

January 31, 1994

Docket Nos. 50-387  
and 50-388

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

Dear Mr. Byram:

SUBJECT: REVISIONS TO TEMPERATURE LEAK DETECTION, SUSQUEHANNA STEAM ELECTRIC  
STATION, UNITS 1 AND 2 (PLA-3487) (TAC NOS. M80107 AND M80108)

The Commission has issued the enclosed Amendment No. 132 to Facility  
Operating License No. NPF-14 and Amendment No. 99 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, as  
supplemented by letters dated August 19, 1991, June 22, 1992 and August 3,  
1992.

These amendments change the Technical Specifications to revise the isolation  
setpoints for the ambient temperature switches for the High Pressure Coolant  
Injection and Reactor Core Isolation Cooling Systems room area coolers.  
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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PDR ADOCK 05000387  
P PDR

Enclosures:

1. Amendment No. 132 to License No. NPF-14
2. Amendment No. 99 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures:  
See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 31, 1994

Docket Nos. 50-387  
and 50-388

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

Dear Mr. Byram:

SUBJECT: REVISIONS TO TEMPERATURE LEAK DETECTION, SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 (PLA-3487) (TAC NOS. M80107 AND M80108)

The Commission has issued the enclosed Amendment No. 132 to Facility Operating License No. NPF-14 and Amendment No. 99 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, as supplemented by letters dated August 19, 1991, June 22, 1992 and August 3, 1992.

These amendments change the Technical Specifications to revise the isolation setpoints for the ambient temperature switches for the High Pressure Coolant Injection and Reactor Core Isolation Cooling Systems room area coolers.

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 black ink, appearing to read "Richard J. Clark", written over a horizontal line.

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. 132 to License No. NPF-14
2. Amendment No. 99 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Robert G. Byram  
Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,  
Units 1 & 2

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

PENNSYLVANIA POWER & LIGHT COMPANY

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-387

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132  
License No. NPF-14

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.

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PDR ADOCK 05000387  
P PDR

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. 132 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: January 31, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 132

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

REMOVE

3/4 3-19  
3/4 3-20

INSERT

3/4 3-19  
3/4 3-20\*

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
<u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</u> (Continued)		
d. RCIC Equipment Room Temperature - High	≤ 167°F**	≤ 174°F**
e. RCIC Equipment Room Δ Temperature - High	≤ 89°F	≤ 98°F*
f. RCIC Pipe Routing Area Temperature - High	≤ 167°F##	≤ 174°F##
g. RCIC Pipe Routing Area Δ Temperature - High	≤ 89°F##	≤ 98°F##*
h. RCIC Emergency Area Cooler Temp. - High	≤ 167°F	≤ 174°F
i. Manual Initiation	NA	NA
j. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
6. <u>HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION</u>		
a. HPCI Steam Line Flow - High	≤ 350 inches H <sub>2</sub> O	≤ 367 inches H <sub>2</sub> O
b. HPCI Steam Supply Pressure - Low	≥ 104 psig	≥ 90 psig
c. HPCI Turbine Exhaust Diaphragm Pressure - High	≤ 10 psig	≤ 20 psig
d. HPCI Equipment Room Temperature - High	≤ 167°F	≤ 174°F
e. HPCI Equipment Room Δ Temperature - High	≤ 89°F	≤ 98°F
f. HPCI Emergency Area Cooler Temp. - High	≤ 167°F	≤ 174°F
g. HPCI Pipe Routing Area Temperature - High	≤ 167°F##	≤ 174°F##
* These trip functions need not be OPERABLE from October 19, 1989 to January 19, 1990.		

TABLE 3.3.2-2 (Continued)

## ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
h. HPCI Pipe Routing Area $\Delta$ Temperature - High	$\leq 89^{\circ}\text{F}##$	$\leq 98^{\circ}\text{F}##^{**}$
i. Manual Initiation	NA	NA
j. Drywell Pressure - High	$\leq 1.72$ psig	$\leq 1.88$ psig
<b>7. RHR SYSTEM SHUTDOWN COOLING/HEAD SPRAY MODE ISOLATION</b>		
a. Reactor Vessel Water Level - Low, Level 3	$\geq 13.0$ inches <sup>*</sup>	$\geq 11.5$ inches
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	$\leq 98$ psig	$\leq 108$ psig
c. RHR Flow - High	$\leq 25,000$ gpm	$\leq 26,000$ gpm
d. Manual Initiation	NA	NA
e. Drywell Pressure - High	$\leq 1.72$ psig	$\leq 1.88$ psig
<p>* See Bases Figure B 3/4 3-1.  # Lower setpoints for TSH-G33-1N600 E, F and TDSH-G33-1N602 E, F.  ## 15 minute time delay.  ** This trip function need not be OPERABLE from October 19, 1989 to January 19, 1990.</p>		





