January 9, 19

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

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
(TAC NOS. M90482 AND M90483)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 140 to Facility Operating License No. NPF-14 and Amendment No. 110 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 September 26, 1994.

These amendments change the Technical Specifications for each of the units to remove the requirement for the average power range monitors (APRMs) to be operable while the plant is in Operational Condition 5, refueling status. However, the amendment does not change the requirement for the APRMs to be operable when the reactor mode switch is in Startup during a shutdown margin demonstration.

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/
Chester Poslusny, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-387/50-388
Enclosures:
1. Amendment No. 140 to License No. NPF-14
2. Amendment No. 110 to License No. NPF-22
3. Safety Evaluation

cc w/encls:
See next page

DISTRIBUTION:

Docket File	MO'Brien(2)	CGrimes	RJones
PUBLIC	CPoslusny	JWermiel	
PDI-2 Reading	OGC	ACRS(4)	
SVarga	OPA	OC/LFDCB	
JZwolinski	GHill(4)	JWhite, RGN-I	
JStolz			

OFC	:PDI-2/LA	:PDI-2/PM	:HICB	:SRXB	:OGC	:PDI-2/D	:
	Milton	CP	JW	RE	GB		
NAME	:MO'Brien	:CPoslusny:rb	:JWermiel	:RJones	:RBachmann	:JStolz	:
DATE	:11/28/94	:12/2/94	:12/21/94	:12/16/94	:12/23/94	:1/5/95	:

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January 9, 19

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Pennsylvania Power and Light Company
2 North Ninth Street
Allentown, PA 18101

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These amendments change the Technical Specifications for each of the units to remove the requirement for the average power range monitors (APRMs) to be operable while the plant is in Operational Condition 5, refueling status. However, the amendment does not change the requirement for the APRMs to be operable when the reactor mode switch is in Startup during a shutdown margin demonstration.

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/S/
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Docket Nos. 50-387/50-388
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JZwolinski	GHill(4)	JWhite, RGN-I	
JStolz			

OFC	:PDI-2/LA	:PDI-2/PM	:HICB	:SRXB	:OGC	:PDI-2/D	:
		CP					
NAME	:MO'Brien	:CPoslusny:rb	:JWermiel	:RJones	:RBachmann	:JStolz	:
DATE	:11/23/94	:12/2/94	:12/21/94	:12/16/94	:12/23/94	:1/5/94	:

OFFICIAL RECORD COPY
FILENAME: SU90483.AMD

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

January 9, 1995

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

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
(TAC NOS. M90482 AND M90483)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 140 to Facility Operating License No. NPF-14 and Amendment No. 110 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 September 26, 1994.

These amendments change the Technical Specifications for each of the units to remove the requirement for the average power range monitors (APRMs) to be operable while the plant is in Operational Condition 5, refueling status. However, the amendment does not change the requirement for the APRMs to be operable when the reactor mode switch is in Startup during a shutdown margin demonstration.

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

Sincerely,

Chester Poslusny

Chester Poslusny, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-387/50-388

Enclosures:
1. Amendment No. 140 to License No. NPF-14
2. Amendment No. 110 to License No. NPF-22
3. Safety Evaluation

cc w/encls:
See next page

Mr. Robert G. Byram
Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,
Units 1 & 2

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433 Orlando Avenue
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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. 140
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 September 26, 1994, 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-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. 140 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

John F. Stolz, 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 9, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 140

FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

REMOVE	INSERT
3/4 3-2	3/4 3-2
3/4 3-5	3/4 3-5
3/4 3-7	3/4 3-7
3/4 3-8	3/4 3-8
3/4 3-52	3/4 3-52
3/4 3-53	3/4 3-53
3/4 3-55	3/4 3-55
3/4 3-56	3/4 3-56

