March 2, 1993

Docket No. 50-388

Mr. Harold W. Keiser
Senior Vice President-Nuclear
Pennsylvania Power and Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Dear Mr. Keiser:

SUBJECT: OPERATION OF THE REACTOR WATER CLEANUP (RWCU) SYSTEM WITH THE NON-REGENERATIVE HEAT EXCHANGER DISCHARGE HIGH TEMPERATURE CHANNEL, SUBSTITUTING FOR THE INOPERABLE 'B' RWCU HIGH FLOW ISOLATION TRIP CHANNEL, SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 (PLA-3881) (TAC NO. M85021)

The Commission has issued the enclosed Amendment No. 93 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Unit 2. This amendment is in response to your letter dated November 30, 1992.

This amendment revises the Susquehanna Steam Electric Station, Unit 2 Technical Specifications to authorize operation of the Reactor Water Cleanup (RWCU) System in the current fuel cycle with the non-regenerative heat exchanger discharge high temperature channel substituting for the inoperable 'B' RWCU high flow isolation trip channel.

Issuance of this amendment terminates the Temporary Waiver of Compliance from Technical Specification 3.3.2, Action B, which we verbally granted on November 23, 1992, and confirmed by our letter of November 25, 1992.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly Federal Register Notice.

Sincerely, Original signed by
Richard J. Clark

Richard J. Clark, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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Enclosures:
1. Amendment No. 93 to License No. NPF-22
2. Safety Evaluation

cc w/enclosures:
See next page

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

March 2, 1993

Docket No. 50-388

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Senior Vice President-Nuclear
Pennsylvania Power and Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

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SUBJECT: OPERATION OF THE REACTOR WATER CLEANUP (RWCU) SYSTEM WITH THE NON-REGENERATIVE HEAT EXCHANGER DISCHARGE HIGH TEMPERATURE CHANNEL, SUBSTITUTING FOR THE INOPERABLE 'B' RWCU HIGH FLOW ISOLATION TRIP CHANNEL, SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 (PLA-3881) (TAC NO. M85021)

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Sincerely,

Richard J. Clark, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 93 to License No. NPF-22
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. Harold W. Keiser
Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,
Units 1 & 2

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

PENNSYLVANIA POWER & LIGHT COMPANY

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 93
License No. NPF-22

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

   A. The application for the amendment filed by the Pennsylvania Power & Light Company, dated November 30, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's 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 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.

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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 the Facility Operating License No. NPF-22 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 93 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PP&L shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Charles L. Miller

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: March 2, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 93

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following pages of the Appendix A Technical Specifications with enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The overleaf pages are provided to maintain document completeness.*

REMOVE	INSERT
3/4 3-11	3/4 3-11*
3/4 3-12	3/4 3-12
3/4 3-17	3/4 3-17*
3/4 3-18	3/4 3-18
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 3-24	3/4 3-24

TABLE 3.3.2-1

ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL(S)(a)	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)	APPLICABLE OPERATIONAL CONDITION	ACTION
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level				
1) Low, Level 3	A	2	1, 2, 3	20
2) Low Low, Level 2	B	2	1, 2, 3	20
3) Low Low Low, Level 1	X	2	1, 2, 3	20
b. Drywell Pressure - High	Y,Z	2	1, 2, 3	20
c. Manual Initiation	NA	1	1, 2, 3	24
d. SGTS Exhaust Radiation - High	R	1	1, 2, 3, 4***, 5***	20
e. Main Steam Line Radiation - High	C	2	1, 2, 3	20
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low Low, Level 2	**	2	1, 2, 3 and *	25
b. Drywell Pressure - High	**	2	1, 2, 3	25
c. Refuel Floor High Exhaust Duct Radiation - High	**	2	*	25
d. Railroad Access Shaft Exhaust Duct Radiation - High	**	1	*	25
e. Refuel Floor Wall Exhaust Duct Radiation - High	**	2	*	25
f. Manual Initiation	NA	1	1, 2, 3 and *	24

