Manual**	
a.	Safety Injection (ECCS)	Not Applicable
	Feedwater Isolation	Not Applicable
	Reactor Trip (SI)	Not Applicable
	Containment Isolation-Phase "A"	Not Applicable
	Containment Ventilation Isolation	Not Applicable
	Auxiliary Feedwater Pumps	Not Applicable
	Service Water System	Not Applicable
	Containment Fan Cooler	Not Applicable
b.	Containment Spray	Not Applicable
	Containment Isolation-Phase "B"	Not Applicable
	Containment Ventilation Isolation	Not applicable
c.	Containment Isolation-Phase "A"	Not Applicable
	Containment Ventilation Isolation	Not Applicable
d.	Steam Line Isolation	Not Applicable
2.	**Containment Pressure-High**	
a.	Safety Injection (ECCS)	$\leq$27.0(1)
b.	Reactor Trip (from SI)	$\leq$2.0
c.	Feedwater Isolation	$\leq$10.0
d.	Containment Isolation-Phase "A"	$\leq$17.0(2)/27.0(3)
e.	Containment Ventilation Isolation	Not Applicable
f.	Auxiliary Feedwater Pumps	$\leq$60
g.	Service Water System	$\leq$13.0(2)/45.0(3)
h.	Containment Fan Coolers	$\leq$45.0

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low	
a. Safety Injection (ECCS)	$\leq 12.0^{(2)}/22.0^{(3)}$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 17.0^{(2)}/27.0^{(3)}$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 14.0^{(2)}/48.0^{(3)}$
h. Steam Line Isolation	≤ 8.0*
7. Containment Pressure--High-High	
a. Containment Spray	≤ 33.0
b. Containment Isolation-Phase "B"	Not Applicable
c. Steam Line Isolation	≤ 7.0*
8. Steam Generator Water Level--High High	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 10.0
9. Steam Generator Water Level--Low-Low	
a. Motor-Driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-Driven Auxiliary Feedwater Pumps(5)	≤ 60.0

* ≤10.0 seconds until restart following the tenth refueling outage.

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. 127
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 May 26, 1992, 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. 127, 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 45 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Larry E. Nicholson, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 16. 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 127

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 1-1	3/4 1-1
3/4 3-25	3/4 3-25
3/4 3-26	3/4 3-26
3/4 3-28	3/4 3-28
3/4 3-30	3/4 3-30

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - T_{avg} > 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.6% delta k/k**.

APPLICABILITY: MODES 1, 2*, 3, and 4.

ACTION:

With the SHUTDOWN MARGIN less than 1.6% delta k/k**, immediately initiate and continue boration at greater than or equal to 10 gpm of a solution containing greater than or equal to 20,000 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be greater than or equal to 1.6% delta k/k**:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be increased by an amount at least equal to the withdrawn worth of the immovable or untrippable control rod(s).

b. When in MODE 1 or MODE 2 with K_{eff} greater than or equal to 1.0, at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.5.

c. When in MODE 2 with K_{eff} less than 1.0, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.5.

*See Special Test Exception 3.10.1

** 1.85% delta k/k during Cycle 7 of operation.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	≤ 15.0 psig	≤ 16.0 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation Logic	Not Applicable	Not Applicable
b. Phase "B" Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure--High-High	≤ 15.0 psig	≤ 16.0 psig
c. Containment Ventilation Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
3. Containment Atmosphere Gaseous Radioactivity	Per Table 3.3-6	
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq$ 15.0 psig	$\leq$ 16.0 psig
d. Steam Flow in Two Steam Lines--High Coincident with Tavg -- Low-Low or Steam Line Pressure -- Low	$\leq$ A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load. T avg $\geq$ 543°F $\geq$ 600 psig steam line pressure	$\leq$ A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load. T avg $\geq$ 541°F $\geq$ 579 psig steam line pressure
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water Level -- High-High	$\leq$ 67% of narrow range instrument span each steam generator	$\leq$ 68% of narrow range instrument span each steam generator
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	Not Applicable	Not Applicable

TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual	
a. Safety Injection (ECCS)	Not Applicable
Feedwater Isolation	Not Applicable
Reactor Trip (SI)	Not Applicable
Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
Auxiliary Feedwater Pumps	Not Applicable
Service Water System	Not Applicable
Containment Fan Cooler	Not Applicable
b. Containment Spray	Not Applicable
Containment Isolation-Phase "B"	Not Applicable
Containment Ventilation Isolation	Not applicable
c. Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
d. Steam Line Isolation	Not Applicable
2. Containment Pressure-High	
a. Safety Injection (ECCS)	$\leq$ 27.0(1)
b. Reactor Trip (from SI)	$\leq$ 2.0
c. Feedwater Isolation	$\leq$ 10.0
d. Containment Isolation-Phase "A"	$\leq$ 17.0(2)/27.0(3)
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	$\leq$ 60
g. Service Water System	$\leq$ 13.0(2)/45.0(3)
h. Containment Fan Coolers	$\leq$ 45.0

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low	
a. Safety Injection (ECCS)	≤ 12.0(2)/22.0(3)
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 10.0
d. Containment Isolation-Phase "A"	≤ 17.0(2)/27.0(3)
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 14.0(2)/48.0(3)
h. Steam Line Isolation	≤ 8.0*
7. Containment Pressure--High-High	
a. Containment Spray	≤ 33.0
b. Containment Isolation-Phase "B"	Not Applicable
c. Steam Line Isolation	≤ 7.0*
8. Steam Generator Water Level--High-High	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 10.0
9. Steam Generator Water Level --Low-Low	
a. Motor-Driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-Driven Auxiliary Feedwater Pumps(5)	≤ 60.0

* ≤10.0 seconds until restart following the sixth refueling outage.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 149 AND 127 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, UNITS 1 AND 2

DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letter dated May 26, 1992, the Public Service Electric & Gas Company (the licensee) submitted a request for changes to the Salem Nuclear Generating Station, Units 1 and 2, Technical Specifications (TS). The requested changes would increase the shutdown margin limit for Unit 1 cycle 11 and Unit 2 cycle 7; decrease the containment pressure high-high setpoint and allowable value; decrease the service water system response time criteria for containment pressure high signal with loss of offsite power; decrease the containment spray (CS) system response time criteria for a containment high-high pressure signal; change the containment fan cooler unit (CFCU) signal from the containment high-high pressure signal to the containment high pressure signal; and increase the CFCU response time criteria. These changes were necessitated by the discovery of CFCU and CS system response times greater than originally assumed in the Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB) analysis, and auxiliary feedwater (AFW) system flow greater than assumed in the MSLB analysis.

The Salem 1 and 2 TS would be revised as follows:

(1) Specification 3/4.1.1.1: Change the SHUTDOWN MARGIN limit from $\geq 1.6\%\ \Delta k/k$ to $\geq 1.85\%\ \Delta k/k$, effective during Unit 1, Cycle 11 and Unit 2, Cycle 7.

(2) Table 3.3-4 (Items 2.c, 3.b.3 and 4.c): Change the containment pressure, high-high setpoint from ≤ 23.5 psig to ≤ 15.0 psig, and the Allowable Value from ≤ 24.0 psig to ≤ 16.0 psig.

(3) Table 3.3-5: Change the ESF RESPONSE TIME for:

Item 2.g: Service water system (containment pressure, high signal with loss of offsite power), from ≤ 48.0 seconds to ≤ 45.0 seconds.

Item 7.a: The containment spray system (containment pressure high-high signal), from ≤ 45.0 seconds to ≤ 33.0 seconds.

Item 7.d: Delete 7.d and add a new item 2.h, which moves the containment fan cooler response time requirements from the containment pressure, high-high signal to the containment pressure, high signal. Change the containment fan cooler response time criterion from ≤ 40.0 seconds to ≤ 45.0 seconds.

