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U. S. Nuclear Regulatory Commission Attn: Document Control Desk Mail Stop OP1-17 Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION PROPOSED LICENSE AMENDMENT NUMBERS 262 FOR UNIT 1 AND 227 FOR UNIT 2 CONTAINMENT PURGE VALVE LEAK RATE TEST FREQUENCY PLA-5728

Docket Nos. 50-387 and 50-388

Pursuant to 10 CFR 50.90, PPL Susquehanna, LLC (PPL), hereby requests the following amendments to the Susquehanna Steam Electric Station (SSES) Unit 1 and Unit 2 Technical Specifications (TS), as described in the enclosure. The proposal would change technical specifications for containment purge valves with resilient seals, to reduce the SR 3.6.1.3.6 frequency from 184 days to 24 months. This change is based on an analysis performed by the BWR Owners' Group (BWROG) which concluded that extensive testing of large containment isolation valves using resilient seals has resulted in no indication of seal degradation. PPL Susquehanna Unit 1 and Unit 2 plant specific data and the BWROG generic data is included in the Safety Assessment.

As demonstrated in the enclosed evaluation, the proposed amendments do not involve a significant hazard consideration.

Precedent licensing submittals have been approved by NRC for Georgia Power Company's Vogtle Electric Generating Plant; Entergy Operations Inc., Grand Gulf Nuclear Station; and Wisconsin Electric Power Company's Point Beach Plant. These precedents are further discussed in the Background section of the Licensee Evaluation of proposed changes.

PPL Susquehanna, LLC requests approval of the proposed amendment by May 2005 to minimize unnecessary testing. Once approved, the amendment shall be implemented within 60 days.

Attachments 1 and 2 are the Technical Specifications marked-up and retyped.

There are no regulatory commitments associated with the proposed changes.

The need for the changes has been discussed with the SSES NRC Project Manager.

The proposed changes have been approved by the SSES Plant Operations Review Committee and reviewed by the Susquehanna Review Committee.

In accordance with 10 CFR 50.91(b), PPL Susquehanna LLC is providing the Commonwealth of Pennsylvania with a copy of this proposed License Amendment request.

If you have any questions or require additional information, please contact Mr. Michael H. Crowthers at (610) 774-7766.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: <u>7-804</u> B. T. McKinney

Enclosure: PPL Susquehanna Evaluation of the Proposed Changes

Attachments:

Attachment 1 – Proposed Technical Specification Changes (Mark-up) Attachment 2 – Proposed Technical Specification Pages (Camera Ready) Attachment 3 – Changes to Technical Specifications Bases Pages (Provided for Information)

Copy: NRC Region 1

Mr. R. Guzman, NRC Project Manager Mr. A. J. Blamey, NRC Sr. Resident Inspector Mr. R. Janati DEP/BRP

Enclosure to PLA-5728

PPL Susquehanna Evaluation of Proposed Change Containment Purge Valve Leak Rate Test Frequency

- 1. DESCRIPTION
- 2. PROPOSED CHANGE
- 3. BACKGROUND
- 4. TECHNICAL ANALYSIS
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SUBJECT: Application for Amendment to Technical Specification 3.6.1.3 "Primary Containment Isolation Valves," to allow extension of the Surveillance Requirements on Containment Purge Valves

1.0 DESCRIPTION

:

The proposal would change Technical Specifications for containment purge valves with resilient seals, to reduce the SR 3.6.1.3.6 frequency from 184 days to 24 months. This change is based on an analysis performed by the BWR Owners' Group (BWROG) which concluded that extensive testing of large containment isolation valves using resilient seals has resulted in no indication of seal degradation. PPL Susquehanna, LLC (PPL) plant specific data and the BWROG generic data is included in the Safety Assessment.

2.0 PROPOSED CHANGE

The proposed changes revise the Unit 1 and Unit 2 Technical Specifications to replace the SR 3.6.1.3.6 Primary Containment Purge Valve with Resilient Seals Surveillance Frequency of 184 days with 24 months.

The associated Unit 1 and Unit 2 Bases changes delete the reason for the 184 day surveillance frequency:

"Additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option B, (Ref. 3), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established,"

and replace it with:

"The Appendix J Leakage Rate Test Interval of 24 months is sufficient."