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL(S)(a)	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)	APPLICABLE OPERATIONAL CONDITION	ACTION
3. MAIN STEAM LINE ISOLATION				
a. Reactor Vessel Water Level - Low Low Low, Level 1	X	2	1, 2, 3	21
b. Main Steam Line Radiation - High	C	2	1, 2, 3	21
c. Main Steam Line Pressure - Low	P	2	1	22
d. Main Steam Line Flow - High	D	2/line	1, 2, 3	20
e. Condenser Vacuum - Low	UA	2	1, 2, 3	21
f. Reactor Building Main Steam Line Tunnel Temperature - High	E	2	1, 2, 3	21
g. Reactor Building Main Steam Line Tunnel Δ Temperature - High	E	2	1, 2, 3	21*
h. Manual Initiation	NA	1	1, 2, 3	24
i. Turbine Building Main Steam Line Tunnel Temperature - High	E	2	1, 2, 3	21
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. RWCU Δ Flow - High	J	1	1, 2, 3	23
b. RWCU Area Temperature - High	W	3	1, 2, 3	23
c. RWCU Area Ventilation Δ Temperature - High	W	3	1, 2, 3	23*
d. SLCS Initiation	I	2	1, 2, 3	23
e. Reactor Vessel Water Level - Low Low, Level 2	B	2	1, 2, 3	23
f.1. RWCU Flow - High	J	1#	1, 2, 3	23
f.2. Non-Regenerative Heat Exchanger Discharge Temperature - High	J	1#	1, 2, 3	23
g. Manual Initiation	NA	1	1, 2, 3	24

* These trip functions need not be OPERABLE from October 19, 1989 to January 1, 1990.

\# For Unit 2 Cycle 6 operation, the Non-Regenerative Heat Exchanger Discharge Temperature - High Channel shall be OPERABLE in place of RWCU Flow - High Channel 'B'.

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. PRIMARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level		
1) Low, Level 3	≥13.0 inches*	≥ 11.5 inches
2) Low Low, Level 2	≥ -38.0 inches*	≥ -45.0 inches
3) Low Low Low, Level 1	≥ -129 inches*	≥ -136 inches
b. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
c. Manual Initiation	NA	NA
d. SGTS Exhaust Radiation - High	≤ 23.0 mR/hr	≤ 31.0 mR/hr
e. Main Steam Line Radiation - High	≤ 7.0 X full power background	≤ 8.4 X full power background
2. SECONDARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level - Low Low, Level 2	≥ -38.0 inches*	≥ -45.0 inches
b. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
c. Refuel Floor High Exhaust Duct Radiation - High	≤ 2.5 mR/hr	≤ 4.0 mR/hr
d. Railroad Access Shaft Exhaust Duct Radiation - High	≤ 2.5 mR/hr	≤ 4.0 mR/hr
e. Refuel Floor Wall Exhaust Duct Radiation - High	≤ 2.5 mR/hr	≤ 4.0 mR/hr
f. Manual Initiation	NA	NA
3. MAIN STEAM LINE ISOLATION		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches*	≥ -136 inches
b. Main Steam Line Radiation - High	≤ 7.0 X full power background	≤ 8.4 X full power background
c. Main Steam Line Pressure - Low	≥ 861 psig	≥ 841 psig
d. Main Steam Line Flow - High	≤ 107 psid	≤ 110 psid

TABLE 3.3.2-2 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
MAIN STEAM LINE ISOLATION (Continued)		
e. Condenser Vacuum - Low	≥ 9.0 inches Hg vacuum	≥ 8.8 inches Hg vacuum
f. Reactor Building Main Steam Line Tunnel Temperature - High	≤ 177°F	≤ 184°F
g. Reactor Building Main Steam Line Tunnel Δ Temperature - High	≤ 99°F	≤ 108°F*
h. Manual Initiation	NA	NA
i. Turbine Building Main Steam Line Tunnel Temperature - High	≤ 197°F	≤ 200°F
4. REACTOR WATER CLEANUP SYSTEM ISOLATION		
a. RWCU Δ Flow - High	≤ 60 gpm	≤ 80 gpm
b. RWCU Area Temperature - High	≤ 147° F or 131°F#	≤ 154°F or 137°F#
c. RWCU/Area Ventilation Δ Temperature - High	≤ 69°F or 40.5°F#	≤ 72°F or 43.5°F#*
d. SLCS Initiation	NA	NA
e. Reactor Vessel Water Level - Low Low, Level 2	≥ -38 inches*	≥ -45 inches
f1. RWCU Flow - High	≤ 426 gpm	≤ 436 gpm
f2. Non-Regenerative Heat Exchanger Discharge Temperature - High	≤ 144°F	≤ 150°F
g. Manual Initiation	NA	NA
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION		
a. RCIC Steam Line Δ Pressure - High	≤ 153" H_2O	≤ 165" H_2O
b. RCIC Steam Supply Pressure - Low	≥ 60 psig	≥ 53 psig
c. RCIC Turbine Exhaust Diaphragm Pressure - High	≤ 10.0 psig	≤ 20.0 psig

