

October 3, 1992

Docket Nos. 50-387  
and 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: REACTOR WATER CLEANUP (RWCU) SYSTEM, SUSQUEHANNA STEAM ELECTRIC  
STATION, UNITS 1 AND 2 (TAC NOS. M80107 AND M80108)

The Commission has issued the enclosed Amendment No. 123 to Facility  
Operating License No. NPF-14 and Amendment No. 90 to Facility Operating  
License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2.  
These amendments are in response to your letter dated January 9, 1991, and its  
supplements dated August 19, 1991, June 22, 1992, and August 3, 1992.

These amendments make changes to the technical specifications to prevent  
inadvertent isolation of the RWCU system due to high seasonal temperatures  
while still providing timely leak detection capability.

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

Sincerely,

/s/  
James J. Raleigh, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 123 to License No. NPF-14
2. Amendment No. 90 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures:  
See next page

DISTRIBUTION:

<del>SECRET</del>	MO'Brien(2)	CGrimes, 11E-21	JWhite, RGN-I
NRC & Local PDRs	JRaleigh	CMcCracken, 8D-1	
PDI-2 Reading	OGC	ACRS(10)	
SVarga	DHagan, 3206	OPA	
JCalvo	GHill(8), P1-22	OC/LFMB	
CMiller	Wanda Jones, 7103	EWenzinger, RGN-I	

OFC	: PDI-2/LA	: PDI-2/PM	: SPLB	: OGC	: PDI-2/D	:
NAME	: MO'Brien	: JRaleigh	: rb:CMcCracken:	: E.Holloman	: CNTT/Mar	:
DATE	: 9/7/92	: 9/2/92	: 9/4/92	: 9/10/92	: 9/17/92	:

680021

9210130269 921003  
PDR ADOCK 05000387  
P PDR

OP-1  
DFC-1



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

October 3, 1992

Docket Nos. 50-387  
and 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: REACTOR WATER CLEANUP (RWCU) SYSTEM, SUSQUEHANNA STEAM ELECTRIC  
STATION, UNITS 1 AND 2 (TAC NOS. M80107 AND M80108)

The Commission has issued the enclosed Amendment No. 123 to Facility Operating License No. NPF-14 and Amendment No. 90 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2. These amendments are in response to your letter dated January 9, 1991, and its supplements dated August 19, 1991, June 22, 1992, and August 3, 1992.

These amendments make changes to the technical specifications to prevent inadvertent isolation of the RWCU system due to high seasonal temperatures while still providing timely leak detection capability.

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

Sincerely,

A handwritten signature in cursive script that reads "James J. Raleigh".

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

Enclosures:

1. Amendment No. 123 to License No. NPF-14
2. Amendment No. 90 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Harold W. Keiser  
Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,  
Units 1 & 2

cc:

Jay Silberg, Esq.  
Shaw, Pittman, Potts & Trowbridge  
2300 N Street N.W.  
Washington, D.C. 20037

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406

Bryan A. Snapp, Esq.  
Assistant Corporate Counsel  
Pennsylvania Power & Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Mr. Harold G. Stanley  
Superintendent of Plant  
Susquehanna Steam Electric Station  
Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Mr. J. M. Kenny  
Licensing Group Supervisor  
Pennsylvania Power & Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Mr. Herbert D. Woodeshick  
Special Office of the President  
Pennsylvania Power and Light Company  
Rural Route 1, Box 1797  
Berwick, Pennsylvania 18603

Mr. Scott Barber  
Senior Resident Inspector  
U. S. Nuclear Regulatory Commission  
P.O. Box 35  
Berwick, Pennsylvania 18603-0035

Mr. Robert G. Byram  
Vice President-Nuclear Operations  
Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Mr. Thomas M. Gerusky, Director  
Bureau of Radiation Protection  
Resources  
Commonwealth of Pennsylvania  
P. O. Box 2063  
Harrisburg, Pennsylvania 17120

Mr. Jesse C. Tilton, III  
Allegheny Elec. Cooperative, Inc.  
212 Locust Street  
P.O. Box 1266  
Harrisburg, Pennsylvania 17108-1266



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. 123  
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 January 9, 1991, and its supplements dated August 19, 1991, June 22, 1992, and August 3, 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.

