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

August 4, 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: REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM TEST INTERVALS AND ALLOWED OUTAGE TIMES, SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M83377 AND M83378)

The Commission has issued the enclosed Amendment Nos. 142 and 121 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 May 11, 1992, and supplemented by letters dated July 16, 1992, February 2, 1993, and July 2, 1993.

These amendments modify the Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) Instrument Sections and associated Bases for Surveillance Test Intervals (STS) and Allowed Outage Times (AOT). These changes are line-item improvements previously approved by the NRC and documented in safety evaluations for WCAP-10271 and Supplement 1, WCAP-10271 Supplement 2, and Supplement 2, Revision 1. Changes also modify the Semi-Automatic Transfer to Recirculation on Refueling Water Storage Tank (RWST) Low Level. This Functional Unit is not part of the program covered in the WCAP and was analyzed on a plant-specific basis.

110154

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, Units 1 and 2.

Sincerely,

/S/

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

Enclosures:
1. Amendment No. 142 to License No. DPR-70
2. Amendment No. 121 to License No. DPR-75
3. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION w/enclosures:

Docket File	MO'Brien(2)	CGrimes, 11E21	JWhite, RGN-I
NRC & Local PDRs	JStone	JWermiel	MJanus
PDI-2 Reading	OGC	ACRS(10)	
SVarga	DHagan, 3206	OPA	
JCalvo	GHill(4), P1-22	OC/LFMB	
MBoyle	Wanda Jones, P-370	EWenzinger, RGN-I	

OFC	:PDI-2/LA	:PDI-2/I	:PDI-2/PM	:HICB/BC	:OGC	:PDI-2/D	:
NAME	:MO'Brien	:MJanus:rb	:JStone	:JWermiel	:RBachmann	:MBoyle	:
DATE	:7/13/93	:7/ /93	:7/20/93	:7/15/93	:7/23/93	:8/3/93	:

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Sincerely,

James C. Stone

James C. Stone, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
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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. 142
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 11, 1992, and supplemented by letters dated July 16, 1992, February 2, 1993, and July 2, 1993, 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. 142 , 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for Charles L. Miller, 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: August 4, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 142

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 3-3	3/4 3-3
3/4 3-4	3/4 3-4
3/4 3-5	3/4 3-5
3/4 3-6	3/4 3-6
3/4 3-7	3/4 3-7
3/4 3-11	3/4 3-11
3/4 3-12	3/4 3-12
3/4 3-13	3/4 3-13
3/4 3-15	3/4 3-15
3/4 3-19	3/4 3-19
3/4 3-20	3/4 3-20
3/4 3-20a	3/4 3-20a
3/4 3-21	3/4 3-21
3/4 3-22	3/4 3-22
3/4 3-31a	3/4 3-31a
3/4 3-32	3/4 3-32
3/4 3-32a	3/4 3-32a
3/4 3-33	3/4 3-33
B 3/4 3-1	B 3/4 3-1

TABLE 3.3-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT		TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
11.	Pressurizer Water Level--High	3	2	2	1,2	6#
12.	Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	6#
13.	Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	6#
14.	Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loops	2/loop in each operating loop	1,2	6#
15.	Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1,2	6#
16.	Undervoltage - Reactor Coolant Pumps	4-1/bus	1/2 twice	3	1	6
17.	Underfrequency - Reactor Coolant Pumps	4-1/bus	1/2 twice	3	1	6

TABLE 3.3-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18. Turbine Trip					
a. Low Autostop Oil Pressure	3	2	2	1	6#
b. Turbine Stop Valve Closure	4	4	3	1	6#
19. Safety Injection Input from ESF	2	1	2	1,2	10
20. Reactor Coolant Pump Breaker Position Trip (above P-7)	1/breaker	2	1/breaker per operating loop	1	11
21. Reactor Trip Breakers	2	1	2	1,2 3*,4*,5*	1###, 14 13
22. Automatic Trip Logic	2	1	2	1,2 3*,4*,5*	10 13

TABLE 3.3-1 (Continued)
TABLE NOTATION

* With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

\# The provisions of Specification 3.0.4 are not applicable.

\## High voltage to detector may be de-energized above P-6.

\### If ACTION Statement 1 is entered as a result of Reactor Trip Breaker (RTB) or Reactor Trip Bypass Breakers (RTBB) maintenance testing results exceeding the following acceptance criteria, NRC reporting shall be made within 30 days in accordance with Specification 6.9.2:

1. A RTB or RTBB trip failure during any surveillance test with less than or equal to 300 grams of weight added to the breaker trip bar.

2. A RTB or RTBB time response failure that results in the overall reactor trip system time response exceeding the Technical Specification limit.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

c. Either, THERMAL POWER is restricted to $\leq$ 75% of RATED THERMAL POWER and the Power Range, Neutron Flux trip setpoint is reduced to $\leq$ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours.

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6 but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

ACTION 7 - NOT USED

ACTION 8 - NOT USED

ACTION 9 - NOT USED

TABLE 3.3-1 (Continued)

ACTION 10 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY in the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 6 hours.

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

ACTION 13 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

ACTION 14 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and be in at least HOT STANDBY within 6 hours. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

REACTOR TRIP SYSTEM INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels $< 6 \times 10^{-11}$ amps.	P-6 prevents or defeats the manual block of source range reactor trip.
P-7	With 2 of 4 Power Range Neutron Flux Channels $\geq$ 11% of RATED THERMAL POWER or 1 of 2 Turbine impulse chamber pressure channels $\geq$ a pressure equivalent to 11% of RATED THERMAL POWER.	P-7 prevents or defeats the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump undervoltage and under-frequency, pressurizer low pressure, pressurizer high level, and the opening of more than one reactor coolant pump breaker.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip Switch	N.A.	N.A.	S/U(9)	N.A.
2. Power Range, Neutron Flux	S	D(2), M(3) and Q(6)	Q	1,2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6)	Q	1,2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6)	Q	1,2
5. Intermediate Range, Neutron Flux	S	R(6)	S/U(1)	1,2 and *
6. Source Range, Neutron Flux	S(7)	R(6)	Q and S/U(1)	2,3,4,5 and *
7. Overtemperature ΔT	S	R	Q	1,2
8. Overpower ΔT	S	R	Q	1,2
9. Pressurizer Pressure--Low	S	R	Q	1,2
10. Pressurizer Pressure--High	S	R	Q	1,2
11. Pressurizer Water Level--High	S	R	Q	1,2
12. Loss of Flow - Single Loop	S	R	Q	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	Q	1,2
15. Steam/Feedwater Flow Mismatch & Low Steam Generator Water Level	S	R	Q	1,2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1
18. Turbine Trip				
A. Low Autostop Oil Pressure	N.A.	N.A.	S/U(1)	1,2
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1,2
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)(5)	1,2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	S/U(10), M(11,13), SA(12,13) and R(14)	1,2 and *
22. Automatic Trip Logic	N.A.	N.A.	M(5)	1,2 and *

TABLE 4.3-1 (Continued)
NOTATION

* - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

(1) - If not performed in previous 31 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference ≥ 3 percent.