* These trip functions need not be OPERABLE from October 19, 1989 to January 19, 1990.

TABLE 3.3.2-3 ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME	
TRIP FUNCTION	**RESPONSE TIME (Seconds)#**
1. PRIMARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level	
1) Low, Level 3	≤10[a]
2) Low Low, Level 2	≤1.0*/≤10[a]**
3) Low Low Low, Level 1	≤10[a]
b. Drywell Pressure - High	≤10[a]
c. Manual Initiation	NA
d. SGTS Exhaust Radiation - High[b]	≤10[a]
e. Main Steam Line Radiation - High[b]	≤10[a]
2. SECONDARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level - Low Low, Level 2	≤10[a]
b. Drywell Pressure - High	≤10[a]
c. Refuel Floor High Exhaust Duct Radiation - High[b]	≤10[a]
d. Railroad Access Shaft Exhaust Duct Radiation - High (b)	≤10[a]
e. Refuel Floor Wall Exhaust Duct Radiation - High[b]	≤10[a]
f. Manual Initiation	NA
3. MAIN STEAM LINE ISOLATION	
a. Reactor Vessel Water Level - Low Low Low, Level 1	≤10[a]
b. Main Steam Line Radiation - High[b]	≤1.0*/≤10[a]**
c. Main Steam Line Pressure - Low	≤1.0*/≤10[a]**
d. Main Steam Line Flow - High	≤0.5*/≤10[a]**
e. Condenser Vacuum - Low	NA
f. Reactor Building Main Steam Line Tunnel Temperature - High	NA
g. Reactor Building Main Steam Line Tunnel Δ Temperature - High	NA
h. Manual Initiation	NA
i. Turbine Building Main Steam Line Tunnel Temperature - High	NA
4. REACTOR WATER CLEANUP SYSTEM ISOLATION	
a. RWCU Δ Flow - High	≤10[a]##
b. RWCU Area Temperature - High	NA
c. RWCU Area Ventilation Temperature ΔT - High	NA
d. SLCS Initiation	NA
e. Reactor Vessel Water Level - Low Low, Level 2	≤10[a]
f1. RWCU Flow - High	NA
f2. Non-Regenerative Heat Exchanger Discharge Temperature - High	NA
g. Manual Initiation	NA
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION	
a. RCIC Steam Line Δ Pressure - High	≤10[a]###
b. RCIC Steam Supply Pressure - Low	≤10[a]
c. RCIC Turbine Exhaust Diaphragm Pressure - High	NA
d. RCIC Equipment Room Temperature - High	NA
e. RCIC Equipment Room Δ Temperature - High	NA
f. RCIC Pipe Routing Area Temperature - High	NA
g. RCIC Pipe Routing Area Δ Temperature - High	NA
h. RCIC Emergency Area Cooler Temperature - High	NA
i. Manual Initiation	NA
j. Drywell Pressure - High	≤10[a]