2.0 <u>EVALUATION</u>

(1) <u>Impact of Increased Auxiliary Feedwater (AFW) Flow</u>

The increased AFW flow has two principal effects: an increase in primary system cooling following an MSLB event and increased mass in energy release to the containment following a secondary system break. The AFW flow increase can also increase the likelihood of steam generator overfill following any event which initiates AFW.

a. Increased Cooling Effect of Increased AFW Flow

Following a licensing basis MSLB event (calculated assuming hot zero power), increased primary system cooling (caused by greater AFW flow) results in a higher positive reactivity insertion, which in turn can amplify the power, thermal and hydraulic consequences of the event on the nuclear steam supply system (NSSS). To compensate for the higher positive reactivity insertion calculated for the licensing basis MSLB, the MSLB analyses were revised to assume a shutdown margin of 1.85% $\Delta k/k$ in place of the previously assumed 1.6% $\Delta k/k$. The licensee reports that the revised analysis shows a slight increase in peak heat flux and small changes in pressurizer pressure and cold leg inlet temperature. The licensee states that the departure from nucleate boiling ratio (DNBR) would remain greater than applicable limits, and therefore the core response would continue to be within acceptance criteria.

b. Steam Generator Tube Rupture

The licensing basis steam generator tube rupture (SGTR) event in the Salem UFSAR, Section 15, is not sensitive to this change in AFW flow. Therefore, we conclude that the basis for acceptability of Salem operation with regard to SGTR events continues to apply with the increase in AFW flow. We also note that the staff has reviewed and approved the licensee's proposal for upgrading and utilizing existing main steam line radiation monitors to enhance the response to SGTR events.

c. Steam Generator Overfill

In a letter of May 15, 1990, to the licensee, the staff indicated that the licensee had provided information to demonstrate that the Salem units meet the intent of Generic Letter 89-19 in that the Salem steam generator overfill protection system is implemented and the TS include requirements to periodically verify its operability. The letter also indicates the NRC review, if any, will be performed either by inspection or audit. We find that at this time this action adequately addresses the steam generator overfill consideration for increased AFW flow.

(2) <u>Engineering Safety Features Actuation System Instrumentation Setpoints (Table 3.3-4)</u>

The containment responses for a spectrum (size, break locations, and associated single-failures) of primary and secondary breaks inside containment have been reanalyzed to ensure that the worst-case post-accident containment pressure and temperature response profiles do not exceed design limits of the containment structure and safety-related electrical equipment located in containment. The revised analyses reflect use of revised assumptions for the response time of mitigation systems as discussed below. The calculated results of the analyses are bounded by containment design criteria specified in the FSAR and equipment qualification acceptance criteria.

Containment spray provides an iodine removal function in addition to pressure and temperature mitigation functions. New LOCA radiological dose calculations considered the effect of additional spray delay and demonstrated that the additional delay can be accommodated without exceeding dose acceptance criteria. The thyroid 2-hour site boundary offsite dose increases by 1 Rem to 97 Rem, which remains within the 300 Rem Part 100 limit.

The revised analyses described in the submittal are cycle-specific for the Units 1 and 2 cycle 11 and cycle 7 operating cycles. Future analyses will assume a reduced shutdown margin, but will utilize the same minimum ESF response times.

The containment pressure at which the CS system is assumed to actuate in the LOCA/MSLB analyses has been reduced from 25.4 psig to 17.0 psig. The licensee's setpoint calculations indicate that a maximum trip setpoint of 15.85 psig and a maximum allowable value of 16.58 psig are needed to support the analytical limit of 17.0 psig. During the Unit 2 sixth refueling outage and the Unit 1 tenth refueling outage, the setpoint was lowered from 23.5 psig to 15.0 psig, and the allowable value was lowered from 24.0 psig to 16.0 psig, both of which are below the maximum values. These changes support an analytical limit of 17.0 psig, with positive margin relative to the setpoint calculations.