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-14 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. 123 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 and is to be implemented within 30 days after 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: October 3, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

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

REMOVE

3/4 3-17  
3/4 3-18

INSERT

3/4 3-17\*  
3/4 3-18

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<b>1. PRIMARY CONTAINMENT ISOLATION</b>		
a. Reactor Vessel Water Level		
1) Low, Level 3	> 13.0 inches <sup>A</sup>	> 11.5 inches
2) Low Low, Level 2	> -38.0 inches <sup>A</sup>	> -45.0 inches
3) Low Low Low, Level 1	> -129 inches <sup>A</sup>	> -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
<b>2. SECONDARY CONTAINMENT ISOLATION</b>		
a. Reactor Vessel Water Level - Low Low, Level 2	≥ -38.0 inches <sup>A</sup>	≥ -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
<b>3. MAIN STEAM LINE ISOLATION</b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches <sup>A</sup>	> -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
<b>MAIN STEAM LINE ISOLATION</b> (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
<b>4. REACTOR WATER CLEANUP SYSTEM ISOLATION</b>		
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
f. RWCU Flow - High	≤ 426 gpm	≤ 436 gpm
g. Manual Initiation	NA	NA
<b>5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</b>		
a. RCIC Steam Line Δ Pressure - High	≤ 177" H <sub>2</sub> O	≤ 189" H <sub>2</sub> O
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.		





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. 90  
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 January 9, 1991, and its supplements dated August 19, 1991, June 22, 1992, and August 3, 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.

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. 90 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 and is to be implemented within 30 days after 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: October 3, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 90

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 page is identified by Amendment number and contains vertical lines indicating the area of change. The overleaf page is provided to maintain document completeness.\*

REMOVE

3/4 3-17  
3/4 3-18

INSERT

3/4 3-17\*  
3/4 3-18

TABLE 3.3.2-2  
ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<b>1. PRIMARY CONTAINMENT ISOLATION</b>		
a. Reactor Vessel Water Level		
1) Low, Level 3	> 13.0 inches <sup>A</sup>	> 11.5 inches
2) Low Low, Level 2	> -38.0 inches <sup>A</sup>	> -45.0 inches
3) Low Low Low, Level 1	> -129 inches <sup>A</sup>	> -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
<b>2. SECONDARY CONTAINMENT ISOLATION</b>		
a. Reactor Vessel Water Level - Low Low, Level 2	> -38.0 inches <sup>A</sup>	> -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
<b>3. MAIN STEAM LINE ISOLATION</b>		
a. Reactor Vessel Water Level - Low Low Low, Level 1	> -129 inches <sup>A</sup>	> -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
<b>MAIN STEAM LINE ISOLATION (Continued)</b>		
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
<b>4. REACTOR WATER CLEANUP SYSTEM ISOLATION</b>		
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
f. RWCU Flow - High	≤ 426 gpm	≤ 436 gpm
g. Manual Initiation	NA	NA
<b>5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</b>		
a. RCIC Steam Line Δ Pressure - High	≤ 153" H <sub>2</sub> O	≤ 165" H <sub>2</sub> O
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.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NO. NPF-14  
AMENDMENT NO. 90 TO FACILITY OPERATING LICENSE NO. NPF-22  
PENNSYLVANIA POWER & LIGHT COMPANY  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2  
DOCKET NOS. 50-387 AND 388

1.0 INTRODUCTION

By letter dated January 9, 1991, as supplemented by letters dated August 19, 1991, June 22, 1992, and August 3, 1992, the Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc. (the licensees) submitted a request for changes to the Susquehanna Steam Electric Station (SSES), Units 1 and 2, Technical Specifications (TS). The requested changes would make changes to the technical specifications to prevent inadvertent isolation of the Reactor Water Cleanup (RWC) system due to high seasonal temperatures while still providing timely leak detection capability. The August 9, 1991, June 22, 1992, and August 3, 1992, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

Ambient and differential temperature conditions are monitored in the RWC penetration room to provide indication of leakage from the Reactor Coolant Pressure Boundary (RCPB). Control room annunciation and automatic system isolation will occur if the temperatures exceed predetermined setpoints. The purpose of this leak detection and isolation function is to prevent the release of radioactive material outside the primary containment boundary. However, a leak rate basis was not specifically defined for the temperature setpoints that currently exist in the Technical Specifications for RWC isolation.