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

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. 99  
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. 99 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: January 31, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 99

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 page is provided to maintain document completeness.\*

REMOVE

3/4 3-19  
3/4 3-20

INSERT

3/4 3-19  
3/4 3-20\*

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
<u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION (Continued)</u>		
d. RCIC Equipment Room Temperature - High	≤ 167°F	≤ 174°F
e. RCIC Equipment Room Δ Temperature - High	≤ 89°F	≤ 98°F*
f. RCIC Pipe Routing Area Temperature - High	≤ 167°F##	≤ 174°F##
g. RCIC Pipe Routing Area Δ Temperature - High	≤ 89°F##	≤ 98°F##*
h. RCIC Emergency Area Cooler Temp. - High	≤ 167°F	≤ 174°F
i. Manual Initiation	NA	NA
j. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
<b>6. <u>HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION</u></b>		
a. HPCI Steam Line Flow - High	≤ 275 inches H <sub>2</sub> O	≤ 292 inches H <sub>2</sub> O
b. HPCI Steam Supply Pressure - Low	≥ 104 psig	≥ 90 psig
c. HPCI Turbine Exhaust Diaphragm Pressure - High	≤ 10 psig	≤ 20 psig
d. HPCI Equipment Room Temperature - High	≤ 167°F	≤ 174°F
e. HPCI Equipment Room Δ Temperature - High	≤ 89°F	≤ 98°F
f. HPCI Emergency Area Cooler Temp. - High	≤ 167°F	≤ 174°F
g. HPCI Pipe Routing Area Temperature - High	≤ 167°F##	≤ 174°F##
h. HPCI Pipe Routing Area Δ Temperature - High	≤ 89°F##	≤ 98°F##*
i. Manual Initiation	NA	NA
j. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
* These trip functions need not be OPERABLE from October 19, 1989 to January 19, 1990.		

SUSQUEHANNA - UNIT 2

3/4 3-19

Amendment No. 99

**TABLE 3.3.2-2 (Continued)**

**ISOLATION ACTUATION INSTRUMENTATION SETPOINTS**

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
<b>7. RHR SYSTEM SHUTDOWN COOLING/HEAD SPRAY MODE ISOLATION</b>		
a. Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches <sup>#</sup>	≥ 11.5 inches
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	≤ 98 psig	≤ 108 psig
c. RHR Flow - High	≤ 25,000 gpm	≤ 26,000 gpm
d. Manual Initiation	NA	NA
e. Drywell Pressure - High	≤ 1.72 psig	≤ 1.88 psig
<p>* See Bases Figure B 3/4 3-1.                      # Lower setpoints for TSH-G33-2N600 E, F and TDSH-G33-2N602 E, F.                      ## 15 minute time delay.</p>		



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO.132 TO FACILITY OPERATING LICENSE NO. NPF-14  
AMENDMENT NO. 99 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 (PP&L or the licensee) submitted a request for changes to the Susquehanna Steam Electric Station (SSES), Units 1 and 2, Technical Specifications (TS). The requested changes would revise the isolation setpoints for the ambient temperature switches in the High Pressure Coolant Injection (HPCI) and the Reactor Core Isolation Cooling (RCIC) room cooler air inlets. The application has also requested changes to the isolation setpoints for the ambient and differential temperature detectors in the Reactor Water Cleanup (RWCU) penetration room. The changes pertaining to the RWCU system were approved by Amendment Nos. 123 and 90 for Units 1 and 2, respectively, issued October 3, 1992.

Section 5.2.5.1.3 of the Final Safety Analysis Report (FSAR) for the SSES describes the various means used to detect possible abnormal leakage of primary coolant (or steam) outside the primary containment. There are multiple means used to detect possible leakage, including area radiation monitors, ambient and differential temperature sensors, flow and differential flow elements, and pressure and differential pressure instruments. This application only involves two temperature sensors and this safety evaluation will primarily discuss the temperature-based leak detection method in the HPCI and RCIC rooms.

A differential temperature sensing system is installed in each room containing equipment that interfaces with the reactor coolant pressure boundary. These are the HPCI, RCIC, Residual Heat Removal (RHR) and RWCU systems equipment rooms, and the main steam line tunnel. Temperature sensors are placed in the inlet and outlet ventilation ducts. Other sensors are installed in the equipment areas to monitor ambient temperature. A differential temperature switch between each set of sensors and/or ambient temperature switch initiates an alarm and isolation when the temperature reaches a preset value. The HPCI,

RCIC and RHR leak detection area ambient temperature switch setpoints are designed to initiate isolation signals at 167 °F. This setpoint includes sufficient margin above the post LOCA maximum area temperature to preclude inadvertent isolation signals.

