



Pennsylvania Power & Light Company

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Harold W. Keiser
Vice President-Nuclear Operations
215/770-7502

MAR 27 1986

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Project Director
BWR Project Directorate No. 3
Division of BWR Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
REVISION TO PROPOSED AMENDMENTS 66 TO
NPF-14 AND 19 TO NPF-22
ER 100450
PLA-2620

FILE 841-8

Docket Nos. 50-387
50-388

Reference: PLA-2440, N. W. Curtis to A. Schwencer, dated April 11, 1985.

Dear Ms. Adensam:

Via the referenced letter, PP&L proposed changes to the Susquehanna SES in support of operation with one recirculation loop out of service. Based on recent discussions with your staff, we are now revising that proposal as described below. A marked up version of the revised Technical Specification pages is attached.

DESCRIPTION OF PROPOSED CHANGES

- o 3/4.4.1.1.1 ACTION a: The original changes provided 12 hours before compliance with the single loop operation (SLO) requirements of 3/4.4.1.1.2 had to be achieved. It is being revised to instead direct the operator's attention immediately to the specification which governs the condition the unit would be in.
- o 3/4.4.1.1.2 ACTION b: This ACTION has been revised to address the two general cases under which it can be entered. The first (b1) addresses initial entry into SLO, be it by "falling" into it, or by a planned maintenance activity. A total of 12 hours is provided as previously proposed, but is broken down to allow 6 hours before a HOT SHUTDOWN ACTION is entered. This 6 hours is enough time to either change setpoints or, in the case of the planned maintenance, enough time to do the work. The second case addresses finding limits out of spec during operation under single loop restrictions; this is no different in consequence than finding the appropriate limits out of spec during two loop operation. Therefore, the same ACTIONS are to be followed.

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Ms. E. Adensam

- o 3/4.4.1.1.2 L.C.O c. and ACTION e: Based on SIL-380 Rev. 1, the proposed changes provide an additional operating restriction in order to prohibit operation in a potentially unstable area of the power/flow map. This same restriction already exists for two-loop operation, but was implicitly controlled since the boundary is the two-pump minimum flow line; since operation with only one pump would allow flow to drop below this line, an explicit limit (the two pump limit) is proposed to be added to the specification governing SLO.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

The assessment provided with the referenced proposal does not change based on the above described revisions, which are either consistent or more restrictive.

Any questions on this request should be directed to Mr. R. Sgarro at (215) 770-7855.

Very truly yours,



H. W. Keiser
Vice President-Nuclear Operations

cc: M. J. Campagnone USNRC
R. H. Jacobs USNRC

T. M. Gerusky, Director
Bureau of Radiation Protection
PA Dept. of Environmental Resources
P.O. Box 2063
Harrisburg, PA 17120

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3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 RECIRCULATION SYSTEM

RECIRCULATION LOOPS - TWO LOOP OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1.1 Two reactor coolant system recirculation loops shall be in operation.
and:

- a. Total core flow shall be greater than or equal to 45 million lbs/hr, or
- b. THERMAL POWER shall be less than or equal to the limit specified in Figure ~~3.4.1.1.1~~ 3.4.1.1.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*[#], except during single loop operation.[#]

ACTION: Within the next 12 hours, either comply with the single loop operation requirements of Specification 3.4.1.1.2, or

- a. With one reactor coolant system recirculation loop not in operation, ~~immediately initiate an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1.1, and be in at least HOT SHUTDOWN within the next 12 hours.~~
- b. With no reactor coolant system recirculation loops in operation, immediately initiate an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~, and initiate measures to place the unit in at least STARTUP within 6 hours and in HOT SHUTDOWN within the next 6 hours. _{3.4.1.1.1-1}
- c. With two reactor coolant system recirculation loops in operation and total core flow less than 45 million lbs/hr and THERMAL POWER greater than the limit specified in Figure ~~3.4.1.1.1~~: _{3.4.1.1.1-1}
 - 1. Reduce THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~, or _{3.4.1.1.1-1}
 - 2. Increase core flow to greater than 45 million lbs/hr, or
 - 3. Determine the APRM and LPRM*** neutron flux noise levels within 1 hour, and:
 - a) If the APRM and LPRM*** neutron flux noise levels are less than three times their established baseline levels, continue to determine the noise levels at least once per 8 hours and within 30 minutes after the completion of a THERMAL POWER increase of at least 5% of RATED THERMAL POWER, or
 - b) If the APRM or LPRM*** neutron flux noise levels are greater than or equal to three times their established baseline levels, immediately initiate corrective action and restore the noise levels to within the required limits within 2 hours by increasing core flow to greater than 45 million lbs/hr, and/or by initiating an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~.