(4) - Manual SSPS functional input check every 18 months.

(5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.

(8) - Deleted

(9) - If not performed in the previous 24 hours, conduct a functional test of the Manual Reactor Trip Switches to verify the Manual Reactor Trip Switch and the independent operation of the U.V. and shunt trip wiring.

(10) - If not performed in the previous 24 hours, conduct a functional test of:

- Reactor Trip Breaker independent operation of U.V. and Shunt Trip (via SSPS)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(11) - Perform a functional test of:

- Reactor Trip Breaker independent operation of U.V. Trip and Shunt Trip (via SSPS) and conduct response time testing of U.V. and Shunt Trip/Breakers (event recorders)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(12) - Perform periodic maintenance on Reactor Trip Breakers and Reactor Trip Bypass Breakers semiannually as follows:

a. response time testing, (3 times) (visicorder) trend data
b. trip bar lift force measurements
c. UV output force measurement
d. dropout voltage check
e. servicing/lubrication/adjustments (See Table 3.3-1 Notation ###)
f. repeat testing steps (a-d) following any necessary actions at step (e)

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1,2,3,4	18
b. Automatic Actuation Logic	2	1	2	1,2,3,4	13
c. Containment Pressure-High	3	2	2	1,2,3	19*
d. Pressurizer Pressure-Low	3	2	2	1,2,3#	19*
e. Differential Pressure Between Steam Lines - High	3/steam line	2/steam line any steam line	2/steam line	1,2,3##	19*
f. Steam Flow in Two Steam Lines-High	2/steam line	1/steam line any 2 steam lines	1/steam line	1,2,3##	19*
COINCIDENT WITH EITHER					
Tavg--Low-Low	1 Tavg/loop	1 Tavg in any 2 loops	1 Tavg in any 3 loops	1,2,3##	19*
OR, COINCIDENT WITH					
Steam Line Pressure-Low	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops	1,2,3##	19*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. STEAM LINE ISOLATION					
a. Manual	2/steam line	1/steam line	1/operating steam line	1,2,3	23
b. Automatic Actuation Logic	2***	1	2	1,2,3	20
c. Containment Pressure--High-High	4	2	3	1,2,3	16
d. Steam Flow in Two Steam Lines--High	2/steam line	1/steam line any 2 steam lines	1/steam line	1,2,3##	19*
COINCIDENT WITH EITHER					
Tavg--Low-Low	1 Tavg/loop	1 Tavg in any 2 loops	1 Tavg in any 3 loops	1,2,3##	19*
OR, COINCIDENT WITH					
Steam Line Pressure-Low	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops	1,2,3##	19*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water level--High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1,2,3	19*
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1,2,3,4	13
7. UNDERVOLTAGE, VITAL BUS					
a. Loss of Voltage	1/bus	2	3	1,2,3	14*
b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1,2,3	14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. AUXILIARY FEEDWATER					
a. Automatic Actuation Logic**	2	1	2	1,2,3	20
b. Manual Initiation	1/pump	1/pump	1/pump	1,2,3	22
c. Steam Generator Water Level--Low-Low					
i. Start Motor Driven Pumps	3/stm. gen.	2/stm. gen. any stm. gen.	2/stm. gen.	1,2,3	19*
ii. Start Turbine Driven Pumps	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2/stm. gen.	1,2,3	19*
d. Undervoltage - RCP Start Turbine - Driven Pump	4-1/bus	1/2 x 2	3	1,2	19
e. S.I. Start Motor-Driven Pumps	See 1 above (All S.I. initiating functions and requirements)				
f. Trip of Main Feedwater Pumps Start Motor Driven Pumps	2/pump	1/pump	1/pump	1,2	21*
g. Station Blackout	See 6 and 7 above (SEC and U/V Vital Bus)				

TABLE 3.3-3 (Continued)

TABLE NOTATION

Trip function may be bypassed in this MODE below P-11.

Trip function may be bypassed in this MODE below P-12.

* The provisions of Specification 3.0.4 are not applicable.

** Applies to Functional Unit 8 items c and d.

*** The automatic actuation logic includes two redundant solenoid operated vent valves for each Main Steam Isolation Valve. One vent valve on any one Main Steam Isolation Valve may be isolated without affecting the function of the automatic actuation logic provided the remaining seven solenoid vent valves remain OPERABLE. The isolated MSIV vent valve shall be returned to OPERABLE status upon the first entry into MODE 5 following determination that the vent valve is inoperable. For any condition where more than one of the eight solenoid vent valves are inoperable, entry into ACTION 20 is required.

ACTION STATEMENTS

ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 6 hours or, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15 - NOT USED

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated by CHANNEL CHECK within 6 hours; one additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 17 - With less than the Minimum Channels OPERABLE, operations may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 6 hours or, be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 21 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may proceed provided that either:

a. The inoperable channel is restored to OPERABLE within 72 hours, or

b. If the affected Main Feedwater Pump is expected to be out of service for more than 72 hours, the inoperable channel is jumpered so as to enable the Start Circuit of the Auxiliary Feedwater Pumps upon the loss of the other Main Feedwater Pump.

ACTION 22 - With the number of OPERABLE channels relating directly with the number of OPERABLE auxiliary feedwater pumps, the ACTIONs of L.C.O. 3.7.1.2 apply.

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	R	1,2,3,4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
c. Containment Pressure-High	S	R	Q(3)	1,2,3
d. Pressurizer Pressure--Low	S	R	Q	1,2,3
e. Differential Pressure Between Steam Lines--High	S	R	Q	1,2,3
f. Steam Flow in Two Steam Lines--High coincident with Tavg--Low-Low or Steam Line Pressure-Low	S	R	Q	1,2,3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	R	1,2,3,4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
c. Containment Pressure--High-High	S	R	Q(3)	1,2,3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1. Manual	N.A.	N.A.	R	1,2,3,4
2. From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
b. Phase "B" Isolation				
1. Manual	N.A.	N.A.	R	1,2,3,4
2. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
3. Containment Pressure--High-High	S	R	Q(3)	1,2,3
c. Containment Ventilation Isolation				
1. Manual	N.A.	N.A.	R	1,2,3,4
2. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
3. Containment Atmosphere Gaseous Radioactivity - High	Per table 4.3-3			

