Docket No.: 50-388 OCT 09 1984

Mr. Norman W. Curtis
Vice President
Engineering and Construction - Nuclear
Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Dear Mr. Curtis:

Subject: Amendment No. 2 to Facility Operating License No. NPF-22 - Susquehanna Steam Electric Station, Unit 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 2 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Unit 2. The amendment is in response to your letters dated April 10, 1984 and May 15, 1984. This amendment revises Technical Specification Table 3.6.3-1 to reflect the installation of modifications to the Nitrogen makeup system required by Item 1.a of Attachment 1 to Facility Operating License No. NPF-22, and revises Technical Specifications to resolve the BWR Core Thermal Hydraulic Stability issue discussed in General Electric Service Information Letter No. 380, Revision 1, dated February 10, 1984.

A copy of the related safety evaluation supporting Amendment No. 2 to Facility Operating License NPF-22 is enclosed.

Sincerely,

Original signed by

A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing

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

cc w/enclosures
See next page

CONCURRENCES:

DL:LB#2
RPerch:es
9/21/84

OELD
T. GRAY
9/25/84

DL:LB#2
ASchwencer
9/24/84
10/1/84/s/

~~AD:L~~
~~TMNovak~~
~~/ /84~~

8410170298 841009
PDR ADOCK 05000388
P PDR

SUSQUEHANNA

Mr. Norman W. Curtis
Vice President
Engineering and Construction
Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

cc: Jay Silberg, Esq.
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Edward M. Nagel, Esquire
General Counsel and Secretary
Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Mr. William E. Barberich
Nuclear Licensing Group Supervisor
Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Mr. R. Jacobs
Resident Inspector
P. O. Box 52
Shickshinny, Pennsylvania 18655

Mr. E. B. Poser
Project Engineer
Bechtel Power Corporation
P. O. Box 3965
San Francisco, California 94119

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

Mr. N. D. Weiss
Project Manager
Mail Code 391
General Electric Company
175 Curtner Avenue
San Jose, California 95125

Robert W. Adler, Esquire
Office of Attorney General
P. O. Box 2357
Harrisburg, Pennsylvania 17120

Susquehanna

cc: Governor's Office of State Planning & Development
Attn: Coordinator, State Clearinghouse
P O. Box 1323
Harrisburg, Pennsylvania 17120

Mr. Bruce Thomas, President
Board of Supervisors
R. D. #1
Berwick, Pennsylvania 18603

U. S. Environmental Protection Agency
Attn: EIS Coordinator
Region III Office
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

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. 2
License No. NPF-22

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

   A. The application for an amendment filed by the Pennsylvania Power & Light Company, dated April 10, 1984 and May 15, 1984 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;

   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 the 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. 2, 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 amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: OCT 09 1984

CONCURRENCES:

DL:LB#2	OELD	DL:LB#2	AD:BL
RPerch:es	L. GRAY	ASchwencer	TMNovak
9/21/84	9/25/84	9/26/84	10/5/84
		10/6/84/s/	

ATTACHMENT TO LICENSE AMENDMENT NO. 2

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.

REMOVE	INSERT
xxi	xxi
xxii	xxii
3/4 4-1	3/4 4-1
3/4 4-2	3/4 4-1a
--	3/4 4-1b
--	3/4 4-2
3/4 6-21	3/4 6-21
3/4 6-22	3/4 6-22
3/4 10-3	3/4 10-3
3/4 10-4	3/4 10-4
B3/4 4-1	B3/4 4-1
B3/4 4-2	B3/4 4-2

INDEX

ADMINISTRATIVE CONTROLS

LIST OF FIGURES

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 RECIRCULATION SYSTEM

RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

3.4.1.1 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.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*.

ACTION:

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.

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:

   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.

*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.

SURVEILLANCE REQUIREMENTS

4.4.1.1.1 Each pump discharge valve and bypass valve shall be demonstrated OPERABLE by cycling each valve through at least one complete cycle of full travel during each startup** prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER.