At Susquehanna, the RWC system is currently subject to inadvertent isolation due to high ambient temperatures that occur during the summer months. Inadvertent isolation of the RWC system can result in operational problems due to chemistry excursions that subsequently occur in the reactor coolant system (RCS), and such RWC system transients can cause leaks in the RWC pump seals.

On July 12, 1991, a temporary waiver of compliance was granted by the staff that allowed the licensee to increase the RWCU penetration room ambient temperature isolation setpoint from 118.3 °F to 131 °F. The waiver was in effect until October 15, 1991, and was intended to prevent inadvertent isolation of the RWCU system as a result of high outdoor temperatures during the summer months.

## 2.0 EVALUATION

The existing Technical Specifications for Susquehanna require that the RWCU system be isolated if the ambient room temperature exceeds 118.3 °F, or if the differential temperature exceeds 35.3 °F. These temperature limits were originally established to isolate RCS leakage outside containment that could occur due to a breach in the RWCU system. However, a rigorous basis was not established for these initial temperature isolation setpoints. In addition, sufficient margin was not included in these setpoints to account for seasonal temperature variations that can occur or for normal operational occurrences such as a loss of heating, ventilation, and air conditioning (HVAC). Consequently, the RWCU system is subject to spurious isolation during the summer months due to high ambient temperatures, and could be subject to spurious isolation due to high differential temperatures during winter months if loss of HVAC were to occur.

In its submittal, PP&L requested that the RWCU penetration room high ambient temperature isolation setpoint be changed to 131 °F, with an allowable value of 137 °F; and that the differential temperature isolation setpoint be changed to less than or equal to 40.5 °F, with an allowable value of less than or equal to 43.5 °F. Also, the licensee requested that the allowable value for high differential temperature isolation in the RWCU pump rooms and heat exchanger rooms be changed to less than or equal to 72 °F.

### 2.1 Isolation Temperature Bases

PP&L established the following criteria for selecting the RWCU penetration room isolation temperature trip setpoints:

- a. Leak detection temperature trip setpoints are selected to detect and isolate a leak that is normally less than 25 gpm and below the flow rate corresponding to the critical crack size for the system piping.
- b. Leak detection isolation temperature trip setpoints are set below fire suppression systems actuation setpoints.
- c. Leak detection isolation temperature trip setpoints are set high enough to avoid inadvertent isolation caused by normal temperature transients or abnormal transients caused by non-leak conditions (such as loss of ventilation).

- d. Leak detection isolation temperature trip setpoints are set using worst-case conditions (high temperature - winter conditions; differential temperature - summer conditions).
- e. Leak detection isolation temperature trip setpoints are set to include allowance for instrument tolerance and instrument drift.
- f. Leak detection isolation temperature trip setpoints are established such that the leak will be detected and isolated within a reasonable time (<24 hours).
- g. Leak detection isolation temperature trip setpoints are established such that the radiological release that occurs prior to system isolation will not exceed the control room and offsite dose limitations that are stated in the regulations.

## 2.2 RWCU Penetration Room Temperature Isolation Requirements

The licensee has analytically determined the temperature response spectra in the RWCU penetration room for various plant conditions, including winter operation, summer operation, loss of ventilation, and for postulated RWCU system leakage rates of 5 gpm and 25 gpm. Applying the criteria stated in Section 3.1 above, the licensee established allowable values and isolation setpoints for the high ambient and high differential temperature isolation functions. Although RWCU leak rates of 5 gpm were analyzed, the licensee determined that such a small leak rate could not serve as a basis for RWCU isolation because the leak could not be detected within a reasonably short period of time without subjecting the RWCU system to spurious isolation due to seasonal temperature variations.