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1,2,3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3
c. Containment Pressure--High-High	S	R	Q(3)	1,2,3
d. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low or Steam Line Pressure--Low	S	R	Q	1,2,3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1,2,3
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC) LOGIC				
a. Inputs	N.A.	N.A.	M(6)	1,2,3,4
b. Logic, Timing and Outputs *	N.A.	N.A.	M(1)	1,2,3,4
7. UNDERVOLTAGE, VITAL BUS				
a. Loss of Voltage	S	R	M	1,2,3
b. Sustained Degraded Voltage	S	R	M	1,2,3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. AUXILIARY FEEDWATER				
a. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3
b. Manual Initiation	N.A.	N.A.	M(5)	1,2,3
c. Steam Generator Water Level--Low-Low	S	R	Q	1,2,3
d. Undervoltage - RCP	S	R	Q	1,2
e. S.I.	See 1 above (All S.I. surveillance requirements)			
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1
g. Station Blackout	See 6b and 7 above (SEC and U/V Vital Bus)			

3/4.3 INSTRUMENTATION

BASES

==========

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation and, 3) sufficient system functions capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and Supplements to that report. Surveillance intervals and out of service times were determined based on maintaining an appropriate level of reliability of the Reactor Protection System and Engineered Safety Features instrumentation.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served

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.121
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 11, 1992, and supplemented by letters dated July 16, 1992, February 2, 1993, and July 2, 1993, 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. 121 , 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for Charles L. Miller, 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: August 4, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 121

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 3-3	3/4 3-3
3/4 3-4	3/4 3-4
3/4 3-5	3/4 3-5
3/4 3-6	3/4 3-6
3/4 3-7	3/4 3-7
3/4 3-11	3/4 3-11
3/4 3-12	3/4 3-12
3/4 3-13	3/4 3-13
3/4 3-15	3/4 3-15
3/4 3-19	3/4 3-19
3/4 3-20	3/4 3-20
3/4 3-21	3/4 3-21
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-33	3/4 3-33
3/4 3-34	3/4 3-34
3/4 3-35	3/4 3-35
3/4 3-36	3/4 3-36
B 3/4 3-1	B 3/4 3-1

TABLE 3.3-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
11. Pressurizer Water Level --High	3	2	2	1,2	6#
12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	6#
13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	6#
14. Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loops	2/loop in each operating loop	1,2	6#
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1,2	6#
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	1/2 twice	3	1	6
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	1/2 twice	3	1	6

TABLE 3.3-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18. Turbine Trip					
a. Low Autostop Oil Pressure	3	2	2	1	6#
b. Turbine Stop Valve Closure	4	4	3	1	6#
19. Safety Injection Input from ESF	2	1	2	1,2	10
20. Reactor Coolant Pump Breaker Position Trip (above P-7)	1/breaker	2	1/breaker per operating loop	1	11
21. Reactor Trip Breakers	2	1	2	1,2 3*,4*,5*	1###, 14 13
22. Automatic Trip Logic	2	1	2	1,2 3*,4*,5*	10 13

TABLE 3.3-1 (Continued)
TABLE NOTATION

* With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

\# The provisions of Specification 3.0.4 are not applicable.

\## High voltage to detector may be de-energized above P-6.

\### If ACTION Statement 1 is entered as a result of Reactor Trip Breaker (RTB) or Reactor Trip Bypass Breaker (RTBB) maintenance testing results exceeding the following acceptance criteria, NRC reporting shall be made within 30 days in accordance with Specification 6.9.2:

1. A RTB or RTBB trip failure during any surveillance test with less than or equal to 300 grams of weight added to the breaker trip bar.

2. A RTB or RTBB time response failure that results in the overall reactor trip system time response exceeding the Technical Specification limit.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

c. Either, THERMAL POWER is restricted to $\leq$ 75% of RATED THERMAL POWER and the Power Range, Neutron Flux trip setpoint is reduced to $\leq$ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours.

d. The QUADRANT POWER TILT RATIO, as indicated by the remaining three detectors, is verified consistent with the normalized symmetric power distribution obtained by using the movable in-core detectors in the four pairs of symmetric thimble locations at least once per 12 hours when THERMAL POWER is greater than 75% of RATED THERMAL POWER.

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6, but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

d. Above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channel OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

ACTION 7 - NOT USED

ACTION 8 - NOT USED

ACTION 9 - NOT USED

TABLE 3.3-1 (Continued)

ACTION 10 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY in the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 6 hours.

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

ACTION 13 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

ACTION 14 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and be in at least HOT STANDBY within 6 hours. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

REACTOR TRIP SYSTEM INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels $< 6 \times 10^{-11}$ amps.	P-6 prevents or defeats the manual block of source range reactor trip.
P-7	With 2 of 4 Power Range Neutron Channels $\geq$ 11% of RATED THERMAL POWER or 1 of 2 Turbine impulse chamber pressure channels $\geq$ a pressure equivalent to 11% of RATED THERMAL POWER.	P-7 prevents or defeats Flux the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump undervoltage and under-frequency, pressurizer low pressure, pressurizer high level, and the opening of more than one reactor coolant pump breaker.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip Switch	N.A.	N.A.	S/U(9)	N.A.
2. Power Range, Neutron Flux	S	D(2), M(3) and Q(6)	Q	1,2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6)	Q	1,2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6)	Q	1,2
5. Intermediate Range, Neutron Flux	S	R(6)	S/U(1)	1,2 and *
6. Source Range, Neutron Flux	S(7)	R(6)	Q and S/U(1)	2,3,4,5 and *
7. Overtemperature ΔT	S	R	Q	1,2
8. Overpower ΔT	S	R	Q	1,2
9. Pressurizer Pressure--Low	S	R	Q	1,2
10. Pressurizer Pressure--High	S	R	Q	1,2
11. Pressurizer Water Level--High	S	R	Q	1,2
12. Loss of Flow - Single Loop	S	R	Q	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	Q	1,2
15. Steam/Feedwater Flow Mismatch & Low Steam Generator Water Level	S	R	Q	1,2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1
18. Turbine Trip				
a. Low Autostop Oil Pressure	N.A.	N.A.	S/U(1)	N.A.
b. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	N.A.
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)(5)	1,2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	S/U(10), M(11,13), SA(12,13) and R(14)	1,2 and *
22. Automatic Trip Logic	N.A.	N.A.	M(5)	1,2 and *

TABLE 4.3-1 (Continued)

NOTATION

* - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

(1) - If not performed in previous 31 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference ≥ 3 percent.

(4) - Manual SSPS functional input check every 18 months.

(5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.

(8) - Deleted

(9) - If not performed in the previous 24 hours, conduct a functional test of the Manual Reactor Trip Switches to verify the Manual Reactor Trip Switch and the independent operation of the U.V. and shunt trip wiring.

