



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 8, 2000

Mr. Robert G. Byram
Senior Vice President
and Chief Nuclear Officer
PP&L, Inc.
2 North Ninth Street
Allentown, PA 18101

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 - ISSUANCE OF
AMENDMENT RE: RESIDUAL HEAT REMOVAL RELIEF VALVE LINE LEAK
RATE TESTING SURVEILLANCE INTERVAL EXTENSION (TAC NO. MA8622)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 160 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Unit 2. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated April 10, 2000. A Notice of Enforcement Discretion (NOED) related to the subject TS was issued verbally on April 8, 2000. The NOED issuance was documented in our letter dated April 11, 2000. This amendment supersedes the NOED.

This amendment adds a note to TS Surveillance Requirement 3.6.1.1.1 to defer performance of this test on a one-time basis for spectacle flanges 2S299A and 2S299B o-rings until the Unit 2 10th Refueling Outage (Spring 2001) or a prior Unit 2 outage requiring entry into Mode 4. The change allows Unit 2 operation to continue until an outage occurs where leak rate surveillance testing on spectacle flanges 2S299A and 2S299B can be performed.

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

Sincerely,

Robert G. Schaaf, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-388

Enclosures: 1. Amendment No. 160 to
License No. NPF-22
2. Safety Evaluation

cc w/encls: See next page

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EXCEL 392

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

PP&L, INC.

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160
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 PP&L, Inc., dated April 10, 2000, 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. 160 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 shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: May 8, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 160

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

3.6-2

INSERT

3.6-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<p>-----NOTE----- Not required to be performed on the 2S299A and 2S299B spectacle flange o-rings until the Unit 2 10th Refueling Outage (Spring 2001) or a prior Unit 2 outage requiring entry into Mode 4. -----</p>		
SR 3.6.1.1.1	Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with the Primary Containment Leakage Rate Testing Program.	In accordance with the Primary Containment Leakage Rate Testing Program.
SR 3.6.1.1.2	Verify that the drywell-to-suppression chamber bypass leakage is less than 0.00535 ft ² at an initial differential pressure of \geq 4.3 psi.	When performing 10 CFR 50 Appendix J, Type A testing, in accordance with the Primary Containment Leakage Rate Testing Program. <u>AND</u> -----Note----- Only required after two consecutive tests fail and continues until two consecutive tests pass ----- 24 months



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. NPF-22

PP&L, INC.

ALLEGHENY ELECTRIC COOPERATIVE INC.

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-388

1.0 INTRODUCTION

By letter dated April 10, 2000, PP&L, Inc. (the licensee) submitted a request for changes to the Susquehanna Steam Electric Station, Unit 2, Technical Specifications (TSs). The requested changes would add a note to TS 3.6.1.1.1 to defer performance of this test on a one-time basis for spectacle flanges 2S299A and 2S299B o-rings until the Unit 2 10th Refueling Outage (Spring 2001) or a prior Unit 2 outage requiring entry into Mode 4. The proposed change will allow Unit 2 operation to continue until an outage occurs where leak rate surveillance testing on spectacle flanges 2S299A and 2S299B can be performed.

2.0 BACKGROUND

During completion of local leakage rate testing (LLRT) of the Unit 1 spectacle flange 1S299B o-rings during the Spring 2000 Unit 1 refueling outage, licensee personnel questioned the configuration of the spectacle flange and o-rings. The spectacle flange is used to provide a barrier to test against when performing the LLRT on the containment isolation valves for these penetrations.

The spectacle flange has three concentric grooves machined on each side. The work plan for flange 1S299B specified installation of o-rings in all three grooves on each side of the flange. Research into the number of o-rings to be installed revealed that the design requires installation of two o-rings per flange: one o-ring in the inner groove and one o-ring in the outer groove. The purpose of the middle groove is to provide a means to test the inner and outer o-rings. With an o-ring in the middle groove, the licensee determined that it cannot be positively demonstrated that the containment boundary (i.e. the o-rings) has been adequately tested. The o-ring in the middle groove may adversely affect proper pressurization of the inner and outer o-rings, resulting in an invalid LLRT of the inner and outer o-rings.