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM [a]	ACTION
1. Intermediate Range Monitors: [b]			
a. Neutron Flux - High	2 3, 4 5[c]	3 2 3[d]	1 2 3
b. Inoperative	2 3, 4 5	3 2 3[d]	1 2 3
2. Average Power Range Monitor[e]			
a. Neutron Flux - Upscale, Setdown	2 3 5[c][l]	2 2 2[d]	1 2 3
b. Flow Biased Simulated Thermal Power - Upscale	1	2	4
c. Neutron Flux - Upscale	1	2	4
d. Inoperative	1, 2 3 5[c][l]	2 2 2[d]	1 2 3
3. Reactor Vessel Steam Dome Pressure - High	1, 2[f]	2	1
4. Reactor Vessel Water Level - Low, Level 3	1, 2	2	1
5. Main Steam Line Isolation Valve - Closure	1[g]	4	4
6. Main Steam Line Radiation - High	1, 2[f]	2	5

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

(a) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter. Upon determination that a trip setpoint cannot be restored to within its specified value during performance of the CHANNEL CALIBRATION, the appropriate ACTION, 3.3.1a or 3.3.1b, shall be followed.

(b) This function is automatically bypassed when the reactor mode switch is in the Run position.

(c) The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn* and shutdown margin demonstrations performed per Specification 3.10.3.

(d) The non-coincident NMS reactor trip function logic is such that all channels go to both trip systems. Therefore, when the "shorting links" are removed, the Minimum OPERABLE Channels Per Trip System is 4 APRMS and 6 IRMS.

(e) An APRM channel is inoperable if there are less than 2 LPRM inputs per level or less than 14 LPRM inputs to an APRM channel.

(f) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.

(g) This function is automatically bypassed when the reactor mode switch is not in the Run position.

(h) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(i) With any control rod withdrawn.*

(j) This function shall be automatically bypassed when turbine first stage pressure is less than 108 psig or 17% of the value of first stage pressure in psia at valves wide open (V.W.O.) steam flow, equivalent to THERMAL POWER of about 24% of RATED THERMAL POWER.

(k) Also actuates the EOC-RPT system.

(l) This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

---

* Not required for control rods removed per Specification 3.9.10.1 or 3.9.10.2.

TABLE 4.3.1.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. Intermediate Range Monitors:				
a. Neutron Flux - High	S/U,S,[b]	S/U[c],W	SA	2
	S	W	SA	3, 4, 5
b. Inoperative	NA	S/U[c],W	NA	2, 3, 4, 5
2. Avg. Power Range Monitor[f]				
a. Neutron Flux - Upscale, Setdown	S/U,S,[b]	S/U[c],W	SA	2
	S	W	SA	3,5[k]
b. Flow Biased Simulated Thermal Power - Upscale	S,D[g]	S/U[c],Q	W[d][e],SA,R[h]	1
c. Fixed Neutron Flux - Upscale	S	S/U[c],Q	W[d],SA	1
d. Inoperative	NA	S/U[c],Q	NA	1,2,3,5[k]
3. Reactor Vessel Steam Dome Pressure - High	NA	Q	Q	1,2
4. Reactor Vessel Water Level - Low, Level 3	S	NA	Q	1,2
5. Main Steam Line Isolation Valve - Closure	NA	Q	R	1
6. Main Steam Line Radiation - High	S	Q	R	1,2[i]
7. Drywell Pressure - High	NA	Q	R	1,2

TABLE 4.3.1.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
8. Scram Discharge Volume Water Level - High				
a. Level Transmitter	NA	Q	R	1,2,5[j]
b. Float Switch	NA	Q	R	1,2,5[j]
9. Turbine Stop Valve - Closure	NA	Q	R	1
10. Turbine Control Valve Fast Closure Valve Trip System Oil Pressure - Low	NA	Q	R	1
11. Reactor Mode Switch Shutdown Position	NA	R	NA	1,2,3,4,5
12. Manual Scram	NA	W	NA	1,2,3,4,5