(10) - If not performed in the previous 24 hours, conduct a functional test of:

- Reactor Trip Breaker independent operation of U.V. and Shunt Trip (via SSPS)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(11) - Perform a functional test of:

- Reactor Trip Breaker independent operation of U.V. Trip and Shunt Trip (via SSPS) and conduct response time testing of U.V. and Shunt Trip/Breakers (event recorders)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(12) - Perform periodic maintenance on Reactor Trip Breakers and Reactor Trip Bypass Breakers semiannually as follows:
a. response time testing, (3 times) (visicorder) trend data
b. trip bar lift force measurements
c. U.V. output force measurement
d. dropout voltage check

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1,2,3,4	18
b. Automatic Actuation Logic	2	1	2	1,2,3,4	13
c. Containment Pressure-High	3	2	2	1,2,3	19*
d. Pressurizer Pressure-Low	3	2	2	1,2,3#	19*
e. Differential Pressure Between Steam Lines - High	3/steam line	2/steam line any steam line	2/steam line	1,2,3##	19*
f. Steam Flow in Two Steam Lines-High	2/steam line	1/steam line any 2 steam lines	1/steam line	1,2,3##	19*
COINCIDENT WITH EITHER					
Tavg--Low-Low	1 Tavg/loop	1 Tavg in any 2 loops	1 Tavg in any 3 loops	1,2,3##	19*
OR, COINCIDENT WITH					
Steam Line Pressure-Low	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops	1,2,3##	19*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. STEAM LINE ISOLATION					
a. Manual	2/steam line	1/steam line	1/operating steam line	1,2,3	23
b. Automatic Actuation Logic	2***	1	2	1,2,3	20
c. Containment Pressure--High-High	4	2	3	1,2,3	16
d. Steam Flow in Two Steam Lines--High	2/steam line	1/steam line any 2 steam lines	1/steam line	1,2,3##	19*
COINCIDENT WITH EITHER					
T_{avg}--Low-Low	1 T_{avg}/loop	1 T_{avg} in any 2 loops	1 T_{avg} in any 3 loops	1,2,3##	19*
OR, COINCIDENT WITH					
Steam Line Pressure-Low	1 pressure/loop	1 pressure any 2 loops	1 pressure any 3 loops	1,2,3##	19*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water level--High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1,2,3	19*
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1,2,3,4	13
7. UNDERVOLTAGE, VITAL BUS					
a. Loss of Voltage	1/bus	2	3	1,2,3	14*
b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1,2,3	14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. AUXILIARY FEEDWATER					
a. Automatic Actuation Logic**	2	1	2	1,2,3	20
b. Manual Initiation	1/pump	1/pump	1/pump	1,2,3	22
c. Stm. Gen. Water Level-Low-Low					
i. Start Motor Driven Pumps	3/stm. gen.	2/stm. gen. any stm. gen.	2/stm. gen.	1,2,3	19*
ii. Start Turbine Driven Pumps	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2/stm. gen.	1,2,3	19*
d. Undervoltage - RCP Start Turbine - Driven Pump	4-1/bus	1/2 x 2	3	1,2	19
e. S.I. Start Motor-Driven Pumps	See 1 above (All S.I. initiating functions and requirements)				
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps	2/pump	1/pump	1/pump	1,2	21*
g. Station Blackout	See 6 and 7 above (SEC and UV Vital Bus)				
9. SEMIAUTOMATIC TRANSFER TO RECIRCULATION					
a. RWST Level Low	4	2	3	1,2,3	16
b. Automatic Actuation Logic	2	1	2	1,2,3	20

TABLE NOTATION

\# Trip function may be bypassed in this MODE below P-11.

Trip function may be bypassed in this MODE below P-12.

* The provisions of Specification 3.0.4 are not applicable.

** Applies to Functional Unit 8 items c and d.

*** The automatic actuation logic includes two redundant solenoid operated vent valves for each Main Steam Isolation Valve. One vent valve on any one Main Steam Isolation Valve may be isolated without affecting the function of the automatic actuation logic provided the remaining seven solenoid vent valves remain OPERABLE. The isolated MSIV vent valve shall be returned to OPERABLE status upon the first entry into MODE 5 following determination that the vent valve is inoperable. For any condition where more than one of the eight solenoid vent valves are inoperable, entry into ACTION 20 is required.

ACTION STATEMENTS

ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 6 hours or, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15 - NOT USED

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated by CHANNEL CHECK within 6 hours; one additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to operable status within 6 hours or, be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 21 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may proceed provided that either:

a. The inoperable channel is restored to OPERABLE within 72 hours.

b. If the affected Main Feedwater Pump is expected to be out of service for more than 72 hours, the inoperable channel is jumpered so as to enable the Start Circuit of the Auxiliary Feedwater Pumps upon loss of the other Main Feedwater Pump.

ACTION 22 - With the Number of OPERABLE channels relating directly with the number of OPERABLE Auxiliary Feedwater Pumps, the ACTIONS of L.C.O. 3.7.1.2 apply.

ACTION 23 - With the Number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	R	1,2,3,4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
c. Containment Pressure--High	S	R	Q(3)	1,2,3
d. Pressurizer Pressure--Low	S	R	Q	1,2,3
e. Differential Pressure Between Steam Lines--High	S	R	Q	1,2,3
f. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low or Steam Line Pressure--Low	S	R	Q	1,2,3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	R	1,2,3,4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
c. Containment Pressure--High-High	S	R	Q(3)	1,2,3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	R	1,2,3,4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	R	1,2,3,4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
3) Containment Pressure--High-High	S	R	Q(3)	1,2,3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	R	1,2,3,4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3,4
3) Containment Atmosphere Gaseous Radioactivity-High		Per table 4.3-3		

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1,2,3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3
c. Containment Pressure--High-High	S	R	Q(3)	1,2,3
d. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low or Steam Line Pressure--Low	S	R	Q	1,2,3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1,2,3
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC) LOGIC				
a. Inputs	N.A.	N.A.	M(6)	1,2,3,4
b. Logic, Timing and Outputs *	N.A.	N.A.	M(1)	1,2,3,4
7. UNDERVOLTAGE, VITAL BUS				
a. Loss of Voltage	S	R	M	1,2,3
b. Sustained Degraded Voltage	S	R	M	1,2,3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. AUXILIARY FEEDWATER				
a. Automatic Actuation Logic	N.A.	N.A.	M(2)	1,2,3
b. Manual Initiation	N.A.	N.A.	M(5)	1,2,3
c. Steam Generator Water Level--Low-Low	S	R	Q	1,2,3
d. Undervoltage - RCP	S	R	Q	1,2
e. S.I.	See 1 above (All S.I. surveillance requirements)			
f. Trip of Main Feedwater Pumps	N.A.	N.A.	S/U(4)	1,2
g. Station Blackout	See 6 and 7 above (SEC and U/V Vital Bus)			
9. SEMIAUTOMATIC TRANSFER TO RECIRCULATION				
a. RWST Low Level	S	R	Q	1,2,3
b. Automatic Initiation Logic	N.A.	N.A.	N.A.	1,2,3,4