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3.4.1.1.1-1

*See Special Test Exception 3.10.4.

***Detectors A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

See Specification 3.4.1.1.2 for single loop operation requirements.

REACTOR COOLANT SYSTEM

RECIRCULATION LOOPS - SINGLE LOOP OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1.2 One reactor coolant recirculation loop shall be in operation with the pump speed $\leq 80\%$ of the rated pump speed, and

a. the following revised specification limits shall be followed:

1. Specification 2.1.2: the MCPR Safety Limit shall be increased to 1.07.
2. Table 2.2.1-1: the APRM Flow-Biased Scram Trip Setpoints shall be as follows:

<u>Trip Setpoint</u>	<u>Allowable Value</u>
$\leq 0.58W + 55\%$	$\leq 0.58W + 58\%$

3. Specification 3.2.1: the MAPLHGR limits shall be as follows:
 - a. GE fuel: the limits specified in Figures 3.2.1-1 and 3.2.1-2, multiplied by 0.81.
 - b. Exxon fuel: the limits specified in Figure 3.2.1-2 multiplied by 0.81.
4. Specification 3.2.2: the APRM Setpoints shall be as follows:

<u>Trip Setpoint</u>	<u>Allowable Value</u>
$S \leq (0.58W + 55\%)T$	$S \leq (0.58W + 58\%)T$
$S_{RB} \leq (0.58W + 46\%)T$	$S_{RB} \leq (0.58W + 49\%)T$

5. Table 3.3.6-2: the RBM/APRM Control Rod Block Setpoints shall be as follows:

	<u>Trip Setpoint</u>	<u>Allowable Value</u>
a. RBM - Upscale		
1.	$\leq 0.66W + 35\%$	$\leq 0.66W + 38\%$
2.	$\leq 0.66W + 37\%$	$\leq 0.66W + 40\%$

5.a.1 and 5.a.2 shall be used in conjunction with the MCPR limits specified in Figures 3.2.3-1a and 3.2.3-1b, respectively.

	<u>Trip Setpoint</u>	<u>Allowable Value</u>
b. APRM-Flow Biased	$\leq 0.58W + 46\%$	$\leq 0.58W + 49\%$

- b. APRM and LPRM*** neutron flux noise levels shall be less than three times their established baseline levels when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*, except during two loop operation.#

- c. Total core flow shall be greater than or equal to 42 million lbs/hr when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1.

ACTION:

- a. With no reactor coolant system recirculation loops in operation, take the ACTION required by Specification 3.4.1.1.1.
- b. With any of the limits specified in 3.4.1.1.2a not satisfied, take the ACTION required by the referenced Specification.
- c. With the APRM or LPRM*** neutron flux noise levels greater than or equal to three times their established baseline levels when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1, immediately initiate corrective action and restore the noise levels to within the required limits within 2 hours by initiating an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1.1-1. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours.
- d. With one or more jet pumps inoperable, be in at least HOT SHUTDOWN within 12 hours.

Replace
with
INSERT (B)

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SURVEILLANCE REQUIREMENTS

- 4.4.1.1.2.1 Upon entering single loop operation and at least once per 24 hours thereafter, verify that the pump speed in the operating loop is $\leq 80\%$ of the rated pump speed.
- 4.4.1.1.2.2 With THERMAL POWER greater than the limit specified in Figure 3.4.1.1.1-1, determine the APRM and LPRM*** neutron flux noise levels within 1 hour. Continue to determine the noise levels at least once per 8 hours and within 30 minutes after the completion of a THERMAL POWER increase $\geq 5\%$ of RATED THERMAL POWER.
- 4.4.1.1.2.3 Within 15 minutes prior to either THERMAL POWER increase resulting from a control rod withdrawal or recirculation loop flow increase, verify that the following differential temperature requirements are met if THERMAL POWER is $\leq 30\%****$ of RATED THERMAL POWER or the recirculation loop flow in the operating recirculation loop is $\leq 50\%****$ of rated loop flow:
 - a. $\leq 145^\circ\text{F}$ between reactor vessel steam space coolant and bottom head drain line coolant,
 - b. $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and the coolant in the reactor pressure vessel, and
 - c. $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and operating loop.
- 4.4.1.1.2.4 a. Establish a baseline APRM and LPRM neutron flux noise value at a point within 5% RATED THERMAL POWER of the 100% rated