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION	RESPONSE TIME (Seconds)#
6. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION	
a. HPCI Steam Flow - High	≤10(a)####
b. HPCI Steam Supply Pressure - Low	≤10(a)
c. HPCI Turbine Exhaust Diaphragm Pressure - High	NA
d. HPCI Equipment Room Temperature - High	NA
e. HPCI Equipment Room Δ Temperature - High	NA
f. HPCI Emergency Area Cooler Temperature - High	NA
g. HPCI Pipe Routing Area Temperature - High	NA
h. HPCI Pipe Routing Area Δ Temperature - High	NA
i. Manual Initiation	NA
j. Drywell Pressure - High	≤10(a)
7. RHR SYSTEM SHUTDOWN COOLING/HEAD SPRAY MODE ISOLATION	
a. Reactor Vessel Water Level - Low, Level 3	≤10(a)
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	NA
c. RHR Equipment Area Δ Temperature - High	NA
d. RHR Equipment Area Temperature - High	NA
e. RHR Flow - High	NA
f. Manual Initiation	NA
g. Drywell Pressure - High	≤10(a)

(a) The isolation system instrumentation response time shall be measured and recorded as a part of the ISOLATION SYSTEM RESPONSE TIME. Isolation system instrumentation response time specified includes the delay for diesel generator starting assumed in the accident analysis.

(b) Radiation detectors are exempt from response time testing. Response time shall be measured from detector output or the input of the first electronic component in the channel.

*Isolation system instrumentation response time for MSIVs only. No diesel generator delays assumed for MSIV Valves.

**Isolation system instrumentation response time for associated valves except MSIVs.

#Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time shown in Table 3.6.3-1 and 3.6.5.2-1 for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

##With time delay of 45 seconds.

###With time delay of 3 seconds.

####With time delay of 3 seconds.

TABLE 4.3.2.1-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level -				
1) Low, Level 3	S	M	R	1, 2, 3
2) Low Low, Level 2	S	M	R	1, 2, 3
3) Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure - High	NA	M	R	1, 2, 3
c. Manual Initiation	NA	R	NA	1, 2, 3
d. SGTS Exhaust Radiation - High	S	M	R	1, 2, 3, 4***, 5***
e. Main Steam Line Radiation - High	S	M	R	1, 2, 3
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low Low, Level 2	S	M	R	1, 2, 3 and *
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. Refuel Floor High Exhaust Duct Radiation - High	S	M	R	*
d. Railroad Access Shaft Exhaust Duct Radiation - High	S	M	R	*
e. Refuel Floor Wall Exhaust Duct Radiation - High	S	M	R	*
f. Manual Initiation	NA	R	NA	1, 2, 3 and *

TABLE 4.3.2.1-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
3. MAIN STEAM LINE ISOLATION a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Main Steam Line Radiation - High	S	M	R	1, 2, 3
c. Main Steam Line Pressure - Low	NA	M	Q	1
d. Main Steam Line Flow - High	S	M	R	1, 2, 3
e. Condenser Vacuum - Low	NA	M	Q	1, 2**, 3**
f. Reactor Building Main Steam Line Tunnel Temperature - High	NA	M	Q	1, 2, 3
g. Reactor Building Main Steam Line Tunnel Δ Temperature - High	NA	M	Q	1, 2, 3*
h. Manual Initiation	NA	R	NA	1, 2, 3
i. Turbine Building Main Steam Line Tunnel Temperature - High	NA	M	Q	1, 2, 3
4. REACTOR WATER CLEANUP SYSTEM ISOLATION a. RWCU Δ Flow - High	S	M	R	1, 2, 3
b. RWCU Area Temperature - High	NA	M	Q	1, 2, 3
c. RWCU Area Ventilation Δ Temperature - High	NA	M	Q	1, 2, 3*
d. SLCS Initiation	NA	R	NA	1, 2, 3
e. Reactor Vessel Water Level - Low Low, Level 2	S	M	R	1, 2, 3
f.1. RWCU Flow - High#	S	M	R	1, 2, 3
f.2. Non-Regenerative Heat Exchanger Discharge Temperature - High#	S	M	Q	1, 2, 3
g. Manual Initiation	NA	R	NA	1, 2, 3

* These trip functions need not be OPERABLE from October 19, 1989 to January 1, 1990.

\# For Unit 2 Cycle 6 operation, the Non-Regenerative Heat Exchanger Discharge Temperature - High Channel shall be OPERABLE in place of RWCU Flow - High Channel 'B'.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NO. NPF-22

PENNSYLVANIA POWER & LIGHT COMPANY

ALLEGHENY ELECTRIC COOPERATIVE INC.