4.4.1.1.2 Each pump discharge bypass valve, if not OPERABLE, shall be verified to be closed at least once per 31 days.

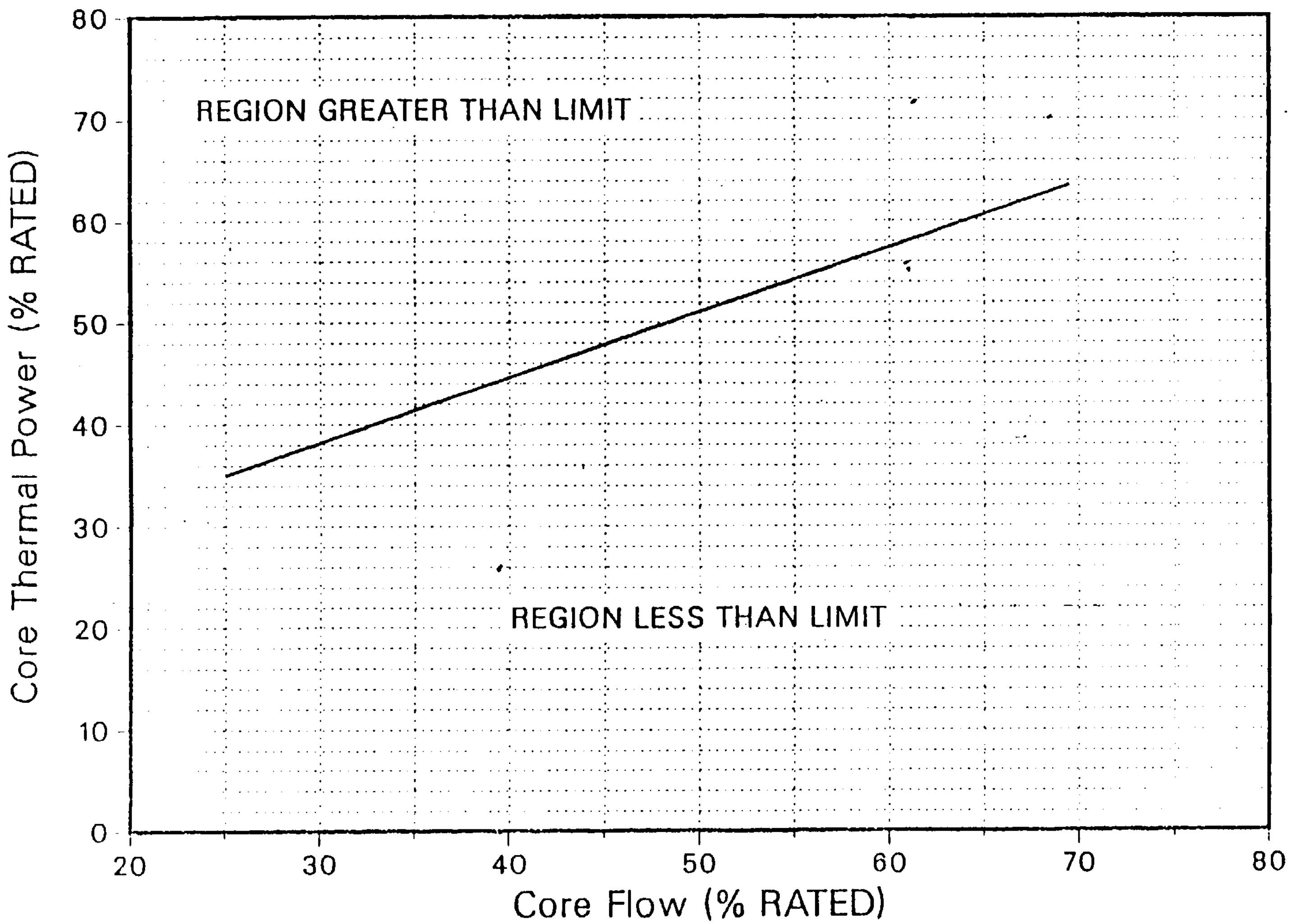
4.4.1.1.3 Each pump MG set scoop tube electrical and mechanical stop shall be demonstrated OPERABLE with overspeed setpoints less than or equal to 102.5 and 105%, respectively, of rated core flow, at least once per 18 months.

4.4.1.1.4 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.