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
(b) The IRM and SRM channels shall be determined to overlap for at least 0.5 decades during each startup after entering OPERATIONAL CONDITION 2 and the IRM and APRM channels shall be determined to overlap for at least 0.5 decades during each controlled shutdown, if not performed within the previous 7 days.
(c) Within 24 hours prior to startup, it not performed within the previous 7 days.
(d) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER ≥ 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 3.2.2 shall not be included in determining the absolute difference.
(e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
(f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH) using the TIP system.
(g) Verify measured core flow to be greater than or equal to established core flow at the existing loop flow.
(h) This calibration shall consist of verifying the 6 ± 1 second simulated thermal power time constant.
(i) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.
(j) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.
(k) This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed by Specification 3.10.3.

TABLE 3.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. ROD BLOCK MONITOR[a]			
a. Upscale	2	1*	60
b. Inoperative	2	1*	60
c. Downscale	2	1*	60
2. APRM			
a. Flow Biased Neutron Flux - Upscale	4	1	61
b. Inoperative	4	1,2,5[f]	61
c. Downscale	4	1	61
d. Neutron Flux - Upscale, Startup	4	2,5[f]	61
3. SOURCE RANGE MONITORS			
a. Detector not full in[b]	3	2	61
	2	5	61
b. Upscale[c]	3	2	61
	2	5	61
c. Inoperative[c]	3	2	61
	2	5	61
d. Downscale[d]	3	2	61
	2***	5	61
4. INTERMEDIATE RANGE MONITORS			
a. Detector not full in	6	2,5	61
b. Upscale	6	2,5	61
c. Inoperative	6	2,5	61
d. Downscale[e]	6	2,5	61
5. SCRAM DISCHARGE VOLUME			
a. Water Level-High	2	1,2,5**	62
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW			
a. Upscale	2	1	62
b. Inoperative	2	1	62
c. Comparator	2	1	62

TABLE 3.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION

ACTION 60 - Declare the RBM inoperable and take the ACTION required by Specification 3.1.4.3.

ACTION 61 - With the number of OPERABLE Channels:

a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.

b. Two or more less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within 1 hour.

ACTION 62 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within 1 hour.

NOTES

* With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

** With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

*** Not required when eight or fewer fuel assemblies (adjacent to the SRMs) are in the core.

a. The RBM shall be automatically bypassed when a peripheral control rod is selected or the reference APRM channel indicates less than 30% of RATED THERMAL POWER.

b. This function shall be automatically bypassed if detector count rate is ≥ 100 cps or the IRM channels are on range 3 or higher.

c. This function is automatically bypassed when the associated IRM channels are on range 8 or higher.

d. This function is automatically bypassed when the IRM channels are on range 3 or higher.

e. This function is automatically bypassed when the IRM channels are on range 1.

f. This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

TABLE 4.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. ROD BLOCK MONITOR				
a. Upscale	NA	S/U[b],M	Q	1*
b. Inoperative	NA	S/U[b],M	NA	1*
c. Downscale	NA	S/U[b],M	Q	1*
2. APRM				
a. Flow Biased Neutron Flux - Upscale	S	S/U[b],W	SA	1
b. Inoperative	NA	S/U[b],W	NA	1,2,5***
c. Downscale	S	S/U[b],W	SA	1
d. Neutron Flux - Upscale, Startup	S	S/U[b],W	SA	2,5***
3. SOURCE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2,5
b. Upscale	NA	S/U[b],W	Q	2,5
c. Inoperative	NA	S/U[b],W	NA	2,5
d. Downscale	NA	S/U[b],W	Q	2,5
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2,5
b. Upscale	S	S/U[b],W	Q	2,5
c. Inoperative	NA	S/U[b],W	NA	2,5
d. Downscale	S	S/U[b],W	Q	2,5
5. SCRAM DISCHARGE VOLUME				
a. Water Level-High	NA	M	R	1,2,5**
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW				
a. Upscale	NA	S/U[b],M	Q	1
b. Inoperative	NA	S/U[b],M	NA	1
c. Comparator	NA	S/U[b],M	Q	1

TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(b) Within 24 hours prior to startup, if not performed within the previous 7 days.