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-388

1.0 INTRODUCTION

By letter dated November 30, 1992, the Pennsylvania Power and Light Company (PP&L) and Allegheny Electric Cooperative, Inc. (the licensees) submitted a request for changes to the Susquehanna Steam Electric Station (SSES), Unit 2, Technical Specifications (TS). The requested changes would revise the SSES, Unit 2, TS to authorize operation of the Reactor Water Cleanup (RWCU) System in the current fuel cycle with the non-regenerative heat exchanger discharge high temperature channel substituting for the inoperable 'B' RWCU high flow isolation trip channel.

During a routine surveillance channel check on November 15, 1992, operators for PP&L noted a significant decrease in the 'B' RWCU Flow-High isolation channel. The licensee determined that the associated instrument met the channel check acceptance criteria and continued to investigate the cause of the decrease in indicated flow. The licensee subsequently confirmed that the channel was inoperable. Attempts to restore the inoperable channel were unsuccessful. Since further repair activities would involve primary containment entry and, potentially, complete defueling of the reactor vessel, PP&L requested an extension to the temporary waiver of compliance from Technical Specification (TS) Action Requirement 23 of Table 3.3.2-1 which is referenced in TS 3.3.2, Action b, footnote (*), previously granted by the staff on November 17, 1992. The purpose of the extension was to allow continued operation of the RWCU system while the staff evaluated the licensee's application for the subject TS change. The Temporary Waiver of Compliance was verbally granted on November 23, 1992, and confirmed by letter dated November 25, 1992. The Temporary Waiver will terminate upon issuance of the subject amendment.

By letter dated November 30, 1992, the licensee proposed a one-time change to the SSES, Unit 2, TSs. The proposed change would allow continued operation of the RWCU system for the duration of the sixth operating cycle for Unit 2 with one operable RWCU Flow-High isolation channel. To ensure the necessary diversity of isolation system actuation is maintained for all RWCU piping, PP&L proposed that the Non-Regenerative Heat Exchanger (NRHX) Discharge Temperature-High channel be substituted for the inoperable B RWCU Flow-High

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isolation channel. The proposed TS change reduces the required number of operable RWCU Flow-High channels in Table 3.3.2-1 to one; adds the requirement for one operable NRHX Discharge Temperature-High channel to Table 3.3.2-1; adds setpoint requirements to Table 3.3.2-2 for the NRHX Discharge Temperature-High channel; adds the NRHX Discharge Temperature-High channel to Table 3.3.2-3; and adds surveillance requirements for the instrument associated with the NRHX Discharge Temperature-High channel to Table 4.3.2.1-1.

2.0 BACKGROUND

The RWCU system penetrates the primary containment and is provided with inboard and outboard containment isolation valves. In order to maintain the integrity of the reactor coolant pressure boundary and to minimize the radiological consequences in the event of a break in the RWCU system piping, the RWCU system is equipped with diverse and redundant leak detection devices which provide isolation signals to the RWCU system containment isolation valves. In addition to the protection provided by the RWCU Flow-High isolation, RWCU Area Temperature-High, RWCU Area Ventilation Differential Temperature-High, and RWCU Differential Flow-High instruments detect leakage in certain sections of the RWCU system and initiate isolation. Reactor Vessel Level Low, Low (Level 2) provides automatic isolation of the RWCU system for large break flows which exceed feedwater system makeup capability and result in a decreasing reactor vessel water level. Although not capable of initiating automatic RWCU isolation, area radiation and main steam tunnel temperature monitoring is available to provide operators warning of a leak or break in the RWCU piping.

The licensee has performed a detailed evaluation of the adequacy of leak detection for the entire length of RWCU piping outside primary containment. Based on this evaluation, PP&L determined that the RWCU Flow-High isolation function is necessary to provide diversity to detect and isolate leaks in the section of piping from the downstream RWCU differential flow element to the point where the RWCU piping ties into the feedwater system piping. Only the RWCU Flow-High isolation and the Reactor Vessel Level Low, Low (Level 2) provide isolation capability for leaks or breaks in this section of piping.