**If not performed within the previous 31 days.

***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.

Figure 3.4.1.1-1
THERMAL POWER LIMITATIONS



JET PUMPS

LIMITING CONDITION FOR OPERATION

3.4.1.2 All jet pumps shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

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

SURVEILLANCE REQUIREMENTS

4.4.1.2 Each of the above required jet pumps shall be demonstrated OPERABLE prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER and at least once per 24 hours* by determining recirculation loop flow, total core flow and diffuser-to-lower plenum differential pressure for each jet pump and verifying that no two of the following conditions occur when the recirculation pumps are operating at the same speed:

a. The indicated recirculation loop flow differs by more than 10% from the established pump speed-loop flow characteristics.

b. The indicated total core flow differs by more than 10% from the established total core flow value derived from recirculation loop flow measurements.

c. The indicated diffuser-to-lower plenum differential pressure of any individual jet pump differs from established patterns by more than 10%.

*During the startup test program, data shall be recorded for the parameters listed to provide a basis for establishing the specified relationships. Comparisons of the actual data in accordance with the criteria listed shall commence upon the conclusion of the startup test program.

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	MAXIMUM ISOLATION TIME (Seconds)	ISOLATION SIGNAL(S)[(a)]
Automatic Isolation Valves (Continued)		
Containment Atmosphere Sample		
SV-25734 A,B	N/A	B,Y
SV-25736 A	N/A	B,Y
SV-25736 B	N/A	B,Y
SV-25740 A,B	N/A	B,Y
SV-25742 A,B	N/A	B,Y
SV-25750 A,B	N/A	B,Y
SV-25752 A,B	N/A	B,Y
SV-25774 A,B	N/A	B,Y
SV-25776 A	N/A	B,Y
SV-25776 B	N/A	B,Y
SV-25780 A,B	N/A	B,Y
SV-25782 A,B	N/A	B,Y
Nitrogen Makeup		
SV-25737	N/A	B,Y,R
SV-25738	N/A	B,Y,R
SV-25767	N/A	B,Y,R
SV-25789	N/A	B,Y,R
Reactor Coolant Sample		
HV-243F019	2	B,C
HV-243F020	2	B,C
Liquid Radwaste		
HV-26108 A1,A2	15	B,Z
HV-26116 A1,A2	15	B,Z
RHR - Suppression Pool Cooling/Spray[(c)]		
HV-251F011 A,B	23	X,Z
HV-251F028 A,B	90	X,Z
CS Test[(b)(c)]		
HV-252F015 A,B	60	X,Z
HPCI Suction [(b)(c)]		
HV-255F042	90	L,LB

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	MAXIMUM ISOLATION TIME (Seconds)	ISOLATION SIGNAL(S)[a]
Automatic Isolation Valves (Continued)		
Suppression Pool Cleanup[b]		
HV-25766	35	A,Z
HV-25768	30	A,Z
HPCI Vacuum Breaker		
HV-255F075	15	LB,Z
HV-255F079	15	LB,Z
RCIC Vacuum Breaker		
HV-249F062	10	KB,Z
HV-249F084	10	KB,Z
TIP Ball Valves (d)		
C51-J004 A,B,C,D,E	5	A,Z
b. Manual Isolation Valves		
MSIV-LCS Bleed Valve		
HV-239F001 B,F,K,P		
Feedwater[e]		
HV-241F032 A,B		
RWCU Return		
HV-244F042		
HV-244F104		
RCIC Injection		
HV-249F013		
2-49-020		

SPECIAL TEST EXCEPTIONS

3/4.10.3 SHUTDOWN MARGIN DEMONSTRATIONS

LIMITING CONDITION FOR OPERATION

3.10.3 The provisions of Specification 3.9.1, Specification 3.9.3 and Table 1.2 may be suspended to permit the reactor mode switch to be in the Startup position and to allow more than one control rod to be withdrawn for shutdown margin demonstration, provided that at least the following requirements are satisfied.

a. The source range monitors are OPERABLE with the RPS circuitry "shorting links" removed per Specification 3.9.2.

b. The rod worth minimizer is OPERABLE per Specification 3.1.4.1 and is programmed for the shutdown margin demonstration, or conformance with the shutdown margin demonstration procedure is verified by a second licensed operator or other technically qualified member of the unit technical staff.

c. The "continuous rod withdrawal" control shall not be used during out-of-sequence movement of the control rods.

d. No other CORE ALTERATIONS are in progress.

