April 8, 2000

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station OP1-17
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
REQUEST FOR ENFORCEMENT DISCRETION:
RHR RELIEF VALVE LINE LEAK TESTING
PLA-5179 **Docket No. 50-388**

The purpose of this letter is to request that the NRC exercise enforcement discretion to not enforce compliance with the requirements of Technical Specification Surveillance SR 3.6.1.1.1 for the Unit 2 spectacle flanges 2S299A and 2S299B. This enforcement discretion will allow Unit 2 to operate until surveillance testing on the spectacle flanges, determined to have been missed on these lines, can be performed. This request is for the period until the Unit 2 – 10th refueling outage in the Spring of 2001 or the next entry into Mode 4 if that precedes the outage.

The RHR relief valve discharge line penetrations provide the relief path from the RHR Heat Exchanger (shell side) to the suppression pool. This penetration was originally also intended to provide the flowpath for the RHR steam condensing mode which was removed from the plant design prior to initial plant operation.

During closeout activities of the LLRT testing on the Unit 1 RHR relief valve line spectacle flange (1S299B), it was questioned whether the design requires two or three o-rings per spectacle flange face. The spectacle flange on each face contains three grooves. The outer and inner grooves on each face are for the installation of o-ring's. The middle groove is connected to the two LLRT test ports in the mating pipe flanges. Holes are drilled in the middle groove in two places through the spectacle flange to allow the LLRT test pressure to pressurize both faces using either test port of the spectacle flange. This allows both faces of the spectacle flange to be tested at one time.

It has been determined through maintenance records that o-rings have been installed in the middle grooves in addition to the two inner and outer grooves on both Unit 2 RHR relief valve line spectacle flanges. LLRTs were performed on these spectacle flanges. The LLRT results may not be valid due to the existence of the third o-ring on each spectacle flange face.

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DISCUSSION OF ELEMENTS FOR A REQUEST FOR ENFORCEMENT DISCRETION AS SPECIFIED IN NRC INSPECTION MANUAL PART 9900

1. **The TS or other license conditions that will be violated.**

PPL has identified that the LLRT tests performed in accordance with SR 3.6.1.1.1 on the spectacle flanges in penetrations X246A and X246B, RHR relief valve discharge lines, may not be valid. SR 3.6.1.1.1 requires the following: "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." The PPL Primary Containment Leakage Rate Testing Program is defined in PPL Nuclear Department procedure NDAP-QA-0412, "Leakage Rate Test Program". Attachment B of the procedure identifies the subject penetrations and spectacle flanges. The above tests were performed with an additional spectacle flange o-ring installed.

The additional o-ring may block the LLRT test port connection such that the pressure retaining ability of the inner and outer o-rings is not tested.

SR 3.0.3 applies and requires the tests to be performed within 24 hours when a surveillance frequency is not based on a time interval. The test frequency for the flanges is driven by the need to rotate the spectacle flange for other testing. The flanges were last rotated and tested during the Unit 2 Spring 1997 Refueling and Inspection outage.

The 24 hours provided by Specification SR 3.0.3 will expire at 1430 hours on April 8, 2000. At that time, Action A.1 of LCO 3.6.1.1, Primary Containment, will apply. This Action requires restoration of primary containment to operable status within 1 hour. If this completion time is not met, Action B.1 requires the unit to be in Mode 3 within 12 hours and in Mode 4 within 36 hours.

2. **The circumstances surrounding the situation, including apparent root causes, the need for prompt action and identification of any relevant historical events.**

During close-out of the Unit 1 LLRT of the 1S299B o-rings during the Unit 1 Refueling and Inspection Outage, the LLRT work crew questioned the design of the spectacle flange and o-rings. The LLRT crew rotated the spectacle on April 6, 2000 and installed an o-ring in all 3 grooves on each side of the spectacle (per the work plan). The purpose of the spectacle is to provide a barrier to test against when performing the LLRT on the containment isolation valves.

These spectacle flanges are standard design. Installation of the o-rings is a standard routine evolution.