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation and, 3) sufficient system functions capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and Supplements to that report. Surveillance intervals and out of service times were determined based on maintaining an appropriate level of reliability of the Reactor Protection System and Engineered Safety Features instrumentation.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 142 AND 121 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 May 11, 1992, and supplemented by letters dated July 16, 1992, February 2, 1993, and July 2, 1993, Public Service Electric and Gas Company (PSE&G) (the licensee) submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2, Technical Specifications (TS). The requested changes allow longer surveillance test intervals (STIs) and allowed outage times (AOTs) for the reactor trip system (RTS) and engineered safety features actuation system (ESFAS) instrumentation. This modification to the TS will minimize the potential number of inadvertent ESFAS actuation and reactor trips during surveillance testing, increase operational effectiveness of plant personnel, and allow resources to be used for other tasks such as preventive maintenance. In addition, the increased AOTs will result in fewer human errors since more time will be allowed to perform test and maintenance actions. The supplemental letters provide clarifying information that does not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

Operating utilities have become increasingly aware of the effects of current surveillance test intervals (STI) and maintenance requirements on plant operation. Inadvertent reactor trips have occurred that can be attributed to human errors during performance of these activities. Human errors were found to be directly proportional to the frequency of surveillance tests (STs) and inversely proportional to the time allowed for an inoperable channel to remain in a bypassed condition before repairs could be made. Thus, a greater frequency of STs and shorter AOTs were, in part, responsible for inadvertent trips and challenges to safety systems.

To resolve the above concerns, the Westinghouse Owners Group (WOG) initiated a program to evaluate the effect of such undesirable events and proposed TS changes to increase STIs and AOTs as remedial actions to preclude inadvertent trips and challenges to the safety systems while maintaining the benefits of routine tests and maintenance activities to ensure the reliability of the RTS and ESFAS instruments.

3.0 PRE-APPROVED REVISIONS AND ASSOCIATED CONDITIONS

The WOG published results of its study and proposals for remedial actions in 1983 in the original WCAP-10271. This document was later revised several times in response to NRC's comments and the current version of WCAP-10271, Supplement 2, Revision 1, was published on May 12, 1987. The staff reviewed all versions of WCAP-10271 including WOG's responses to staff's questions on these submittals. During this review, the NRC staff engaged the services of Brookhaven National Laboratory (BNL) to evaluate the approach used and the analyses performed in the WOG reports. BNL determined the adequacy of WOG's methodology to establish technical bases for unavailability data, reliability calculations, and proposed STI/AOT extensions. After the NRC staff and BNL staff had completed their review the NRC issued three safety evaluation reports (SERs): RTS SER on February 21, 1985, ESFAS SER on February 22, 1989, and a supplemental SER (SSER) on April 30, 1990. These SERs approved various TS changes relating to extending STIs, test/maintenance AOTs, and bypass time for instrument channels in RTS, ESFAS, and the logic cabinets for these systems. In the SERs, the NRC staff approved extensions to STIs/AOTs as well as to the time during which the instrument channels could be bypassed. However, the staff stipulated certain conditions that licensees must meet to include these pre-approved changes in plant-specific TSs. The pre-approved changes and associated conditions are addressed below.

3.1 Pre-approved Changes

As mentioned above, the NRC staff stipulated certain conditions to be met before the approved TS changes to the RTS and ESFAS and to the logic cabinets of these systems could be made in any plant-specific TS. The pre-approved TS changes are described below and the associated conditions are described in Section 3.2 of this report. PSE&G's specific TS changes for Salem, Units 1 and 2, and their response to the NRC staff's conditions and are evaluated in Section 4 of this report.

3.1.1. SER issued on February 21, 1985 (RTS SER). In this SER the staff approved the following TS changes relating to RTS instruments.

(1) STI for RTS analog channel operational testing may be increased from once a month to once per quarter.

(2) The duration for which an inoperable RTS analog channel may be maintained in an untripped condition may be increased from 1 hour to 6 hours.

(3) The duration for which an inoperable RTS channel may be bypassed to allow testing of another channel in the same function may be increased from 2 hours to 4 hours.

Also, the channel test may be done in the bypass mode, leaving the inoperable channel in a tripped condition.

(4) Testing of RTS analog channels in a bypassed condition instead of a tripped condition will be allowed.

3.1.2. SER issued on February 22, 1989 (ESFAS SER). In this SER, the staff approved the following TS changes relating to ESFAS instruments:

(1) The STIs for the analog channels may be increased from once a month to once a quarter.

(2) The AOTs for testing of analog channels may be increased from 2 hours to 4 hours for both relay and solid state systems.

(3) The AOTs for testing all components may be up to 4 hours in solid state systems.

(4) In relay systems, the AOTs for testing of the logic trains and master relays could be increased to 8 hours and for the slave relays to 12 hours.

(5) The AOTs for maintenance on all components may be extended to 12 hours for both relay and solid state systems. All components except the analog channels could be in the bypass mode during maintenance AOT, with an analog channel tripped after spending 6 hours in the bypass mode. Therefore, the maximum duration for which an inoperable ESFAS analog channel could be in an untripped condition is 6 hours.

(6) Staggered testing is not required for analog channels in the ESFAS and this requirement may be removed for analog channels in RTS.

3.1.3. SER issued on April 30, 1990 (SSER). The staff's approval of the proposed STI/AOT extensions for the logic cabinets and reactor trip breakers for the RTS system was based on its evaluation of Appendix D to the WCAP-10271, Supplement 2, Revision 1. The RTS and ESFAS share some common instrumentation; therefore it was necessary to consider STI/AOT extensions for RPS logic cabinets. The staff's conclusions are given below.

(1) The AOT extensions for the RPS logic cabinets as presented in Appendix D are acceptable. These are 4 hours for testing and 12 hours for maintenance instead of 2 hours and 6 hours respectively.

(2) The STI/AOT extensions (covered by the ESFAS SER) for ESFAS functions associated with the Safety Injection, Steam Line Isolation, Main Feedwater Isolation, and Auxiliary Feedwater Pump Start Signals are acceptable.

(3) The STI/AOT extensions proposed in Appendix D are not acceptable for reactor trip breakers because the extensions would reduce availability of these breakers.

3.2 Associated Conditions for Approval

3.2.1 For the RTS SER Changes:

(1) Performance of testing shall be done on a staggered basis. (This condition was later removed by the ESFAS SER.)