The HPCI, RCIC and RHR ventilation inlet and exhaust differential temperature switch setpoints are designed to initiate isolation signals at a differential temperature of 89 °F. This setpoint includes sufficient margin to prevent inadvertent isolation signals when the area ventilation exhaust is at the maximum post LOCA temperature, and the ventilation inlet corresponds to the minimum reactor building recirculating ventilation design temperature. This setpoint will allow wide fluctuations in outside air temperature without causing inadvertent isolation signals.

### 1.1 HPCI System Leak Detection

The steamline of the HPCI system is constantly monitored for leaks by the leak detection system. Leaks from the HPCI steamline will cause a change in at least one of the following monitored operating parameters; sensed area temperature, steam pressure, or steam flow rate. If the monitored parameters indicate that a leak may exist, the detection system responds by activating an alarm and depending upon the activating parameter, initiates HPCI auto-isolation action.

The HPCI leakage detection system consists of three types of monitoring circuits. The first of these monitors area ambient and differential temperature, triggering the alarm circuit when the temperature rises above the preset maximum. The second type of circuit utilized by the leakage detection system monitors the flow rate, or differential pressure, through the steamline, triggering an alarm circuit when flow rate exceeds a preset maximum. The third type of circuit utilized by the HPCI leakage detection system monitors the steamline pressure upstream of the differential pressure element. Alarm outputs from all three circuits are also used to generate the HPCI auto-isolation signal.

The two division HPCI temperature monitors work on a one-out-of-two logic that initiates the isolation logic. There are five temperature monitors per division which consist of three area (two ambient and one differential) and two tunnel (one ambient and one differential) temperature monitors. The tunnel temperature signals are time delayed before initiating the isolation logic.

## 1.2 RCIC System Leak Detection

The steamlines of the RCIC system are constantly monitored for leaks by the leak detection system. Leaks from the RCIC will cause a change in at least one of the following monitored operating parameters; area temperature, steam pressure, or steam flow rate. If the monitored parameters indicate that a leak may exist, the detection system responds by activating an annunciator and initiating a RCIC isolation trip logic signal.

The RCIC leak detection subsystem consists of three types of monitoring circuits. The first of these monitors ambient and differential temperature, triggering an annunciator when the temperature rises above a preset maximum. The second type of circuit utilized by the leak detection system monitors the flow rate (differential pressure) through the steamline, triggering an annunciator when the differential pressures rises above a preset maximum. The third type of circuit utilized by the leak detection system monitors the steamline pressure upstream of the differential pressure element and also is annunciated. Alarm outputs from all three circuits are also used to generate the RCIC auto-isolation signal.

The RCIC area temperature monitoring circuit is similar to the one described above for the HPCI area temperature monitoring system. Using one-out-of-two logic, the RCIC area temperature monitoring circuit activates an annunciator and initiates a RCIC isolation signal when the temperature rises above a preset limit.

## 2.0 EVALUATION

In both the HPCI and RCIC rooms, there is a room cooler that sits on the floor. Inside each cooler is a fan that pulls air from the room across the heat exchanger coils and discharges the air back into the room. The fans are interlocked with the HPCI and RCIC pumps, so that the fans only operate when the HPCI or RCIC system is operating. The heat exchangers are cooled by the Emergency Service Water (ESW) system. The purpose of the heat exchangers is to reduce the heat input into the room from the steam line and turbine when the HPCI or RCIC system are operating. Mounted on the outside of each heat exchanger (upstream of the fan) is a temperature element. As might be expected when you see the arrangement, the temperature sensors on the outside of the coolers are monitoring room air temperature. Located around each room are other temperature sensors which also monitor room air temperature. Since both sets of sensors are monitoring air temperature in the same room, the temperature readings on both sets of sensors are not significantly different from one another. In Table 3.3.2-2 of the TSs, the isolation trip setpoint for both the HPCI and RCIC room temperature sensors is 167 °F (with an allowable value of 174 °F). (In the Table, items 5f and 6d are referred to as "Pipe Routing Area Temperature-High.") The isolation trip setpoint in the same table for the temperature sensors on the outside of the room coolers is



now 147 °F, with an allowable value of 154 °F. (In the TSs, these temperature sensors are referred to as "Emergency Area Cooler Temperature-High.") As stated in the Introduction above, the FSAR states that: "the HPCI, RCIC and RHR leak detection area ambient temperature switch setpoints are designed to initiate isolation signals at 167 °F." There is no mention made of any other temperature for the isolation setpoint for the room air sensors.