Research into the number of o-rings to be installed revealed that the design requires installation of 2 o-rings per flange; 1 o-ring in the inner grove, 1 o-ring in the outer groove. The purpose of the middle groove is to have a place to test the inner and outer o-rings and to tie together the flanges on either side of the spectacle. This allows the flanges on both sides of the spectacle to be tested at one time. With an o-ring (with grease) in the middle groove, it cannot be demonstrated positively 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 the inner and outer o-rings.

Since the work plan for the Unit 1 spectacle flange o-rings specified 3 o-rings per flange face in conflict with the design intent, the status of the o-rings in the Unit 2 spectacle flanges were checked. Based on a document review, it was identifed that 3 o-rings are installed on each side of the Unit 2 2S299A and 2S299B spectacle flanges. The documentation shows that in 1997 only 2 o-rings (inner and outer) were found per side when the spectacles were initially rotated to the closed position to perform the LLRTs on the RHR heat exchanger relief valves. When the spectacles were rotated back to the open position, 3 o-rings (inner, middle, and outer) were installed per side in accordance with the work plan.

LLRT's were performed after the spectacles were rotated to the open position.

Review of work plans from previous years indicates that three o-rings per face have typically been installed and tested.

The cause of the conflict between the work plans and the design is under investigation.

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. Removal of the middle o-ring would require breach of the primary containment boundary rendering the primary containment inoperable.

Testing was performed on a Unit 1 spectacle flange with the 3 o-rings installed on April 8, 2000.

The results of that test showed that the middle o-ring did not block the flowpath. Additionally, an LLRT test was conducted with both the 3 o-ring and 2 o-ring configurations. The test results were comparable and acceptable.

3. The safety basis for the request, including an evaluation of the safety significance and potential consequences of the proposed course of action. This evaluation should include at least a qualitative risk assessment derived from the licensee's PRA.

The impact to safety of continued operation without leakage rate testing for the affected penetrations has been evaluated. This evaluation is comprised of an assessment of the safety significance and potential consequences of the invalid tests, as well as, a discussion of the potential risk associated with this condition. The following discussion demonstrates the safety significance, potential consequences and risk associated with continued operation without leakage rate testing of the affected flanges are low.

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. The third o-ring does however, potentially affect the ability to positively confirm their performance. The presence of the third o-ring is 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 this third o-ring occupies is machined to the same dimensions as those 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, as those intended for sealing, it should provide an additional barrier against leakage. The condition of the spectacle flanges with three o-ring's is at least as good if not better than the double o-ring design. Therefore the safety basis for this request is that the deficient condition does not degrade safety.

Even if the third o-ring results in some degradation in the seal performance, this degraded performance will not have an adverse impact on safety. Reviewing the history of these penetrations demonstrates that the performance of these seals is excellent (typically less than 20 SCCM on Unit 2). The administrative limit for these seals is 500 SCCM. Therefore the leakage caused by the third o-ring would have to increase by more than a factor of 25 to exceed the administrative limit. 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, caused by 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 credible for a passive o-ring 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. The termination in the airspace is capped with a blind flange inside containment and the submerged termination represents a water seal. 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). SGTS is sized to treat the maximum allowable primary containment leakage rate of $1.0L_a$; (1% primary containment volume per day reference FSAR 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-ring's associated LLRT, is not expected to result in a total primary containment leakage rate that is greater than the design capacity of SGTS. Thus, any leakage through these valves would be treated prior to its release to the environment.

Given the probable improved seal performance due to the additional o-ring and the many layers of defense in depth discussed above, the potential safety consequences to the general public from this inability to test the penetrations is inconsequential.

4. **The basis for the licensee's conclusion that the noncompliance will not be of potential detriment to the public health and safety and that no significant hazard consideration is involved.**

The noncompliance will not be of potential detriment to the public health and safety because the safety significance, potential consequences and risk associated with continued operation without leakage rate testing of the affected flanges are low as demonstrated in Item 3 above.