(2) Procedures should be implemented to evaluate test-failures for common cause effects and additional testing should be performed if necessary.

(3) Approval of channel testing (items 3.1.1.(3) and (4) above) in a bypassed condition assumes that the plant design allows such testing without lifting any leads or installing temporary jumpers.

(4) The approved revisions to TS as described above in items 3.1.1(1) through (4), also apply to the reactor coolant pump undervoltage and underfrequency functional units.

(5) For RTS channels which provide duel inputs to other safety-related systems such as ESFAS, the approval of items 3.1.1(1) through (4) above applies only to RTS functions.

(6) Increased STI would change the margin for analog channel setpoint, therefore, approval of increased STI is contingent on confirmation by the licensee that their setpoint methodology includes sufficient margin to offset the drift anticipated as a result of less frequent surveillance.

3.2.2 For the ESFAS SER Changes:

(1) The licensee must confirm the applicability of the generic analyses to the plant.

(2) The licensee must confirm that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology.

3.2.3 For the SSER changes:

(1) Acceptance of item 3.1.3.(1) is contingent on including a separate new action statement for modes 1 and 2 for RPS Automatic Trip and Interlock Logic Functional Units. The model Action Statement given below is in the format of Westinghouse Standard Technical Specifications, Revision 4, Table 3.3-1.

ACTION 12 - With the number of OPERABLE Channels (analog channels and trip logic) one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

3.2.4 Expeditious Review: In the letters transmitting the ESFAS SER and SSER, the staff indicated that a licensee's request for the proposed changes to the plant-specific TS will be expeditiously reviewed by the staff provided the licensee:

(1) Confirms the applicability of the generic analyses of WCAP-10271, Supplement 2, Revision 0 and Revision 1, to its plant.

(2) Confirms that any increase in instrument drift as a result of the extended STIs has been properly accounted for in setpoint calculation methodology.

(3) Confirms that the proposed TS changes are consistent with those approved by the staff in the SERs.

4.0 EVALUATION

The staff evaluated PSE&G's proposed Salem Units 1 and 2 TS changes to verify that they are consistent with the pre-approved changes and that PSE&G has met all the conditions associated with those changes.

4.1 Verification that Proposed Changes are consistent with the Pre-approved Changes

4.1.1 Limiting Condition for Operation 3.3.1.1

A. Table 3.3-1

1. Proposed change: (Units 1 and 2) Functional Units 12 through 15 and 18 (two places). Change applicable ACTION from 7 to 6.

Evaluation: For RTS functional units 12 (Loss of Flow - Single Loop), 13 (Loss of Flow - Two Loops), 14 (Steam Generator Water Level Low-Low), 15 (Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level) and 18 (Turbine Trip - Low Autostop Oil Pressure and Turbine Stop Valve Closure), in a condition with the number of operable channels one less than the

required minimum operable channels, the existing ACTION 7 allows startup and/or power operation to proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped position within 1 hour.

The revised ACTION 6 requires the inoperable channel be placed in the tripped condition within 6 hours and, if the requirement for the minimum operable channels is met, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

Thus the time for putting the inoperable channel in the tripped condition is extended from 1 hour to 6 hours, and bypassing the inoperable channel for up to 4 hours is allowed while the other channels are being tested. The above change is acceptable because it is consistent with the pre-approved change as described in Sections 3.1.1.(2) and 3.1.1.(3) of this evaluation.

2. Proposed change: (Units 1 and 2) Functional Units 19 and 22. Change applicable ACTION from 1 to 10. ACTION 10 is added to implement a 12-hour maintenance and 4-hour surveillance AOT for the appropriate functions.

   Evaluation: For Functional Units 19 (Safety Injection Input from ESF) and 22 (Automatic Trip logic), if the number of operable channels is one less than the minimum operable required, the existing Action 1 requires the plant "to be in HOT STANDBY within 6 hours, however, one channel may be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE."

   The new ACTION 10 allows 6 hours to restore the inoperable channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours, and allows bypassing one channel up to 4 hours, instead of 2 hours, for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

   The above change is acceptable because it is consistent with the pre-approved change as described in Section 3.2.3.(1) of this evaluation.

3. Proposed change: (Units 1 and 2) ACTION 2. Change the time an inoperable channel may be maintained in an untripped condition from 1 to 6 hours. Allow placing the inoperable channel in bypass while testing another channel in the same function, instead of placing the tested channel in bypass. Change the time an inoperable channel may remain in bypass to support testing another channel in the same function from 2 to 4 hours. Add the words, "of other channels."

   Evaluation: With the number of operable channels one less than the total number of channels, ACTION 2 of the existing TS allows startup and/or power operation to proceed provided the inoperable channel is placed in

the tripped condition within 1 hour, and, if the requirement for the minimum channels operable is met, one additional channel may be bypassed up to 2 hours for surveillance testing.

The revision to the action statements allows up to 6 hours, instead of 1 hour, for putting a channel in the tripped condition and allows for up to 4 hours, instead of 2 hours, for the inoperable channel, instead of an additional channel, to be placed in a bypassed status for surveillance testing "of other channels" per Specification 4.3.1.1.1.

The above change is acceptable because it is consistent with the pre-approved changes described in Sections 3.1.1.(2) and 3.1.1.(3) of this evaluation. The addition of the words, "of other channels" is an administrative change and is acceptable to the staff.

4. Proposed change: (Units 1 and 2) ACTION 7. Delete and mark NOT USED.

   Evaluation: Action statement of ACTION 7 has been replaced by ACTION 6 as described above for item 1. Therefore, this ACTION can be deleted. This is an editorial change and is acceptable to the staff.

5. Proposed change: (Units 1 and 2) ACTION 10. The existing TS Table has a "NOT USED" status. This is revised by deleting the words "NOT USED" and adding the description of insert 1, which reads as follows:

   "ACTION 10 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY in the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE."

   Evaluation: The description of ACTION 10 is acceptable to the staff as described in item 2 above. Adding the above text to the ACTION 10 statement is an administrative change and is acceptable to the staff.

6. Proposed change: (Units 1 and 2) ACTION 11. Change the time an inoperable channel may be maintained in an untripped condition from 1 to 6 hours.

   Evaluation: With the number of operable channels one less than the minimum number of channels OPERABLE, ACTION 11 of the existing TS allows operation to continue provided the inoperable channel is placed in the tripped condition within 1 hour.

   The revision to the action statement allows up to 6 hours, instead of 1 hour, before putting the inoperable channel in the tripped condition.

This change is acceptable because it is consistent with the pre-approved changes described in Sections 3.1.1.(2) of this evaluation.