These changes involve a setpoint change. Lowering the setpoint and allowable value requirements for automatic initiation of containment spray is conservative, because spray will initiate earlier in the event of an accident. They do not involve any new system configurations with the potential for changing the initiation of an accident, nor do they introduce any previously unconsidered equipment failure modes. As discussed above, these changes to the TS do not involve an increase in the probability or consequences of an accident previously evaluated and do not create the possibility of a new or different kind of accident from any accident previously evaluated. Therefore, based on the results of the staff's review, these changes are acceptable.

(3) Engineered Safety Features (ESF) Response Times (Table 3.3-5)

During a review of the Salem UFSAR, the licensee identified a discrepancy in the response times for the CFCU and CS system. It was also discovered that the response time testing for the CFCU's and the CS system did not include delays associated with a Loss of Offsite Power (LOOP). The service water TS response time for a containment pressure high signal is 48 seconds. Because the CFCU's rely on increased service water flow, service water response time must be consistent with the CFCU response time requirements.

Based on test data, the CFCU response time exceeded the 35 seconds assumed in the safety analyses, but a reevaluation using 45 seconds showed that the containment pressure and temperature, following a LOCA or MSLB, would remain within acceptable limits. Therefore, the CFCU response time in Table 3.3-5 is being changed to 45 seconds. In addition, the TS incorrectly list the CFCU's under the containment pressure high-high signal. CFCUs are actuated from the containment pressure high signal. Therefore, TS are being revised to reflect this by deleting Item 7.d and adding an Item 2.h for the CFCU response time criterion on Table 3.3-5.

The CS system ESF response time test ends when the spray pump has reached a selected point on its pump curve in recirculation flow (pump discharge valve opening time is considered, but is typically not limiting). The licensing basis safety analyses assumed that it takes an additional 28 seconds for flow to travel through the header and exit the spray nozzles. This assumption was based on input provided to the licensee by a Westinghouse memo dated June 29, 1978. Because the memo does not meet the licensee's present standards for engineering calculations, a Discrepancy Evaluation Form (DEF) was written in accordance with the licensee's Engineering Discrepancy Control process. Recalculation of the spray fluid travel time resulted in an increase from 28 to 47 seconds. This increased time was reported in LER 272/92-002. In order to account for the 47 second travel time, the LOCA/MSLB analyses were reevaluated, increasing the assumed total response for the CS system from 59 to 80 seconds. An 80 second total response time, with 47 seconds allocated to fluid travel time, requires a 33 second ESF response time test criterion. Therefore, 33 seconds is proposed for the CS response time of Table 3.3-5.

These changes involve response time changes. They do not involve any new system configurations with the potential for changing the initiation of an accident, nor do they introduce any previously unconsidered equipment failure modes. As discussed above, these changes to the TS do not involve a significant increase in the probability or consequences of an accident previously evaluated and do not create the possibility of a new or different kind of accident from any accident previously evaluated. Therefore, based on the results of the staff's review, these changes are acceptable.

Containment sprays are also utilized in the large-break LOCA offsite dose analysis to remove elemental and particulate iodine from the containment atmosphere, to help ensure the offsite radiological doses from a postulated accident would meet the requirements of 10 CFR 100. The LOCA dose analysis of record is presented in Section 15.4 of the Salem updated Final Safety Analysis Report (UFSAR). The assumptions of the NRC Safety Guide 4 dose analysis, presented in the UFSAR, do not include a delay in the initiation of iodine removal by spray. The licensee estimates that the increase in the amount of iodine released to the environment as a result of the 80 second delay period following the initiation of the LOCA is 3 curies of Dose Equivalent I-131. The licensee equates this to an increase in the zero to 2-hour site boundary thyroid dose of approximately 1 rem. This would result in a 97 rem thyroid dose, which remains within the 10 CFR 100 limit of 300 rem.

The UFSAR dose analysis is conservative in that it uses the Safety Guide 4 assumption that 10% of total radioiodine inventory is organic, and therefore not available for removal by the CS system. The more current guidance of Regulatory Guide 1.4 assumes that 4% of the radioiodine is organic, which would increase the amount available for spray removal by 6%. The calculated dose remains below the 10 CFR 100 limit of 300 rem and is therefore acceptable.

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. 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 (57 FR 37571). 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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