The justification for this change is provided in Section 4.0, "Technical Analysis."

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3.0 BACKGROUND

The Containment Purge Valves are part of the Containment Atmosphere Control (CAC) system, and are of butterfly design, manufactured by Henry Pratt. The SR applies to four 24", four 18", and one 6" soft-seated butterfly valves situated in three penetrations per SSES unit. Two of the penetrations (Purge supply lines) are tested by one LLRT. The other two penetrations (Purge exhaust lines) are tested by separate LLRT's.

The attached schematic, Containment Atmosphere Control Valves, identifies the valves referenced in subsequent tables. The schematic is for Unit 1. Unit 2 is identical. The first numeral in the valve identifier is the unit designator.

Technical Specifications currently require that primary containment purge valves with resilient seals be tested at a frequency beyond the test requirements of 10 CFR 50 Appendix J to provide additional assurance of operability. This requirement derives from early concerns that this type of seal had the potential to degrade in a shorter time period than do other seal types. The concern was also based on the importance of maintaining the penetration leak tight (due to the direct path between primary containment and the environment).

As a result of reports of unsatisfactory performance of resilient seals in butterfly-type isolation valves due to seal deterioration, the Nuclear Regulatory Commission (NRC) established Generic Issue B-20 "Containment Leakage Due to Seal Deterioration" to study this issue and propose a regulatory resolution of the problem. IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," dated September 6, 1977 reported difficulty with satisfying leak test requirements on large containment isolation butterfly valves with resilient seals. IE Circular 77-11 reported that: "The cause of the excessive leakage has been determined to be either general degradation of the resiliency characteristics of the seal, cold temperatures and the associated hardening of the seal, or a combination of the two," and that "...examination of the resilient valve seat material indicated that the material had hardened and lost some resiliency and showed signs of wear due to valve cycling. Exposure to various environmental conditions such as humidity and temperature have also, in some cases, apparently accelerated the degradation or changed the performance characteristics of the seating material." Among the actions taken by licensees at that time, to assure continued nearly leak-tight behavior, was increased test frequency.

The proposed change is consistent with several NRC approved precedent submittals:

On December 27, 1994, Georgia Power Company's Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 requested a revision to the leak test frequency for containment purge valves with resilient seals (Reference 7.1). During the period 1987 to 1994 valves had been routinely tested every three months and no indication of seal degradation had been observed. Based on these results, Georgia Power Company concluded that seal

degradation does not occur and that the history of the valves supported a test interval, in accordance with 10 CFR 50 Appendix J of once per refueling outage (24 months).

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On July 7, 1995, the NRC issued an amendment revising the VEGP Units 1 and 2 frequency of conducting leak testing of containment purge valves with seals made of resilient material, from every three months to each refueling outage (Reference 7.2). In its Safety Evaluation for Vogtle, the NRC staff states that: "Operating experience has shown that for well maintained butterfly valves with resilient seals, used at suitable environmental and operating conditions, the 24-month Appendix J leakage rate test interval is sufficiently frequent. Accordingly the staff will approve a reduced testing frequency if supported by plant specific data (i.e., history of test results)."

On September 19, 1996, Entergy Operations Inc. submitted a revision (Reference 7.5), to a proposed amendment (References 7.3 and 7.4) to the Grand Gulf Nuclear Station (GGNS) Operating License to perform leakage rate testing for each primary containment purge valve with resilient seals at a frequency of 36 months with at least 2 pairs (of 4 pairs) of valves tested every 18 months; and once within 92 days test all remaining purge valves, if any purge valve fails to meet its acceptance criteria.

During a period of 14 years the valves had been routinely tested on an augmented testing frequency (every 184 days and once within 92 days after opening a valve) with no indication of seal degradation.

On October 18, 1996, the NRC issued an amendment revising the GGNS Unit 1 Operating License frequency of leakage rate testing for each containment purge isolation valve with resilient seals (Reference 7.6). In the Safety Evaluation for Entergy's Grand Gulf Nuclear Station Unit 1 it was stated that: "The NRC has recently approved changes in testing frequencies for containment purge valves with resilient seals at the Vogtle Electric Generating Plant (Docket Nos. 50-424 and 50-425)." Leakage rate testing of primary containment purge valves with resilient seals is now required every 36 months with at least two pairs of valves tested every 18 months. If any purge valve fails to meet its acceptance criteria, all remaining purge valves must be tested within 92 days, (unless previously tested within 92 days of the failure).