* With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

** With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

*** This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

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. 110
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 September 26, 1994, 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. 110 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

John F. Stolz

John F. Stolz, 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 9, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 110

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

REMOVE	INSERT
3/4 3-2	3/4 3-2
3/4 3-5	3/4 3-5
3/4 3-7	3/4 3-7
3/4 3-8	3/4 3-8
3/4 3-52	3/4 3-52
3/4 3-53	3/4 3-53
3/4 3-55	3/4 3-55
3/4 3-56	3/4 3-56

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM [a]	ACTION
1. Intermediate Range Monitors: [b]			
a. Neutron Flux - High	2 3, 4 5[c]	3 2 3[d]	1 2 3
b. Inoperative	2 3, 4 5	3 2 3[d]	1 2 3
2. Average Power Range Monitor[e]			
a. Neutron Flux - Upscale, Setdown	2 3 5[c][l]	2 2 2[d]	1 2 3
b. Flow Biased Simulated Thermal Power - Upscale	1	2	4
c. Neutron Flux - Upscale	1	2	4
d. Inoperative	1, 2 3 5[c][l]	2 2 2[d]	1 2 3
3. Reactor Vessel Steam Dome Pressure - High	1, 2[f]	2	1
4. Reactor Vessel Water Level - Low, Level 3	1, 2	2	1
5. Main Steam Line Isolation Valve - Closure	1[g]	4	4
6. Main Steam Line Radiation - High	1, 2[f]	2	5

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

(a) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter. Upon determination that a trip setpoint cannot be restored to within its specified value during performance of the CHANNEL CALIBRATION, the appropriate ACTION, 3.3.1a or 3.3.1b, shall be followed.

(b) This function is automatically bypassed when the reactor mode switch is in the Run position.

(c) The "shorting links" shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn* and shutdown margin demonstrations performed per Specification 3.10.3.

(d) The non-coincident NMS reactor trip function logic is such that all channels go to both trip systems. Therefore, when the "shorting links" are removed, the Minimum OPERABLE Channels Per Trip System is 4 APRMS and 6 IRMS.

(e) An APRM channel is inoperable if there are less than 2 LPRM inputs per level or less than 14 LPRM inputs to an APRM channel.

(f) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.

(g) This function is automatically bypassed when the reactor mode switch is not in the Run position.

(h) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(i) With any control rod withdrawn.*

(j) This function shall not be automatically bypassed when turbine first stage pressure is greater than an allowable value of 136 psig.

(k) Also actuates the EOC-RPT system.

(l) This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

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* Not required for control rods removed per Specification 3.9.10.1 or 3.9.10.2.

TABLE 4.3.1.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. Intermediate Range Monitors:				
a. Neutron Flux - High	S/U,S,[b]	S/U[c],W	SA	2
	S	W	SA	3, 4, 5
b. Inoperative	NA	S/U[c],W	NA	2, 3, 4, 5
2. Avg. Power Range Monitor[f]				
a. Neutron Flux - Upscale, Setdown	S/U,S,[b]	S/U[c],W	SA	2
	S	W	SA	3,5[k]
b. Flow Biased Simulated Thermal Power - Upscale	S,D[g]	S/U[c],Q	W[d][e],SA,R[h]	1
c. Fixed Neutron Flux - Upscale	S	S/U[c],Q	W[d],SA	1
d. Inoperative	NA	S/U[c],Q	NA	1,2,3,5[k]
3. Reactor Vessel Steam Dome Pressure - High	NA	Q	Q	1,2
4. Reactor Vessel Water Level - Low, Level 3	S	NA	Q	1,2
5. Main Steam Line Isolation Valve - Closure	NA	Q	R	1
6. Main Steam Line Radiation - High	S	Q	R	1,2[i]
7. Drywell Pressure - High	NA	Q	R	1,2