7. Proposed change: (Units 1 and 2) ACTIONs 1, 2 and 6. Change identified specification number to 4.3.1.1.1.

   Evaluation: This change is an administrative change which identifies the correct specification. This change is acceptable to the staff.

B. Table 4.3-1

1. Proposed change: (Units 1 and 2) Functional Units 2, 3, 4, 6, 7, 8, 9, 10, 12, 14, 15, 16, and 17. Change CHANNEL FUNCTIONAL TEST frequencies from monthly to quarterly.

   Evaluation: The existing STI for the RTS Functional Units of TS Table 4.3-1 is monthly. The revision to the Table 4.3-1 changes the STI for these Functional Units from monthly to quarterly.

   The above change is acceptable because it is consistent with the pre-approved changes described in Section 3.1.1.(1) of this evaluation.

2. Proposed change: (Units 1 and 2) Notation (1) is changed from 7 to 31 days.

   Evaluation: These Functional Units are used only during start up. Changing the STI from 7 to 31 days would be acceptable only if the 31-day drift is included in the loop error calculations of the instrument loop of the affected Functional Unit(s). The licensee has committed to address all changes in drift values due to increased STIs. Therefore, this change is acceptable to the staff.

4.1.2 Limiting Condition for Operation 3.3.2.1

A. Table 3.3-3

1. Proposed change: (Units 1 and 2) Functional Units 1.c, 1.d, 1.e, 1.f (three places), 4.d (three places), 5.a, 8.c.i, and 8.c.ii. Change the applicable ACTION from 14 to 19.

   Evaluation: For ESFAS functional units 1.c (containment pressure high), 1.d (Pressurizer pressure low), 1.e (Differential pressure between Steam Lines - High), 1.f (Steam Flow in Two Steam Lines-High), 4.d (Steam Flow in Two Lines - High), 5.a (Steam generator Water level High-High), 8.c.i (Start Motor Driven Pumps on Steam Generator Water Level Low-Low) and 8.c.ii (Start Turbine Driven Pumps on Steam Generator Water Level Low-Low), in a condition with the number of operable channels one less than the total number of channels, the existing ACTION 14 allows operation to proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

The revised ACTION 19 requires the inoperable channel be placed in the tripped condition within 6 hours and, if the requirement for the minimum OPERABLE channels is met, the inoperable channel, instead of an additional channel, may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

Thus the time for putting the inoperable channel in the tripped condition is extended from 1 hour to 6 hours, and bypassing the inoperable channel is allowed for up to 4 hours while the other channels are being tested. The above change is acceptable because it is consistent with the pre-approved change as described in Sections 3.1.2.(5) and 3.1.2.(2) of this evaluation.

2. Proposed change: (Units 1 and 2) ACTION 13. Change to include a 12 hour maintenance AOT. Change the time a channel may be bypassed to support surveillance testing from 2 to 4 hours.

   (Unit 1 only) ACTION 13. Add the words "provided the other channel is OPERABLE."

   Evaluation: With the number of OPERABLE channels one less than the total number of channels, the existing ACTION statement 13 requires the plant to be in HOT STANDBY within 6 hours and in COLD SHUTDOWN in the following 30 hours, however, one channel may be bypassed up to 2 hours for surveillance testing provided the other channel is operable.

   The revised ACTION statement allows 6 hours to restore an inoperable channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours and in COLD SHUTDOWN in the following 30 hours, and increase the allowed bypassed time from 2 hours to 4 hours for surveillance testing per Specification 4.3.2.1.4 provided the other channel is operable.

   The above change is acceptable because it is consistent with the pre-approved change as described in Section 3.2.3.(1) of this evaluation. Adding the words "provided the other channel is operable" is an administrative change which clarifies the statement and provides consistency between Units 1 and 2. Therefore, this change is acceptable to the staff.

3. Proposed change: (Units 1 and 2) ACTION 16. Change the time an inoperable channel may be maintained in an unbypassed condition from 1 to 6 hours. Increase the time that another channel in the same function may be bypassed to allow testing from 2 to 4 hours.

   (Unit 1 only) ACTION 16. Add the words "by CHANNEL CHECK."

   Evaluation: With the number of OPERABLE channels one less than the Total Number of Channels, the existing ACTION 16 allows operation to proceed provided the inoperable channel is placed in the bypassed condition, and, if the Minimum Channels OPERABLE requirement is demonstrated within 1 hour, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

The revised ACTION statement allows 6 hours instead of 1 hour to keep the inoperable channel bypassed and to demonstrate if the Minimum Channels OPERABLE requirement is met. If this requirement is demonstrated, it allows one additional channel to be bypassed up to 4 hours instead of 2 hours for surveillance testing per Specification 4.3.2.1.1.

The above change is acceptable because it is consistent with the pre-approved change as described in Sections 3.1.2.(5) and 3.1.2.(2) of this evaluation. Adding the words "by CHANNEL CHECK" is an administrative change which clarifies the statement and provides consistency between Units 1 and 2. Therefore, this change is acceptable to the staff.

4. Proposed change: (Units 1 and 2) ACTION 19. Change the time an inoperable channel may be maintained in an untripped condition from 1 to 6 hours. Allow placing the inoperable channel in bypass while testing another channel in the same function, instead of placing the tested channel in bypass. Change the time an inoperable channel may remain in bypass to support testing another channel in the same function from 2 to 4 hours. Add the words "of other channels."

   Evaluation: With the number of OPERABLE channels one less than the total number of channels, existing ACTION 19 allows Startup and/or Power operation to proceed provided the inoperable channel is placed in the tripped condition within 1 hour, and, if the minimum channels OPERABLE requirement is met, allows an additional channel to be bypassed for up to 2 hours for surveillance testing per Section 4.3.2.1.1.

   The revised ACTION 19 requires the inoperable channel be placed in the tripped condition within 6 hours and, if the requirement for the minimum operable channels is met, the inoperable channel instead of an additional channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

   Thus the time for putting the inoperable channel in the tripped condition is extended from 1 hour to 6 hours, and bypassing the inoperable channel instead of one additional channel for up to 4 hours is allowed while the other channels are being tested.

   The above change is acceptable because it is consistent with the pre-approved change as described in Sections 3.1.2.(5), and 3.1.2.(2) of this evaluation. Adding the words "of other channels" is an administrative change which clarifies the statement. Therefore, this change is acceptable to the staff.

5. Proposed change: (Units 1 and 2) ACTION 20. Change to include a 12-hour maintenance AOT. Change the time a channel may be bypassed to support surveillance testing from 1 to 4 hours. Add the words "per Specification 4.3.2.1.1."

Evaluation: With the number of OPERABLE channels one less than the total number of channels, the existing ACTION statement 20 requires the plant to be at least in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed up to 1 hour for surveillance testing provided the other channel is OPERABLE.