By application dated May 29, 1996, (Reference 7.7), and supplemented by a letter dated August 20, 1996 (Reference 7.8) Wisconsin Electrical Power Company's Point Beach Plant (PBNP) Units 1 and 2 requested allowance for an up to 30 month test interval for containment purge supply and exhaust valves using resilient seals. The previous test interval required testing at six (6) month intervals. Leakage test results and the maintenance history of the valves from 1992 to 1996 supported extension of the test interval to up to 30 months.

In the letter dated August 20, 1996, (Reference 7.8) PBNP stated that: "We have reviewed leakage test results and the maintenance history of these valves from 1992 to

present in order to assess the reliability of the valves and support extension of the test interval to up to 30 months. Of the 36 leakage tests performed, nine per penetration, there have been no failures when compared to Technical Specification and Appendix J limits. In addition no valve has exceeded our administrative leakage limit of 2000 sccm."

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The NRC issued an amendment to the PBNP Units 1 and 2 operating licenses, to permit performance of leakage rate tests on containment purge supply and exhaust valves at a 30-month interval (Reference 7.9).

NUREG-1493 "Performance-Based Containment Leak-Test Program," (Reference 7.10) evaluated the impact of changing the frequency of Appendix J tests on overall reactor risk. The report concluded that the frequency of Type C Tests (Valve LLRT) could be reduced without significant impact on reactor accident risk. In addition, the report found that increasing the allowable leakage rate by one or two orders of magnitude would not significantly impact the estimates for population doses in the event of an accident.

The NRC, in Regulatory Guide 1.163 (Reference 7.11), approved 10 CFR 50 Appendix J, Option B and referenced NEI 94-01 "Industry Guideline for Implementing Performance-Based Option of 10 CFR 50 Appendix J," (Reference 7.12) as to methods acceptable to the NRC staff for compliance and implementation.

NEI 94-01 set the rules for establishing test frequencies for valves, Type C tests. Under 10 CFR 50 Appendix J valves were required to be leak tested every refuel outage (2 years). NEI 94-01 permitted the test frequency to be extended up to 120 months based on good performance. Good performance was defined as two consecutive successful as-found leak tests performed with an elapsed time between the first and second test of at least 24 months or nominal test interval.

In Regulatory Guide 1.163, the NRC took exception to the 120 months test frequency and stated that any test frequency beyond 60 months would first require NRC approval. Additionally, the NRC stated that the frequency for main steam and feedwater isolation valves in BWRs and containment purge and vent valves in PWRs and BWRs, should be limited to 30 months, with consideration given to operating experience and safety significance.

The NRC also referenced ANSI/ANS 56.8-1994 (Reference 7.13) Section 3.3.4 in their discussion on the leak testing frequency of purge and vent valves. ANSI/ANS 56.8-1994 Section 3.3.4, gives a test frequency of 30 months plus float.

Under Option B, if a valve fails its as-found test, it shall be tested at a frequency of at least once per 30 months, until adequate performance has been established. In the case of purge and vent valves the frequency would stay at 30 months.

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In summary, 10 CFR 50 Appendix J, Option B presently allows purge and vent valves to be tested at an interval of up to once every 30 months. If a purge or vent valve were to fail its as-found leak test, the testing periodicity would remain the same at every 30 months.

The 24-month frequency proposed is bounded by the frequency specified in 10 CFR 50, Appendix J, Option B.

The BWROG has performed an analysis, based on extensive historical test data and maintenance information (summarized in Section 4 - Technical Analysis). The analysis identified no documentation that attributed test failures to degradation of the resiliency characteristics of the seal, consistent with the precedents cited above.

4.0 TECHNICAL ANALYSIS

4.1 Generic Data

A review of industry operating experience for containment isolation butterfly valves with resilient seats demonstrates that increased testing is not required on a permanent basis, and that the history of these valves supports a test interval in accordance with 10 CFR 50, Appendix J, Option B (i.e., up to a 30 month test interval). A survey was performed by the BWROG to identify performance history for the containment purge valves (butterfly valves) with resilient seals. Table 1, "Industry Containment Purge Valves LLRT Results," identifies leakage test history at 7 different plants. A total of 2,457 leak tests have been performed. The Table identifies the causes of leak test failures.