TABLE 4.3.1.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
8. Scram Discharge Volume Water Level - High				
a. Level Transmitter	NA	Q	R	1,2,5[j]
b. Float Switch	NA	Q	R	1,2,5[j]
9. Turbine Stop Valve - Closure	NA	Q	R	1
10. Turbine Control Valve Fast Closure Valve Trip System Oil Pressure - Low	NA	Q	R	1
11. Reactor Mode Switch Shutdown Position	NA	R	NA	1,2,3,4,5
12. Manual Scram	NA	W	NA	1,2,3,4,5

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
(b) The IRM and SRM channels shall be determined to overlap for at least 0.5 decades during each startup after entering OPERATIONAL CONDITION 2 and the IRM and APRM channels shall be determined to overlap for at least 0.5 decades during each controlled shutdown, if not performed within the previous 7 days.
(c) Within 24 hours prior to startup, it not performed within the previous 7 days.
(d) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER ≥ 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 3.2.2 shall not be included in determining the absolute difference.
(e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
(f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH) using the TIP system.
(g) Verify measured core flow to be greater than or equal to established core flow at the existing loop flow.
(h) This calibration shall consist of verifying the 6 ± 1 second simulated thermal power time constant.
(i) This function is not required to be OPERABLE when the reactor pressure vessel head is unbolted or removed per Specification 3.10.1.
(j) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.
(k) This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed by Specification 3.10.3.

TABLE 3.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. ROD BLOCK MONITOR[a]			
a. Upscale	2	1*	60
b. Inoperative	2	1*	60
c. Downscale	2	1*	60
2. APRM			
a. Flow Biased Neutron Flux - Upscale	4	1	61
b. Inoperative	4	1,2,5[f]	61
c. Downscale	4	1	61
d. Neutron Flux - Upscale, Startup	4	2,5[f]	61
3. SOURCE RANGE MONITORS			
a. Detector not full in[b]	3	2	61
	2	5	61
b. Upscale[c]	3	2	61
	2	5	61
c. Inoperative[c]	3	2	61
	2	5	61
d. Downscale[d]	3	2	61
	2***	5	61
4. INTERMEDIATE RANGE MONITORS			
a. Detector not full in	6	2,5	61
b. Upscale	6	2,5	61
c. Inoperative	6	2,5	61
d. Downscale[e]	6	2,5	61
5. SCRAM DISCHARGE VOLUME			
a. Water Level-High	2	1,2,5**	62
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW			
a. Upscale	2	1	62
b. Inoperative	2	1	62
c. Comparator	2	1	62

TABLE 3.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION

ACTION 60 - Declare the RBM inoperable and take the ACTION required by Specification 3.1.4.3.

ACTION 61 - With the number of OPERABLE Channels:

a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.

b. Two or more less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within 1 hour.

ACTION 62 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within 1 hour.

NOTES

* With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

** With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

*** Not required when eight or fewer fuel assemblies (adjacent to the SRMs) are in the core.

(a) The RBM shall be automatically bypassed when a peripheral control rod is selected or the reference APRM channel indicates less than 30% of RATED THERMAL POWER.

(b) This function shall be automatically bypassed if detector count rate is ≥ 100 cps or the IRM channels are on range 3 or higher.

(c) This function is automatically bypassed when the associated IRM channels are on range 8 or higher.

(d) This function is automatically bypassed when the IRM channels are on range 3 or higher.

(e) This function is automatically bypassed when the IRM channels are on range 1.