The revised ACTION statement allows 6 hours to restore an inoperable channel to OPERABLE status or be at least in HOT STANDBY within the same 6 hours before requiring to be in HOT SHUTDOWN within the following 6 hours, and it increases the allowed bypassed time for one channel from 1 hour to 4 hours for surveillance testing per Specification 4.3.2.1.1, provided the other channel is OPERABLE.

The above change is acceptable because it is consistent with the pre-approved change as described in Section 3.2.3.(1) of this evaluation. Adding the words "per Specification 4.3.2.1.1" is an administrative change which clarifies the statement and provides consistency between Units 1 and 2. Therefore, this change is acceptable to the staff.

6. Proposed change: (Unit 2 only) Functional Unit 9.b. Change applicable ACTION from 13 to 20.

   Evaluation: ACTION 13 was an error in the existing TS. Correction of this error is an administrative change, therefore, this change is acceptable to the staff.

B. Table 4.3-2

1. Proposed change: (Units 1 and 2) Functional Units 1.c, 1.d, 1.e, 1.f, 2.c, 3.b.3, 4.c, 4.d, 5.a, and 8.c. Change CHANNEL FUNCTIONAL TEST frequency from monthly to quarterly.

   Evaluation: The STI requirement for these ESF instruments per existing TS Table 4.3-2 requirement is monthly. The revision to Table 4.3-2 changes the STI requirement for these instruments from monthly to quarterly.

   The above change is acceptable because it is consistent with the pre-approved changes described in Section 3.1.2.(1) of this evaluation.

2. Proposed change: (Units 1 and 2) Functional Unit 8.d. Change CHANNEL FUNCTIONAL TEST frequency for Unit 1 from monthly/staggered to quarterly and for Unit 2 from monthly to quarterly.

   Evaluation: The STI requirement for these ESF instruments per existing TS Table 4.3-2 of Unit 1 is monthly/staggered and of Unit 2 is monthly. The revision to Table 4.3-2 changes the STI requirement for these instruments from monthly to quarterly.

   The above change is acceptable because it is consistent with the pre-approved changes described in Section 3.1.2.(1) of this evaluation. The revision to the TS Table 4.3-2 of Unit 1 removes the requirement to test

the above channels on a staggered test basis. This change is acceptable because it is consistent with the pre-approved changes described in Section 3.1.2.(6) of this evaluation.

3. Proposed change: (Unit 2 only) Functional Unit 9.a. Change CHANNEL FUNCTIONAL TEST from monthly to quarterly.

   Evaluation: The STI requirement for these ESF instruments per existing TS Table 4.3-2 is monthly. The revision to the Table 4.3-2 changes the STI requirement for these instruments from monthly to quarterly.

   The above change is acceptable because it is consistent with the pre-approved changes described in Section 3.1.2.(1) of this evaluation.

4.1.3 Bases: The Units 1 and 2 TS bases pages B 3/4 3-1 have been updated to reflect the changes included in this license amendment. These changes are acceptable to the staff.

4.2 Verification of Conditions

Through its submittal, PSE&G confirmed that it has met the SER conditions as described below.

(1) Condition 3.2.1.(1): Performance of testing on a staggered basis was stipulated by the RTS SER but was removed by ESFAS SER. PSE&G stated that neither Salem Unit implemented staggered testing for RTS functions, therefore, this condition has no impact. This statement is acceptable to the staff.

(2) Condition 3.2.1.(2): PSE&G stated that its engineering evaluation confirmed that no common mode failures could be introduced by extended STIs. In addition, Salem Units 1 and 2 will have procedures in place for common cause failure evaluation and any required additional testing, prior to implementation of the proposed revisions to the TS. This statement is acceptable to the staff.

(3) Condition 3.2.1.(3): PSE&G stated that with the exception of "containment Pressure High-High channels," the Salem Units 1 and 2 design does not provide for testing the RTS and ESFAS analog instrumentation channels in a bypass mode without the lifting of wires or installation of temporary jumpers. Therefore, approval for bypass testing is not requested at this time. This statement is acceptable to the staff.

(4) Condition 3.2.1.(5): The RTS SER states that approval to extend STI and AOT for channels that provide duel inputs to other safety-related systems, such as ESFAS, only applies to the RTS function. PSE&G stated that the extensions generically approved for the ESFAS analog channels are now the same as for the RTS analog channels. This condition is not applicable to the Salem Units since the relaxations requested are the same for channels shared by the RTS and ESFAS. This statement is acceptable to the staff.

(5) Condition 3.2.2.(1): The ESFAS SER states that the licensee must confirm the applicability of the generic analyses to the plant. PSE&G stated that the generic analysis used in WCAP-10271 and its supplements is applicable to Salem Units 1 and 2. Salem Units 1 and 2 use the Westinghouse 7100 Process Control System and the Westinghouse Solid State Protection System for RTS and ESFAS. Both of these systems were specifically modelled in the generic analyses. All of the requested ESFAS Functional Unit relaxations were addressed by the generic analysis, with the exception of functional Unit 9 (SEMIAUTOMATIC TRANSFER TO RECIRCULATION) on Unit 2. Westinghouse addressed Functional Unit 9 of Unit 2 on a plant-specific evaluation "Technical Specification Optimization Program, Semi-Automatic Transfer to Recirculation on RWST Level Low for Salem Generating Station Unit 2". The Westinghouse evaluation concluded that this Functional Unit has less than a 12% decrease in availability. This value corresponds to the lowest calculated value for any Functional Unit in the generic program (Supplement 1, Revision 1, to WCAP-10271). The generic program determined that an availability decrease of less than 12% was acceptable. This conclusion is acceptable to the staff.

(6) Conditions 3.2.1.(6) and 3.2.2.(2): The RTS SER and ESFAS SER state that the license must confirm that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology. PSE&G conducted an in-house evaluation of the performance as stated in the July 2, 1993 letter. The evaluation analyzed the monthly Technical Specification Surveillance as-found/as-left data over a 3-year period (mid 1989 thru 1992) for the Hagan comparators, delta-T and Tavg comparators, and Nuclear Instrumentation. In their submittal, PSE&G stated there was no evidence of drift bias, and they observed no time dependency in the drift. Their study concluded that an increase in STIs from monthly to quarterly was supported by Salem instrument performance, and is expected to have no observable impact on instrument reliability or performance. The staff finds this acceptable.

4.3 OTHER

Table 3.3-3, TABLE NOTATION ***, in the second line, the word "operable" was changed to "OPERABLE". This is now a defined term that requires certain actions (e.g., surveillance) to be performed before the valves can be declared operable. The staff finds this acceptable.

5.0 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.

6.0 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 (57 FR 40220). 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.

7.0 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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