Because the work plan for installation of the Unit 1 spectacle flange specified three o-rings per flange face in conflict with the design intent, the configuration of the o-rings in the Unit 2 spectacle flanges was checked. Based on a document review, the licensee identified that three o-rings were installed on each side of Unit 2 spectacle flanges 2S299A and 2S299B when the

flanges were rotated to perform the containment isolation valve LLRTs in 1997. Review of work plans from previous years indicates that three o-rings per face have typically been installed and tested.

The middle o-ring currently believed to be installed on both the 2S299A and 2S299B spectacle flanges should be removed in order to perform the LLRT as required. However, removal of the middle o-ring would require breach of the primary containment boundary, rendering the primary containment inoperable. Therefore, the licensee is requesting approval to defer the required leakage rate testing of the spectacle flange o-rings until the next Unit 2 refueling outage or earlier entry into Mode 4, when primary containment operability is not required.

SSES Unit 2 TS surveillance requirement (SR) 3.6.1.1.1 requires leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program (TS 5.5.12). TS 5.5.12 states that the Primary Containment Leakage Rate Testing Program complies with the requirements of 10 CFR 50.54(o) and 10 CFR Part 50, Appendix J, Option B. The TSs state that the program will be in accordance with the guidelines in Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. RG 1.163 states that Nuclear Energy Institute guidance document NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 0, dated July 26, 1995, provides acceptable methods for complying with the provisions of Option B, subject to several conditions specified in the regulatory guide.

3.0 EVALUATION

On April 8, 2000, the licensee performed confirmatory testing on a Unit 1 spectacle flange with three o-rings installed. The results of that test showed that the presence of an o-ring in the middle groove did not block the test pressurization flow path. Leakage rate tests were conducted with and without the third o-ring installed in the middle groove and the test results were comparable and acceptable.

The licensee completed an evaluation of the impact to safety of continued operation without leakage rate testing for the affected penetrations. The evaluation consisted of an assessment of the safety significance and potential consequences of the potentially invalid leakage rate tests, as well as consideration of the potential risk associated with this condition. The licensee stated that its assessment demonstrates that the safety significance, potential consequences, and risk associated with continued operation without valid leakage rate tests of the affected flanges are low.

The licensee stated that the existence of the third o-ring per face in spectacle flanges 2S299A and 2S299B does not affect the pressure retaining ability of the pipe flange to spectacle flange interface. However, the third o-ring potentially affects the ability to positively confirm the leakage integrity of the subject flange. The licensee asserted that the presence of the third o-ring is actually likely to improve the pressure retaining capability of the pipe flange to spectacle flange interface. The spectacle flange is a static device that uses o-rings for sealing. The groove the third o-ring occupies is machined to the same dimensions as the inner and outer grooves intended to house o-rings for sealing. The o-ring installed in the center groove is also of the same material and width as those intended for sealing. Since this additional o-ring meets the design and installation requirements for those intended for sealing, it should provide an additional barrier against leakage. The licensee stated that the condition of the spectacle

flanges with three o-rings installed is at least as good as the double o-ring design. Therefore, the licensee concluded that the deficient condition does not degrade safety.

The licensee stated that even if the third o-ring resulted in some degradation in the seal performance, this would not have an adverse impact on safety. The history of these penetrations demonstrates that the leak rate testing performance of these seals is typically less than 20 standard cubic centimeters per minute (SCCM), while the administrative limit for these seals is 500 SCCM. Therefore, any potential leakage caused by the third o-ring would have to cause leakage to increase by more than a factor of 25 to exceed the administrative limit. The licensee stated that such degradation in performance is inconsistent with the design of a passive o-ring seal.

In addition to the substantial margin between the actual seal leakage and the penetrations' administrative limit, there is substantial margin in the actual containment leakage. The current Type B and C containment minimum pathway leakage is less than $0.05L_a$, a factor of 12 less than the Type B and C containment leakage limit of $0.6L_a$. The leakage through these penetrations, which might go undetected because of the presence of the third o-ring, would have to be 12 times greater than the sum of all other penetrations for this issue to represent a significant safety issue. Such a leakage rate is not considered likely for a passive o-ring seal.

The subject lines terminate in the suppression pool water space and in a capped branch line in the primary containment suppression pool airspace. The termination in the airspace is capped with a blind flange and the submerged termination represents a water seal. Any containment atmosphere leakage would have to pass through either the suppression pool water (where it would be scrubbed) or leak through a blind flange in the primary containment suppression pool airspace. Therefore, the flow area for leakage into these penetrations is very small, further limiting the magnitude of possible containment atmosphere leakage.