(f) This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

TABLE 4.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. ROD BLOCK MONITOR				
a. Upscale	NA	S/U[b],M	SA	1*
b. Inoperative	NA	S/U[b],M	NA	1*
c. Downscale	NA	S/U[b],M	SA	1*
2. APRM				
a. Flow Biased Neutron Flux - Upscale	S	S/U[b],W	SA	1
b. Inoperative	NA	S/U[b],W	NA	1,2,5***
c. Downscale	S	S/U[b],W	SA	1
d. Neutron Flux - Upscale, Startup	S	S/U[b],W	SA	2,5***
3. SOURCE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2,5
b. Upscale	NA	S/U[b],W	SA	2,5
c. Inoperative	NA	S/U[b],W	NA	2,5
d. Downscale	NA	S/U[b],W	SA	2,5
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2,5
b. Upscale	S	S/U[b],W	SA	2,5
c. Inoperative	NA	S/U[b],W	NA	2,5
d. Downscale	S	S/U[b],W	SA	2,5
5. SCRAM DISCHARGE VOLUME				
a. Water Level-High	NA	Q	R	1,2,5**
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW				
a. Upscale	NA	S/U[b],M	Q	1
b. Inoperative	NA	S/U[b],M	NA	1
c. Comparator	NA	S/U[b],M	Q	1

TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(b) Within 24 hours prior to startup, if not performed within the previous 7 days.

* With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

** With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

*** This function is required to be OPERABLE only prior to and during Shutdown Margin demonstrations as performed per Specification 3.10.3.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 140 TO FACILITY OPERATING LICENSE NO. NPF-14

AMENDMENT NO. 110 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 September 26, 1994, the Pennsylvania Power and Light Company (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 change the Technical Specifications for each of the units to remove the requirement for the average power range monitors (APRMs) to be operable while the plant is in Operational Condition 5, refueling status. However, the amendment does not change the requirement for the APRMs to be operable when the reactor mode switch is in Startup during a shutdown margin demonstration.

2.0 EVALUATION

As discussed in the SSES Final Safety Evaluation Report, (FSAR) Section 1.2.2.5.1.3, the Neutron Monitoring System (NMS) is composed of in-core neutron detectors and out-of-core electronic monitoring equipment. The NMS is made up of these subsystems: Source Range Monitor (SRM), Intermediate Range Monitor (IRM), Local Power Range Monitor (LPRM), Average Power Range Monitor (APRM), Rod Block Monitor, and Traversing Incore Probe. The safety objective of the NMS is to detect conditions in the core that threaten the overall integrity of the fuel barrier due to excessive power generation and to provide signals to the Reactor Protection System to reduce power levels if necessary to preclude damage to fuel cladding. The IRM and APRM subsystems are both safety related. The IRM Subsystem provides neutron flux information from the upper portion of the source range to the lower portion of the power range, with detectors located in the reactor core region at different radial locations. The APRM Subsystem calculates the average neutron flux using local flux signal inputs from the LPRM detectors located at various radial and axial incore locations. The SRM Subsystem also monitors neutron flux during refueling operations and this non-safety system is required to be operable during shutdown conditions by the TS.

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The proposed change to the TS would in effect allow the APRM to be out of service while the reactor was in the refueling mode. Such a change can be approved if there are available alternate means to perform the function of the APRM with equal or better accuracy or responsiveness and as long as none of the assumptions and conclusions of the current accident analyses are changed. PP&L proposes that the IRM and SRM Subsystems, along with other controls, provide as equal a degree of safety as the APRM during refueling operations.

As discussed in FSAR Section 7.1.2a.1.4.4.1, the APRM Subsystem has a safety design basis to generate a trip signal in response to average neutron flux increases in time to prevent fuel damage with redundancy and independence consistent with the safety design bases of the RPS. In FSAR Section 7.1.2a.1.4.2.1, the safety design basis for the IRM Subsystem is listed as providing a trip signal that can be used to prevent fuel damage from anticipated or abnormal operational transients while the plant is operating in the intermediate power range, with redundancy and independence consistent with the safety design bases of the RPS. In FSAR Section 7.1.2a.1.4.1.1, the non-safety design basis for the SRM Subsystem is listed to include providing a measure of the time rate of change of the neutron flux and generating interlock signals to block control rod withdrawal of the count rate exceeds a preset value.