The data in Table 1 identified a failure rate of 4.3E-2/test. This data is bounded by the failure data discussed in NUREG-1493. The NUREG-1493 data (Table 4-7) indicated that for 992 Butterfly valves leak tests, there were 93 tests where leakage exceeded administrative limits. This is a failure rate of 9.4 E-2/test.

This data indicates that many of the test failures cannot be attributed to any specific condition. Of the test failures, 26% (28/106) were related to the seats and 27% (29/106) have unknown causes (documentation does not identify a cause for the test failure). Thus only 1.1E-2 (28/2547) failures per test are known to involve the seat. Of these seat related test failures, none can be definitively attributed to seal degradation.

As was previously concluded in NUREG-1493, there is no apparent correlation between the size or manufacturer of the valve and its failure history. The review of BWROG experience supports the conclusion that failures by containment isolation valves, such as the containment purge valves addressed herein, do not warrant a test frequency beyond that determined appropriate by NUREG-1493.

4.2 Plant Specific Data

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Table 2, "PPL SSES Containment Atmosphere Control Valves LLRT Reported Failed Test Results," provides the plant specific review of SSES containment isolation butterfly valves with resilient seals test data. The table provides comparable information to Table 1, "Industry Containment Purge Valves LLRT Results" and additional plant specific detail. The PPL SSES data is through February 2004.

The data in Table 1 demonstrates that of 892 valve tests, there were 17 failures for a failure rate of 1.92 E-02/test which is bounded by both the industry failure rate in Table 1 and the NUREG-1493 failure rate.

PPL SSES has not had a confirmed seat related failure since 1995 (nine years) and has had only four failures in the last nine years, and one in the last five years. The seat damage cause occurred on four different valves. Failures occurred more than once on only three of the eighteen valves. The conclusions are that failures occur randomly and infrequently. Recent performance has been very good with only one failure in the last five years. The evolution of the preventive maintenance program has influenced the results positively. The PPL SSES data is consistent with the industry and NUREG-1493 data, and the conclusion that reduction of the Containment Atmosphere Control Valves Surveillance Frequency is justified.

Technical Analysis Conclusion

The technical justification for extending the surveillance frequency for containment purge valves with resilient seals is based on the result of a total of 2,457 satisfactory tests conducted over the period of 1973-2003. This data validates the frequency specified by 10 CFR 50 Appendix J Option B and exhibits that the currently required test frequency based on IE Circular 77-11 is not warranted. The PPL Susquehanna historical data is consistent with the data sets.

This operating experience has shown that for well maintained butterfly valves with resilient seals, the 30-month Appendix J leakage rate test interval is sufficiently frequent.

5.0 <u>REGULATORY SAFETY ANALYSIS</u>

The proposal would change Unit 1 and Unit 2 Technical Specifications for containment purge valves with resilient seals, to reduce the SR 3.6.1.3.6 frequency from 184 days to 24 months.

5.1 No Significant Hazards Consideration

PPL Susquehanna has evaluated whether or not a significant hazards consideration is involved with the proposed generic change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposal would change the Technical Specifications Surveillance Requirement for containment purge valves with resilient seals. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated because the extensive industry operating experience derived from test results has demonstrated that the resilient seal material does not degrade and cause containment isolation valves to leak. Further, these valves are not accident initiators. Thus, the valves will perform as assumed in the accident analyses. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposal would change the Technical Specifications Surveillance Requirement for containment purge valves with resilient seals. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed nor changes in methods governing normal plant operation). In particular, it does not require the valves to function in any manner other than that which is currently required. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposal would change the Technical Specifications Surveillance Requirement for containment purge valves with resilient seals. The proposed change does not involve a significant reduction in margin of safety because it has no effect on any safety analysis bases or assumptions. It does not change the leakage acceptance criteria. Sufficient data has been collected to demonstrate that resilient seals do not degrade. Testing at the same

frequency as other containment isolation valves will not reduce the margin of safety provided by Technical Specifications.