APPLICABILITY: OPERATIONAL CONDITION 5, during shutdown margin demonstrations.

ACTION:

With the requirements of the above specification not satisfied, immediately place the reactor mode switch in the Shutdown or Refuel position.

SURVEILLANCE REQUIREMENTS

4.10.3 Within 30 minutes prior to and at least once per 12 hours during the performance of a shutdown margin demonstration, verify that;

a. The source range monitors are OPERABLE per Specification 3.9.2,

b. The rod worth minimizer is OPERABLE with the required program per Specification 3.1.4.1 or a second licensed operator or other technically qualified member of the unit technical staff is present and verifies compliance with the shutdown demonstration procedures, and

c. No other CORE ALTERATIONS are in progress.

3/4.10.4 RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

3.10.4 The requirements of Specifications 3.4.1.1 and 3.4.1.3 may be suspended for up to 24 hours for the performance of:

a. PHYSICS TESTS, provided that THERMAL POWER does not exceed 5% of RATED THERMAL POWER, or

b. The Startup Test Program.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2, during PHYSICS TESTS and the Startup Test Program.

ACTION:

a. With the above specified time limit exceeded, insert all control rods.

b. With the above specified THERMAL POWER limit exceeded during PHYSICS TESTS, immediately place the reactor mode switch in the Shutdown position.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The time during which the above specified requirement has been suspended shall be verified to be less than 24 hours at least once per hour during PHYSICS TESTS and the Startup Test Program.

4.10.4.2 THERMAL POWER shall be determined to be less than 5% of RATED THERMAL POWER at least once per hour during PHYSICS TESTS.

3/4.4.1 RECIRCULATION SYSTEM

Operation with one reactor core coolant recirculation loop inoperable is prohibited until an evaluation of the performance of the ECCS during one loop operation has been performed, evaluated, and determined to be acceptable.

THERMAL POWER, core flow, and neutron flux noise level limitations are prescribed in accordance with the recommendations of General Electric Service Information Letter No. 380, Revision 1, "BWR Core Thermal Hydraulic Stability," dated February 10, 1984.

An inoperable jet pump is not, in itself, a sufficient reason to declare a recirculation loop inoperable, but it does, in case of a design basis accident, increase the blowdown area and reduce the capability of reflooding the core; thus, the requirement for shutdown of the facility with a jet pump inoperable. Jet pump failure can be detected by monitoring jet pump performance on a prescribed schedule for significant degradation.

Recirculation pump speed mismatch limits are in compliance with the ECCS LOCA analysis design criteria. The limits will ensure an adequate core flow coastdown from either recirculation loop following a LOCA.

In order to prevent undue stress on the vessel nozzles and bottom head region, the recirculation loop temperatures shall be within 50°F of each other prior to startup of an idle loop. The loop temperature must also be within 50°F of the reactor pressure vessel coolant temperature to prevent thermal shock to the recirculation pump and recirculation nozzles. Since the coolant in the bottom of the vessel is at a lower temperature than the coolant in the upper regions of the core, undue stress on the vessel would result if the temperature difference was greater than 145°F.

3/4.4.2 SAFETY/RELIEF VALVES

The safety valve function of the safety/relief valves operate to prevent the reactor coolant system from being pressurized above the Safety Limit of 1325 psig in accordance with the ASME Code. A total of 10 OPERABLE safety/relief valves is required to limit reactor pressure to within ASME III allowable values for the worst case upset transient.

Demonstration of the safety/relief valve lift settings will occur only during shutdown and will be performed in accordance with the provisions of Specification 4.0.5.

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.3.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the reactor coolant pressure boundary.

3/4.4.3.2 OPERATIONAL LEAKAGE

The allowable leakage rates from the reactor coolant system have been based on the predicted and experimentally observed behavior of cracks in pipes. The normally expected background leakage due to equipment design and the detection capability of the instrumentation for determining system leakage was also considered. The evidence obtained from experiments suggests that for leakage somewhat greater than that specified for UNIDENTIFIED LEAKAGE the probability is small that the imperfection or crack associated with such leakage would grow rapidly. However, in all cases, if the leakage rates exceed the values specified or the leakage is located and known to be PRESSURE BOUNDARY LEAKAGE, the reactor will be shutdown to allow further investigation and corrective action.