The licensee determined that a break in the section of piping of concern coupled with a failure to isolate due to failure of the A RWCU Flow-High channel or the associated containment isolation valve would be a low probability event. PP&L prepared a probabilistic evaluation of this case and determined the probability of this event to be 1.1×10^{-6} for a 15-month operating cycle. The evaluation conservatively assumed minimum pipe wall thickness in determining the probability of a pipe break. The piping in the subject section is 4" ASME Section III Class 2 SA-106 Grade B seamless carbon steel piping which is not subject to intergranular stress corrosion cracking.

In order to verify its operability, an additional calibration of the A RWCU Flow-High channel was performed. The licensee has also committed to provide additional guidance to operators to ensure heightened awareness of the

degraded condition of the RWCU high flow leak isolation function. These compensatory measures are intended to reduce the probability of an unisolated leak or break in the RWCU piping.

In addition to the operable A RWCU Flow-High channel isolation, PP&L has determined that a high RWCU system flow, equal to the setpoint of the high flow instrument, will cause the temperature measured at the discharge of the NRHX to exceed the temperature instrument's RWCU isolation setpoint of 140°F. Once the instrument senses a RWCU water temperature above the NRHX Discharge Temperature-High setpoint, isolation of the outboard RWCU containment isolation valve is initiated. PP&L has confirmed that the operable A RWCU Flow-High channel initiates isolation of the redundant inboard RWCU containment isolation valve.

Although the NRHX discharge temperature instrument is not safety grade, PP&L has verified that the instrument's power supply and the equipment associated with initiating RWCU isolation is safety grade. Also, the licensee has determined that the power supply and containment isolation circuitry for the A RWCU Flow-High and the NRHX Discharge Temperature-High channels are physically and electrically separate, and operate in different divisions. The NRHX discharge temperature instrument is designed to initiate RWCU isolation following failure of its thermistor probe due to an open or short circuit, or failure of its power supply. A previous failure of the temperature instrument caused RWCU isolation. The licensee's TS change request includes provisions for surveillance testing of the NRHX Discharge Temperature-High instrument which is consistent with that of other temperature instruments.

3.0 EVALUATION

For sections of the RWCU system provided with leak detection and isolation capability by the RWCU Area Temperature-High, the RWCU Area Ventilation Differential Temperature-High, or the RWCU Differential Flow-High instruments, the staff concludes that sufficiently diverse and redundant means of leak detection and isolation are provided regardless of the RWCU high flow isolation functional capability. Therefore, the capability to detect and isolate leaks in portions of the RWCU system where only the operable A RWCU Flow-High channel and the Reactor Vessel Level Low, Low (Level 2) device provide isolation capability for leaks or breaks is of primary concern in this evaluation.

The staff has determined that, under normal operating conditions, the NRHX Discharge Temperature-High and RWCU Flow-High channels have comparable RWCU isolation capability for a break in the piping section of concern. This was confirmed by calculations indicating that less than a 50 gpm increase in RWCU flow will result in steady state NRHX discharge temperature above the isolation setpoint. For comparison, the RWCU Flow-High setpoint is greater than 100 gpm above normal RWCU system flow.

Although the NRHX discharge temperature instrument is not safety grade, the staff concludes that the instrument reliability is adequate for one cycle of operation. This conclusion is based on the low probability of a break in the section of piping of concern coincident with a failure of the operable RWCU Flow-High channel to isolate RWCU flow, the fail-safe characteristics of the NRHX temperature instrument, and the proposed TS surveillance testing of the NRHX temperature instrument.

The staff found that the temporary substitution of the NRHX Discharge Temperature-High channel for the inoperable B RWCU Flow-High isolation channel under TS 3.3.2 is acceptable for the duration of the sixth operating cycle for Unit 2. This action is consistent with the requirements of General Design Criterion 54 of Appendix A to 10 CFR Part 50 with regard to provision of leak detection and isolation capabilities for piping systems which penetrate containment having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these systems.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes 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 amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 59363). Accordingly, the amendment meets 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 amendment.

6.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Jones

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