The change in the TSs proposed by the licensee is to change the trip setpoints for the sensors on the outside of the room area coolers (items 5h and 6f in Table 3.3.2-2) from 147 °F to 167 °F to be identical to the room area sensors. Also, the licensee proposes to change the allowable value for these same sensors to 174 °F to be the same as for the room area sensors.

A steam leak detection task force was formed in 1988 when the licensee found miswiring of the Reactor Building Steam Tunnel Temperature elements. One of the actions of this task force was to confirm, via task team walkdowns, that all steam leak detection temperature elements were properly located. In addition to the steam tunnel errors, this walkdown identified additional problems with temperature element locations in the Unit 2 HPCI and the Unit 1 RWCU rooms. These temperature elements have since been relocated to their proper location. All other temperature element locations were confirmed to be correct. As part of this program, the licensee also reconstituted the design bases for the temperature based steam leak detection and isolation circuitry in rooms within secondary containment which interface with the reactor coolant system. Reconstitution of the design bases started with modeling each room in which steam leak detection circuitry is installed, and calculating room temperature response to postulated leak rates. Initial analyses used leak rates of 5 gpm and 25 gpm. PP&L used the Compartment Transient Temperature Analysis Program (COTTAP) computer program to generate room thermal response curves under postulated leak conditions. The 25 gpm postulated leak rate is the General Electric (GE) design basis for calculating isolation setpoints as described in GE document EDE-17-0689. This design basis is utilized by other BWRs such as Perry, Grand Gulf, Clinton and River Bend. The use of this postulated leak rate is reasonable, considering that the piping is austenitic stainless steel, a very ductile material, the general acceptance of leak-before-break for this material and that a leak rate of 25 gpm has been demonstrated to be well below the leak rates associated with the onset of unstable pipe rupture. The COTTAP computer program was described in detail in Attachment A to the licensee's response of August 19, 1991 to our request of June 13, 1991 for additional information. The "Theory and Input Description Manual" for COTTAP-2, Revision 1 along with the computer printouts, curves, input parameters, etc. was provided by the licensee's letter of June 23, 1992.

For the HPCI room, the current TS high ambient trip point is 167 °F. The computer calculations on temperature response at a presumed leakage rate of 25 gpm at rated process conditions shows that the existing setpoint (167 °F) is reached at about 18 minutes. A smaller leak rate of 12-15 gpm would cause the setpoint to be reached in 4 hours.

For the RCIC area, the current TS high ambient trip point is also 167 °F. The calculated temperature response in the COTTAP model with a presumed leakage rate of 25 gpm shows that the existing setpoint (167 °F) is reached in about 10 minutes. A smaller leak rate of 10 gpm would cause the setpoint to be reached in 4 hours.

As discussed above, the extensive computer modeling was a two-year effort by the licensee to redefine the design base for the bulk of the temperature isolation setpoints as described in the FSAR. The objective was to establish an analytically consistent and uniform design basis for the bulk of the existing temperature-based isolation circuit setpoints without changing those setpoints.

The only change requested to the isolation setpoints is to eliminate the inconsistency between the isolation setpoints for the temperature sensors mounted on the air inlets to the room coolers and the setpoints for the wall mounted temperature sensors in the same room. The isolation setpoints for the wall-mounted circuits in the TSs is 167 °F for both the HPCI and RCIC rooms. The isolation setpoints for room cooler circuits for the current TSs is 147 °F. However, both sensors are monitoring the same room air temperature and historically have recorded essentially the same temperature. The writer personally examined the room arrangements. Considering the layout of the steam lines to the turbine, it does not appear that the sensors mounted on the room coolers would detect a steam leak any sooner than the wall-mounted sensors. We agree with the licensee that the isolation setpoints for both circuits should be the same.

The analyses submitted by the licensee have demonstrated that establishing isolation setpoints based on a postulated 25 gpm leak rate is reasonable and will isolate any leak well before it would lead to a pipe break. Both the procedures require operator rounds into the HPCI and RCIC areas once-per-day. All areas with steam leak detection circuitry have their temperatures (and differential temperatures) available in the main control room for monitoring. The alarm response procedures identify specific action 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. Prolonged operation with any significant leak is not anticipated.

The HPCI and RCIC system are the only two high pressure emergency core cooling systems. The automatic isolation setpoint should not be so low as to take these important systems out of service for minor steam leaks such as from valve packing. Raising the isolation setpoint for the temperature sensors on the two-room coolers to be the same as the isolation setpoint for the room temperature sensors eliminates an inconsistency and has been justified by the licensee.

The proposed changes to the TSs are acceptable.

### 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 (58 FR 32389). 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 Contributor: R. Clark

Date: January 31, 1994