Based on the above, the PPL Susquehanna concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements / Criteria

5.2.1 Regulations

The regulatory basis for the current surveillance to perform leakage rate testing for each primary containment purge valve with resilient seals at a frequency of 184 days was based on the findings of NRC Generic Issue B-20, "Containment Leakage Due to Seal Degradation," and the final resolution was that valves with resilient seals should be tested more frequently than required by Appendix J. The background for this conclusion was discussed in IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals" (Reference 7.14).

5.2.2 Analysis

The results of the tests reported in Section 4.0 Technical Analysis demonstrate that it is acceptable to use the 10 CFR 50 Appendix J testing requirements for isolation valves with resilient seals because it is evident from the data that seal degradation has not occurred and thus, the basis for the recommendations from NRC Generic Issue B-20, and IE Circular 77-11 are not applicable.

5.2.3 Conclusion

Based on the analyses provided in Section 4.0 Technical Analysis, the proposed change is consistent with all applicable regulatory requirements and criteria. In conclusion, there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, such activities will be conducted in compliance with the Commission's regulations, and the approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions that are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not (1) involve a significant hazards consideration; (2) result in a

Enclosure to PLA-5728 Page 9 of 10

significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL Susquehanna has evaluated the proposed change and has determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22 (c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. The basis for this determination, using the above criteria, follows:

<u>Basis</u>

As demonstrated in the No Significant Hazards Consideration Evaluation, the proposed amendment does not involve a significant hazards consideration.

There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed change does not involve any physical modification or alteration of plant equipment (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

There is no significant increase in individual or cumulative occupational radiation exposure. The proposed change does not involve any physical modification or alteration of plant equipment (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

7.0 <u>REFERENCES</u>

- 7.1 Letter, LCV-0483, Docket Nos. 50-424, 50-425, C. K. McCoy, Georgia Power Company, to USNRC, "Vogtle Electric Generating Plant Request to Revise Technical Specification, Revision to Leak Test Frequency for Valves with Resilient Seals," dated December 27, 1994.
- 7.2 Letter, L. L. Wheeler, USNRC to C. K. McCoy, Georgia Power Company, "Issuance of Amendments, Vogtle Electric Generating Plant Units 1 and 2, (TAC Nos. M91240 and M91241)," dated July 7, 1995.
- 7.3 Letter, GNRO 96/0051, Docket No. 50-415, C. R. Hutchinson, Entergy Operations Inc., to USNRC, "Grand Gulf Nuclear Station, Purge Valve Testing, Proposed Amendment to Operating License," dated May 8, 1996.
- 7.4 Letter, GNRO 96/0084, Docket No. 50-416, C. R. Hutchinson, Entergy Operations Inc., to USNRC, "Purge Valve Testing, Questions Concerning Proposed Amendment to the Operating License," dated July 18, 1996.

- 7.5 Letter, GNRO 96/00108, Docket No. 50-416, J. J. Hagan, Entergy Operations Inc., to USNRC, "Revision to Proposed Amendment to the Operating License," dated September 19, 1996.
- 7.6 Letter, J. N. Donohew, USNRC to J. J. Hagan, Entergy Operations Inc., "Issuance of Amendment No. 128 to Facility Operating License No. NPF-29, Grand Gulf Nuclear Station, Unit 1, (TAC No. M95338)," dated October 18, 1996.
- 7.7 Letter, VPNPD-96-034, B. Link, Wisconsin Electric Power Company to USNRC, "Dockets 50-266 and 50-301, Technical Specification Change Request 187, Adoption of 10 CFR 50, Appendix J, Option B, Point Beach Nuclear Plants Units 1 and 2," dated May 29, 1996.
- 7.8 Letter, VPNPD-96-056, B. Link, Wisconsin Electric Power Company to USNRC, "Dockets 50-256 and 50-301, Supplemental Information, Technical Specifications Change Request 187, Adoption of 10 CFR 50 Appendix J, Option B, Point Beach Nuclear Plants, Units 1 and 2," dated August 20, 1996.
- 7.9 Letter, A. G. Hansen, USNRC to R. E. Link, Wisconsin Electric Power Company, "Amendment Nos. 169 and 173 to Facility Operating License Nos. DPR-24 and DPR-27, Point Beach Nuclear Plant Unit Nos. 1 and 2, (TAC Nos. M95668 and M95669), dated October 1996.
- 7.10 NUREG-1493 "Performance-Based Containment Leak Test Program," dated September 1995.
- 7.11 USNRC Regulatory Guide 1.163, "Performance Based Containment Leak Test Program," dated September 1995.
- 7.12 NEI 94-01, "Industry Guideline for Implementing Performance Based Option of 10 CFR 50 Appendix J," Revision 0, dated July 26, 1995.
- 7.13 ANSI/ANS-56.8-1994, "Containment Leakage Testing Requirements," dated 1994.
- 7.14 USNRC IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," dated September 6, 1977.