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INSERTS

3/4.4.1.1.1 (Delete former ACTION a; replace with the following:)

ACTION:

(A)

- a. With one reactor coolant system recirculation loop not in operation, comply with the requirements of Specification 3/4.1.1.2 or take the associated ACTION.
-

3/4.4.1.1.2 (Delete proposed ACTION b; replace with the following:)

(B)

b. With any of the limits specified in 3/4.1.1.2a not satisfied:

1. Upon entering single loop operation, comply with the new limits within 6 hours or be in at least HOT SHUTDOWN within the following 6 hours.
 2. If the provisions of ACTION b.1 do not apply, take the ACTION(s) required by the referenced Specification(s).
-

(C)

e. With total core flow less than 42 million lbs/hr when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1, immediately initiate corrective action by either:

1. Reducing THERMAL POWER to less than the limit specified in Figure 3/4.1.1.1-1 within 4 hours, or
2. Increasing total core flow to greater than or equal to 42 million lbs/hr within 4 hours.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 RECIRCULATION SYSTEM

RECIRCULATION LOOPS - TWO LOOP OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1.1 Two reactor coolant system recirculation loops shall be in operation and:

- a. Total core flow shall be greater than or equal to 45 million lbs/hr, or
- b. THERMAL POWER shall be less than or equal to the limit specified in Figure ~~3.4.1.1.1~~. 3.4.1.1.1-1

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*[†], except during single loop operation.[‡]

ACTION: *within the next 12 hours, either comply with the single loop operation requirements of Specification 3.4.1.1.2, or*

- a. With one reactor coolant system recirculation loop not in operation, immediately initiate an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~, and be in at least HOT SHUTDOWN within the next 12 hours.
- b. With no reactor coolant system recirculation loops in operation, immediately initiate an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~, and initiate measures to place the unit in at least STARTUP within 6 hours and in HOT SHUTDOWN within the next 6 hours. 3.4.1.1.1-1
- c. With two reactor coolant system recirculation loops in operation and total core flow less than 45 million lbs/hr and THERMAL POWER greater than the limit specified in Figure ~~3.4.1.1.1~~: 3.4.1.1.1-1
 - 1. Reduce THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~, or
 - 2. Increase core flow to greater than 45 million lbs/hr, or
 - 3. Determine the APRM and LPRM*** neutron flux noise levels within 1 hour, and:
 - a) If the APRM and LPRM*** neutron flux noise levels are less than three times their established baseline levels, continue to determine the noise levels at least once per 8 hours and within 30 minutes after the completion of a THERMAL POWER increase of at least 5% of RATED THERMAL POWER, or
 - b) If the APRM or LPRM*** neutron flux noise levels are greater than or equal to three times their established baseline levels; immediately initiate corrective action and restore the noise levels to within the required limits within 2 hours by increasing core flow to greater than 45 million lbs/hr, and/or by initiating an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure ~~3.4.1.1.1~~. 3.4.1.1.1-1

Replace
with INSERT

(A)

*See Special Test Exception 3.10.4.

***Detectors A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

† See Specification 3.4.1.1.2 for single loop operation requirements.



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REACTOR COOLANT SYSTEM

RECIRCULATION LOOPS - SINGLE LOOP OPERATION

LIMITING CONDITION FOR OPERATION

3.4.1.1.2. One reactor coolant recirculation loop shall be in operation with the pump speed $\leq 90\%$ of the rated pump speed, and

a. the following revised specification limits shall be followed:

1. Specification 2.1.2: the MCPR Safety Limit shall be increased to 1.07.
2. Table 2.2.1-1: the APRM Flow-Biased Scram Trip Setpoints shall be as follows:

<u>Trip Setpoint</u>	<u>Allowable Value</u>
$\leq 0.58W + 55\%$	$\leq 0.58W + 58\%$

3. Specification 3.2.1: the MAPLHGR limits shall be the limits specified in Figures 3.2.1-1, 3.2.1-2, and 3.2.1-3, multiplied by 0.81.
4. Specification 3.2.2: the APRM Setpoints shall be as follows:

<u>Trip Setpoint</u>	<u>Allowable Value</u>
$S \leq (0.58W + 55\%)T$	$S \leq (0.58W + 58\%)T$
$S_{RB} \leq (0.58W + 46\%)T$	$S_{RB} \leq (0.58W + 49\%)T$

5. Table 3.3.6-2: the RBM/APRM Control Rod Block Setpoints shall be as follows:

a. RBM - Upscale	<u>Trip Setpoint</u>	<u>Allowable Value</u>
1.	$\leq 0.66W + 35\%$	$\leq 0.66W + 38\%$
2.	$\leq 0.66W + 37\%$	$\leq 0.66W + 40\%$

5.a.1 and 5.a.2 shall be used in conjunction with the MCPR limits specified in Figures 3.2.3-1a and 3.2.3-1b, respectively.

b. APRM-Flow Biased	<u>Trip Setpoint</u>	<u>Allowable Value</u>
	$\leq 0.58W + 46\%$	$\leq 0.58W + 49\%$

- b. APRM and LPRM*** neutron flux noise levels shall be less than three times their established baseline levels when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*, except during two loop operation.#

ACTION:

- a. With no reactor coolant system recirculation loops in operation, take the ACTION required by Specification 3.4.1.1.1.

c. Total core flow shall be greater than or equal to 42 million lbs/hr when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1.



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b. With any of the limits specified in 3.4.1.1.2a not satisfied, take the ACTION required by the referenced Specification.

c. With the APRM or LPRM*** neutron flux noise levels greater than or equal to three times their established baseline levels when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1, immediately initiate corrective action and restore the noise levels to within the required limits within 2 hours by initiating an orderly reduction of THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1.1-1. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours.

d. With one or more jet pumps inoperable, be in at least HOT SHUTDOWN within 12 hours.

Replace
With
INSERT (B)

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SURVEILLANCE REQUIREMENTS

4.4.1.1.2.1 Upon entering single loop operation and at least once per 24 hours thereafter, verify that the pump speed in the operating loop is $\leq 90\%$ of the rated pump speed.

4.4.1.1.2.2 With THERMAL POWER greater than the limit specified in Figure 3.4.1.1.1-1, determine the APRM and LPRM*** neutron flux noise levels within 1 hour. Continue to determine the noise levels at least once per 8 hours and within 30 minutes after the completion of a THERMAL POWER increase $\geq 5\%$ of RATED THERMAL POWER.

4.4.1.1.2.3 Within 15 minutes prior to either THERMAL POWER increase resulting from a control rod withdrawal or recirculation loop flow increase, verify that the following differential temperature requirements are met if THERMAL POWER is $\leq 30\%^{****}$ of RATED THERMAL POWER or the recirculation loop flow in the operating recirculation loop is $\leq 50\%^{****}$ of rated loop flow:

a. $\leq 145^\circ\text{F}$ between reactor vessel steam space coolant and bottom head drain line coolant,

b.## $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and the coolant in the reactor pressure vessel, and

c.## $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and operating loop.

4.4.1.1.2.4 a. Establish a baseline APRM and LPRM neutron flux noise value at a point within 5% RATED THERMAL POWER of the 100% rated rod line with total core flow between 35% and 50% of rated total core flow during startup testing following each refueling outage, or

INSERTS

3/4.4.1.1.1 (Delete former ACTION a; replace with the following:)

ACTION:

(A)

- a. With one reactor coolant system recirculation loop not in operation, comply with the requirements of Specification 3/4.1.1.2 or take the associated ACTION.
-

3/4.4.1.1.2 (Delete proposed ACTION b; replace with the following:)

(B)

- b. With any of the limits specified in 3/4.1.1.2a not satisfied:
 1. Upon entering single loop operation, comply with the new limits within 6 hours or be in at least HOT SHUTDOWN within the following 6 hours.
 2. If the provisions of ACTION b.1 do not apply, take the ACTION(s) required by the referenced Specification(s).
-

(C)

- e. With total core flow less than 42 million lbs/hr when THERMAL POWER is greater than the limit specified in Figure 3/4.1.1.1-1, immediately initiate corrective action by either:
 1. Reducing THERMAL POWER to less than the limit specified in Figure 3/4.1.1.1-1 within 4 hours, or
 2. Increasing total core flow to greater than or equal to 42 million lbs/hr within 4 hours.

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