### RWCU Penetration Room High Ambient Isolation Temperature - Allowable Value and Trip Setpoint

Based on the analyses that were performed, the licensee determined that the appropriate temperatures for the TS required Allowable Value and Trip Setpoint for RWCU penetration room high ambient temperature isolation should be less than or equal to 137 °F and 131 °F, respectively. The existing TS requires these values to be less than or equal to 125.3 °F and 118.3 °F, respectively. Assuming winter conditions with HVAC operating (worst case), the licensee's analysis for a 25 gpm leak in the RWCU penetration room indicated that the trip setpoint of 131 °F would satisfy the selection criteria. Based on its analysis, the licensee determined that a 25 gpm leak would cause RWCU penetration room temperatures to exceed 131 °F within 1.5 hours. Also, recognizing that the RWCU penetration room temperatures occasionally approached 115 °F during the summer months, the calculated Trip Setpoint provided a margin of about 15 °F for any unexpected spurious temperature fluctuations that may occur.



Upon a loss of HVAC, the licensee calculated that the temperatures in the RWCU penetration rooms would reach 138 °F within 24 hours assuming summer ambient temperature conditions of 115 °F in the RWCU penetration room. However, due to TS requirements (TS 3.6.5) and operational restrictions stated in the Emergency Operating Procedures, the plant is required to be shutdown within ten hours following a loss of reactor building HVAC. The licensee's analysis indicated that the RWCU penetration room temperature would approach 131 °F four hours after HVAC is lost and the temperature would reach approximately 134 °F 10 hours after HVAC is lost. Therefore, the selected RWCU penetration room Trip Setpoint would allow a minimum of about 4 hours for plant personnel to respond to a loss of reactor building HVAC before RWCU is isolated on high ambient temperature.

#### RWCU Penetration Room High Differential Isolation Temperature - Allowable Value and Trip Setpoint

Based on the analyses that were performed, the licensee determined that the appropriate temperatures for the TS required Allowable Value and Trip Setpoint for RWCU penetration room high differential temperature isolation should be less than or equal to 43.5 °F and 40.5 °F, respectively. The existing TS Allowable Value and Trip Setpoint for the RWCU penetration room high differential temperature isolation function is 44.3 °F and 35.3 °F, respectively. Assuming the minimum initial differential temperature under summer conditions (worst case), the licensee's analysis for a 25 gpm leak in the RWCU penetration room indicated that the penetration room differential temperature trip setpoint of 40.5 °F would satisfy the selection criteria. Recognizing that both loss of HVAC air flow during summer conditions and loss of heating capability under winter conditions created extreme RWCU penetration room differential temperature conditions, the Trip Setpoint provided a margin of about 10 °F for any unexpected spurious temperature fluctuations that may occur between HVAC inlet and RWCU ambient conditions.

#### RWCU Pump Rooms and Heat Exchanger Rooms High Differential Isolation Temperature - Allowable Value

Based on its analyses, the licensee concluded that the allowable value for high differential temperature isolation in the RWCU pump rooms and heat exchanger rooms should be changed to less than or equal to 72 °F from the existing value of less than or equal to 78 °F. This value is more conservative than the existing TS value.

### 2.3 Radiological Considerations

The licensee analyzed the consequences of a coolant leak outside primary containment in calculation SE-B-NA-078. Fifty gpm of reactor grade water was assumed to leak into secondary containment at a concentration of 4.0  $\mu\text{Ci/gm}$  Dose Equivalent Iodine-131 (maximum allowable coolant concentration of iodine for SSES operation). No credit for removal, holdup, or decay was taken; and the leak was isolated after 48 hours. The licensee's analysis concluded that the resultant offsite and control room doses fell far below 10 CFR Part 100 offsite dose limits and 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 19 control room dose limits.

The licensee also analyzed the consequences of a reactor steam leak in calculation FX-C-DAM-010. In this case, a 50 gpm water equivalent steam leak was assumed to occur over a 24-hour period. Again, no credit for removal, holdup, or decay was taken. The licensee's analysis concluded that the resultant offsite and control room doses fell far below 10 CFR Part 100 offsite dose limits and 10 CFR Part 50, Appendix A, GDC-19 control room dose limits.