Any leakage through the o-ring seals would be directly into the reactor building, which is part of secondary containment, and would not in any way contribute to secondary containment bypass leakage. As a result, any leakage resulting from the current o-ring configuration would be filtered by the Standby Gas Treatment System (SGTS). The SGTS is sized to treat the maximum allowable primary containment leakage rate of $1.0L_a$ (1% primary containment volume per day - reference Final Safety Analysis Report Section 6.5.1.1.1), rather than the $0.6L_a$ test limit referenced above. Any additional leakage, beyond that measured during the o-rings' associated LLRT, is not expected to result in a total primary containment leakage rate that is greater than the design capacity of the SGTS. Thus, any leakage through these valves would be treated prior to its release to the environment.

The staff has reviewed the information provided by the licensee. The results of the testing performed on the Unit 1 spectacle flange indicate that the presence of the third o-ring in the flange has minimal impact on the results of the leakage rate test. The presence of the third o-ring is not expected to adversely affect the pressure retaining ability of the spectacle flange. There is substantial margin between the historical seal leakage test results and the administrative limit and between the current Type B and C containment minimum pathway leakage and the Type B and C containment leakage limit. The physical configuration of the subject lines inside the primary containment and the filtering of any leakage by the SGTS provide defense in depth in the unlikely event of increased flange leakage that may go undetected as a result of the presence of the third o-ring in the subject flanges.

Based on the demonstrated and expected performance of the flanges with the additional o-ring installed, the substantial margin to administrative and regulatory leakage limits, and the defense in depth provided by the system configuration, the staff finds the proposed one-time extension of the primary containment LLRT interval for the subject penetrations to be acceptable.

4.0 EXIGENT CIRCUMSTANCES

The Commission's regulations at 10 CFR 50.91 contain provisions for issuance of amendments where the Commission finds that exigent circumstances exist, in that a licensee and the Commission must act quickly and that time does not permit the Commission to publish a *Federal Register* notice allowing 30 days for prior public comment before issuance of an amendment. The exigency exists in this case in that the proposed amendment is needed because SSES Unit 2 is operating under a Notice of Enforcement Discretion. In accordance with NRC procedures described in NRC Inspection Manual, Part 9900, "Notices of Enforcement Discretion," dated June 29, 1999, issuance of enforcement discretion must be promptly followed by an exigent amendment request.

In its application, the licensee explained why it could not have foreseen the need for this amendment. The licensee stated that the condition was identified on April 7, 2000, as a result of inspections conducted during the ongoing Unit 1 refueling outage. Due to its nature, i.e., a potentially invalid surveillance discovered by a review of maintenance records, it could not have been anticipated, and was therefore not avoidable. In accordance with the previously noted NRC Inspection Manual guidance, the licensee applied for the license amendment within 48 hours after the staff verbally granted the requested enforcement discretion on April 8, 2000.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) result in a significant reduction in the margin of safety.

The amendment has been evaluated against the three standards in 10 CFR 50.92(c). In its analysis of the issue of no significant hazards consideration as required by 10 CFR 50.91(a), the licensee provided the following:

This proposal does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The presence of the third o-ring does not degrade and may improve the pressure retaining capability of the pipe flange to spectacle flange interface. The leakage through the subject lines is not adversely affected by the existence of the third o-ring; therefore the probability of any accident previously evaluated is not significantly increased. The o-rings are passive components and have no active safety function. Similarly, the potential consequences of an accident previously evaluated are not significantly increased by the existence of the third o-ring, since

the pressure retaining capability of the pipe flange to spectacle flange interface is not degraded.

This proposal does not create the possibility of a new or different type of accident from any previously evaluated.

Since the pressure retaining capability of the pipe flange to spectacle flange interface is not affected by the existence of the third o-ring as discussed above, the proposed change does not create a new or different type of accident from any previously evaluated.

This change does not involve a significant reduction in a margin of safety.

Since the pressure retaining capability of the pipe flange to spectacle flange interface is not affected by the existence of the third o-ring, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above considerations, the staff concludes that the amendment meets the standards set forth in 10 CFR 50.92. Therefore, the staff has made a final determination that the proposed amendment involves no significant hazards consideration.

6.0 STATE CONSULTATION

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

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC 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 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (65 FR 21487). Accordingly, the 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 the amendment.

8.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Schaaf

Date: May 8, 2000