<u>No Significant Hazards Considerations</u>

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

As demonstrated above, 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. Since the leakage through the subject lines is determined in Item 3 above to not be affected by the existence of the third o-ring, the probability of any accident previously evaluated is not affected. The o-rings are passive components and have

no active safety function. Similarly, the potential consequences of an accident previously evaluated are not affected by the existence of the third o-ring, since the pressure retaining capability of the pipe flange to spectacle flange interface is not degraded and likely improved as described in Item 3 above.

II. 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 determined in Item 3 above to not be affected by the existence of the third o-ring, the existence of the third o-ring does not create a new or different type of accident from any previously evaluated.

III. 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 determined in Item 3 above to not be affected by the existence of the third o-ring, the margin of safety is not reduced.

5. The basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment.

As stated in Item 3 above, PPL has performed an evaluation that concludes the potential leakage associated with the affected penetrations is not degraded by the existence of the third o-ring. Therefore, no environmental consequences that have not been previously evaluated are anticipated.

6. Any proposed compensatory measure(s).

Although, the condition described above does not degrade the pressure retaining function as described in item 3 above, it may preclude this function from being verified via any practical test. Efforts to either verify this function via test, or efforts to restore the spectacle flange to its intended design configuration will jeopardize the Unit 2 primary containment. Such efforts are seen to be counterproductive and contrary to the safe operation of SSES Unit 2. Considering that the existing Unit 2 condition is not a degradation in the primary containment barrier no compensatory actions are warranted.

7. The justification for the duration of the noncompliance.

Based on the conclusions of the safety basis provided in item 3 above, PP&L proposes the following conditional approach to completion of the missed surveillances:

The testing will be performed during the U2 10th Refueling and Inspection Outage scheduled for Spring 2001. PPL will perform the required testing should an outage occur on Unit 2 requiring entry into Mode 4 prior to the U2 10th Refueling Outage.

The evaluation provided in Items 3 and 4 above are not time dependent. No degradation is expected to occur. As a result, operation until the next outage, at the latest, to occur in the Spring of 2001, is justified.

8. A statement that the request has been approved by the Plant Operations Review Committee.

This request was reviewed by the Plant Operations Review Committee on April 8, 2000.

9. The request must specifically address which one of the NOED criteria for appropriate plant conditions specified in Section B is satisfied and how it is satisfied.

NOED criterion 1.a) is satisfied for the following reasons:

- SSES Unit 2 is operating at full power.
- Compliance with Technical Specification 3.6.1.1 provides 1 hour to restore primary containment to operable status, or Unit 2 must be in Mode 3 within 12 hours and in Mode 4 in 36 hours. This would create an undesirable transient on the unit that is not justified by the low risk impact.
- Based on the evaluation presented in items 3 and 4 above, the proposed enforcement discretion will minimize these potential safety consequences and operational risks.

10. If a follow-up license amendment is required, the NOED request must include marked-up TS pages showing the proposed TS changes and a commitment to submit the actual license amendment request must follow within 48 hours.

A mark-up of Surveillance Requirement SR 3.6.1.1.1 is attached. A formal Technical Specification submittal will be made within 48 hours requesting a "***one time***" exception.

11. For NOEDs involving severe weather ....

This NOED does not involve severe weather thus this request does not contain related information.

Any questions regarding this information should be directed to Mr. T. L. Harpster, Manager – Nuclear Licensing at (610) 774-7504.

Sincerely,

B. L. Shriver
Vice-President – Nuclear Site Operations

Copy: Regional Administrator - Region I
Mr. S. L. Hansell, NRC Sr. Resident Inspector
Mr. R. G. Schaaf, NRC Sr. Project Manager
Mr. D. J. Allard, DEP/BRP

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
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 ≥ 4.3 psi.	When performing 10 CFR 50 Appendix J, Type A testing, in accordance with the Primary Containment Leakage Rate Testing Program. AND -----Note----- Only required after two consecutive tests fail and continues until two consecutive tests pass ---------- 24 months

See inserted Note

Note to be added to SR 3.6.1.1.1

----------NOTE----------
Not required to be performed on the 2S299A and 2S299B spectacle flange o-rings until the U2 10th Refueling outage (Spring 2001) or a prior Unit 2 outage requiring entry into Mode 4.