### 2.4 Miscellaneous Considerations

In addition to the analyses that were performed, the licensee provided the following additional information in support of the requested changes to the Technical Specifications:

- a. Although the SSES Final Safety Analysis Report (FSAR) does not specifically analyze a 25 gpm RCS leak outside containment, other accidents which result in coolant leakage outside containment are analyzed in FSAR Section 15.6.2 (Instrument Line Break) and FSAR Section 15.6.4 (Steam System Piping Break Outside Containment). The 25 gpm RWCU leak rate that is assumed is bounded by the analysis in FSAR Section 15.6.4.
- b. FSAR Table 5.2-10 shows that a leak rate of 25 gpm is less than those leak rates associated with the onset of unstable pipe rupture.
- c. The effects of the new design basis leak rate on equipment, procedures, and personnel were assessed and found to be minimal.
- d. All areas with steam leak detection circuitry have their temperatures (and differential temperatures) available in the main control room for monitoring.
- e. The alarm response procedures identify specific actions required including observation, confirmation, isolation, and repair of leaks. Visual observation of a steam leak, or rising room temperatures, or the occurrence of a pre-isolation temperature alarm in the main control room would invoke operator action without attempting to quantify the leak rate, or waiting for the temperature to reach the isolation setpoint.

- f. All equipment required to function within the environmental zone of the leak is included in the equipment qualification program. The equipment is qualified for the effects of a high energy line break - HELB.

## 2.5 Staff Findings

Since temperature isolation setpoints are based on analysis and a large degree of uncertainty exists, the staff position is that the leakage detection system initiate system isolation when the area temperature conditions exceed the threshold for spurious isolation. Factors to be considered when establishing the threshold for spurious isolation include seasonal temperature variations assuming a loss of normal room ventilation or heating for short periods of time and temperatures that will be reached in the protected area during accident conditions. The isolation leakage rate under the most conservative initial conditions should normally be less than 25 gpm.

The requested temperature changes for the TS Allowable Values and Trip Setpoints for RWCU isolation satisfy the criteria established by the licensee and discussed in Section 3.1 of this Safety Evaluation (SE), and also provide for RWCU isolation when penetration room temperatures exceed the threshold for spurious isolation as discussed above. The temperature limits that have been established by the licensee will minimize spurious isolations of the RWCU system while ensuring that system leakage will be isolated within a reasonably short period of time. Also, the staff noted that the requested changes to the Allowable Values for high differential temperature isolation in the RWCU penetration rooms, pump rooms and heat exchanger rooms was conservative.

The licensee has analyzed the radiological consequences of an RCS leak outside primary containment and has determined that the resultant offsite and control room doses fall far short of 10 CFR Part 100 offsite dose limits and 10 CFR Part 50, Appendix A, GDC-19 control room dose limits. The licensee has also determined that a 25 gpm RWCU leak rate is bounded by the analysis contained in FSAR Section 15.6.4 (Steam System Piping Break Outside Containment). The staff agrees with these determinations.

The licensee has determined that all equipment required to function within the environmental zone of the leak is included in the equipment qualification program and that a 25 gpm leak rate from the RWCU system will not result in a catastrophic pipe failure. Also, as discussed in Section 3.4 of this SE, the licensee has established operational controls to ensure that RCS leakage outside primary containment is identified in a short period of time and that appropriate corrective actions will be taken. These elements are necessary to provide added assurance that the reactor coolant pressure boundary (RCPB) will be adequately maintained and to ensure that safety related equipment will remain operable.

The staff has reviewed the licensee's request and based on the considerations stated above, the staff has found that the proposed RWCU penetration room ambient temperature setpoint of 131 °F and differential temperature setpoint of 40.5 °F are acceptable.

## 2.6 Summary

Based on the considerations and findings discussed in this SE, the staff has determined that the requested changes to the RWCU isolation temperature values are acceptable and satisfy the requirements stated by GDC 30, and the guidance of Regulatory Guide 1.45 and Section 5.2.5 of the Standard Review Plan. The established values will prevent inadvertent isolation of the RWCU system due to high seasonal temperatures while still providing timely leak detection capability. The increase in isolation temperature setpoints will still limit the offsite doses due to leaks outside containment to a small fraction of 10 CFR Part 100 limits and is within 10 CFR Part 50, Appendix A, GDC 19 control room dose limits.

## 3.0 STATE CONSULTATION

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

## 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (57 FR 39713). Accordingly, the amendments meet eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 5.0 CONCLUSION

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

Principal Contributors: James E. Tatum  
James J. Raleigh

Date: October 3, 1992