The Surveillance Requirements for RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA.

3/4.4.4 CHEMISTRY

The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the 0.2 ppm limit on chlorides is permitted during POWER OPERATION. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so a 0.5 ppm concentration of chlorides is not considered harmful during these periods.

Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity must also be within their acceptable limits. With the conductivity meter inoperable, additional samples must be analyzed to ensure that the chlorides are not exceeding the limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

SAFETY EVALUATION

AMENDMENT NO. 2 TO NPF-22

SUSQUEHANNA STEAM ELECTRIC STATION UNIT 2

DOCKET NO. 50-388

Introduction

The licensee in letters dated April 10, 1984 and May 15, 1984 proposed changes to the Technical Specifications of the operating license for Susquehanna Steam Electric Station, Unit 2 which are as follows:

(1) Changes to Technical Specification Table 3.6.3-1 to reflect modifications to the Nitrogen makeup system required by Item 1.a of Attachment 1 to Facility Operating License No. NPF-22, and

(2) Changes to Technical 3.4.1.1 and 3.10.4, Bases 3/4.4.1 and the addition of Technical Specifications 4.4.1.1.4 and Figure 3.4.1.1-1 to resolve the BWR Core Thermal Hydraulic Stability issue discussed in General Electric Service Information Letter No. 380, Revision 1, dated February 10, 1984.

Evaluation

(1) Nitrogen Makeup System

The licensee states that, due to the installation of the modifications to the Nitrogen Makeup system, required by license condition 1.a of Attachment 1 to NPF-22, a change to Table 3.6.3-1 of the Technical Specification is required to ensure that it reflects the as-built configuration. These changes include the addition of two new isolation valves, SV-25738 and SV-25789. The proposed change also would delete valves SV-25737 and SV-25767 currently listed under the "Containment Atmosphere Sample" category in Table 3.6.3-1 since due to rerouting, they are no longer in the atmosphere sampling lines. These two valves along with the newly installed valves (SV-25738 and 25789) will be listed under the new category "Nitrogen Makeup" in Table 3.6.3-1. The automatic isolation signals for the Nitrogen Makeup valves will meet the diversity requirements of SRP 6.2-4.

In the same letter, the licensee proposed another change to Technical Specification Table 3.6.3-1 which would eliminate the "SGTS Exhaust Radiation-High" isolation signal from valves SV-25736B and SV-25776B. These valves are dedicated to the H_2/O_2 sampling lines and no longer part of the nitrogen makeup lines. Therefore, they need not isolate on the "SGTS Exhaust Radiation-High" isolation. The diversity requirement of SRP 6.2-4 is not violated by this change.

The NRC staff has reviewed the proposed changes and finds them acceptable based on the rationale provided above.

(2) BWR Core Thermal Hydraulic Stability

The principal changes made to the Technical Specifications to resolve the Thermal Hydraulic Stability concerns are the following:

1. When operating with one or no recirculation loops, the plant will immediately initiate an orderly reduction in thermal power to less than a specified limit.

2. When in twin loop operation at flow rates less than 45 million lb/hr, reduce thermal power to the specified limit or monitor APRM and LPRM neutron flux levels at least once per 8 hours and insure that they are less than three times their established baseline levels.

The staff has reviewed these proposed changes and has found that they are prudent and acceptably resolve our Thermal-Hydraulic Stability concerns for Susquehanna Units 1 and 2, assuming long term single loop operation is not permitted. Should such operation be requested in the future the staff will revaluate this Technical Specification to determine if additional modifications are required.

Environmental Considerations

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

Conclusion

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: OCT 0 9 1984

DIST:

Docket File	CMiles
NRC PDR / Local PDR	HDenton
PRC System	JRutberg
NSIC	AToalston
LB#2 Rdg	WMiller, LFMB
EGHylton	NGrace
RPerch	EJordan
TMNovak	LHarmon
JSaltzman, SAB	TBarnhart (4)
OELD, Attorney	Inez Bailey
DBrinkman, SSPB	