In the submittal dated September 26, 1994, PP&L indicted that during refueling operations, the following controls are implemented to avoid inadvertent reactor criticality and fuel damage:

1) Licensed plant operators are trained to operate equipment and follow approved procedures.

2) Plant approved refueling and maintenance procedures are intended to mitigate the potential for inadvertent reactor criticality.

3) SRMs indicate reactor criticality and generate a control rod block signal on high neutron flux levels. Prior to and during the time any control rod is withdrawn (except via Technical Specification 3.9.10.1 & 3.9.10.2) and Shutdown Margin demonstrations are in progress, Technical Specification Section 3.9.2 requires the shorting links be removed so that the SRMs will operate in the non-coincident scram mode to cause a reactor scram as necessary.

4) Refueling interlocks prevent the withdrawal of more than one control rod and prevent the insertion of fuel bundles into the core unless all control rod insertion signals are present.

5) The IRMs and APRMs provide an indication of local power and average power, respectively. IRMs and APRMs provide rod blocks and scram signals on high neutron flux levels.

PP&L proposed that the APRM Subsystem is not needed for safe operation of the plant while in the refueling mode because the IRM Subsystem is required to be operable as per the TS and would be available to detect any neutron flux increases above the specified setpoint, and would as per design generate an RPS trip signal to prevent fuel damage or a control rod block, as necessary. If the most likely refueling reactivity insertion transient occurred, (a core alteration event such as a control rod withdrawal or fuel assembly insertion into the core as discussed in FSAR Section 15.4.1), the IRM Subsystem would detect the increase in neutron flux more quickly than the APRM, and the safety function would be initiated sooner by this diverse and redundant safety related system. This is because the IRMs are designed and calibrated to be more sensitive to neutron flux than the APRMs. In addition, the TS requirement to have the SRM Subsystem operable during OPCON 5 provides another monitoring capability for defense-in-depth.

The licensee concluded in its submittal that the APRMs are not necessary for safe operation of the plant while operating in OPCON 5 with the mode switch in "REFUEL" for the following reasons:

- The IRMs are a safety-related subsystem of the NMS required by Technical Specifications to be OPERABLE in OPCON 5. The IRMs will generate an RPS scram or control rod block if neutron flux increased to the applicable setpoint.

- The IRMs and SRMs are designed and calibrated to be more sensitive to neutron flux than the APRMs.

- The IRMs are designed to monitor local core events while the APRMs provide a measure of core average power condition. The IRMs can monitor and react to the most probable reactivity events expected during refueling, i.e., control rod withdrawal or fuel insertion.

- The IRMs would detect and respond (control rod block or reactor scram) to an inadvertent criticality event before the APRMs would provide a trip function.

- The withdrawal of only one control rod in OPCON 5 is permitted by the "one-rod-out" interlock while in "Refuel". The core is designed to be subcritical with one rod out.

- The withdrawal of a second control rod or inadvertent addition of a fuel bundle in OPCON 5 is precluded by refueling interlocks, refueling procedures, and administrative controls.

- The APRMs will still be required to be OPERABLE during a shutdown margin demonstration performed in OPCON 5 (a special test exception in the Technical Specifications).

- The SRMs are required to be OPERABLE in OPCON 5.

The staff agrees with the licensee's conclusion that the use of the IRM Subsystem provides an equivalent or better level of safety than the APRM in its detection and response capability, and ensures adequate protection of the health and safety of the public relative to increases in neutron flux caused by refueling activities. Further, the levels of control exercised at the plant along with the IRM and SRM capabilities ensure that there are no changes in the conclusions related to probable accidents during refueling operations. Therefore, based on the information discussed above, the staff approves the deletion of the APRM operability requirement from the TS for the SSES units.

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 (59 FR 55880). 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: C. Poslusny

Date: January 9, 1995