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TABLE 1Industry Containment Purge Valves LLRT Results

				Failure	Types					
Plant	Total # of Tests	Total # of Reactor Years	Total # of Failures		2	3	4	5	6	7
1	726	221	4	0	0	0	0	0	4	0
2	123	192	3	0	0	0	0	0	0	3
3	72	112	10	2	0	0	6	0	2	0
4	874	336	17	1	5	0	0	2	3	6
5	197	48	4	0	0	0	4	0	0	0
6	80	24	1	0	0	0	0	0	0	1
7	385	550	67	0	23	18	3	0	4	19
TOTAL	L <u>2457</u>	1483	106	3	28	18	13	2	13	29
Failure	s per Test									
	106/2457	4.3E-02								
		•								
									·	
NOT		l								
NOTES	<u>.</u>									
1.	ACTUATOR									
2.	SEAT									
	DAMAGE									
3.	PACKING									
4.	DEBRIS									
5.	. VALVE STROKING									
6.	OTHER (non-Seat related)									
7.	UNIDENTIFIE	D CAUSE								

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TABLE 2 PPL SSES Containment Atmosphere Control Valves LLRT Reported Failed Test Results

VALVE	SIZE	DATE	PPL Determined FAILURE TYPE	COMMENT
HV15703	18	11/11/93	7	
HV15704	18	11/11/93	7	
HV15713	24	02/08/85	7	
HV15713	24	04/15/87	2	
HV15723	24	02/07/85	6	
HV15724	18	02/07/85	6	
HV15725	18	02/07/85	6	
HV25703	18	09/26/86	2	"Nick," found on seating surface.
HV25703	18	09/07/93	2	Seat had a "crack."
HV25703	18	04/06/94	7	
HV25713	24	04/06/94	2	Seat reported worn.
HV25714	24	04/06/94	7	Seat was replaced. The failure was probably due to the HV25713 valve and not this valve.
HV25723	24	09/12/97	5	
HV25723	24	03/05/99	5	
HV25723	24	04/16/99	7	Seat was replaced. After seat was replaced and LLRT acceptance criteria still not met, loose taper pin and valve adjustments made.
HV25724	18	09/13/95	2	Piece of seat missing.
HV25723	24	03/06/03	1	

TABLE 2

PPL SSES Containment Atmosphere Control Valves LLRT Reported Failed Test Results

NOTES:

- 892 Valve tests were performed from 3/82-2/04.
- This represents 9 valves x 2 units x 22 years = 396 valve years of operating history.
- 17 tests failed the LLRT.
- Failure Rate = 17/892 = 1.9 E-02/test
- Seat related Failure rate = 5/892 = 0.56 E-02
- Failures per year vs. cause code:

	1	2	3	4	5	6	7-11-12
Year							
1985						3	1
1986		1					
1987		1					
1993		1					2
1994		1					2
1995		1					
1997					1		
1999					1		1
2003	1						
Totals	1	5		and a start of the	2	3	6

Causes Codes:

- 1. ACTUATOR
- 2. SEAT DAMAGE
- 3. PACKING
- 4. DEBRIS

- 5. VALVE STROKING
- 6. OTHER (non-Seat related)
- 7. UNIDENTIFIED CAUSE



CONTAINMENT ATMOSPHERE

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ATTACHMENT 1 to PLA-5728

Proposed Technical Specification Change

(Mark-Up)

PPL Rev.-0-1 PCIVs

3.6.1.3

SURVEILLANCE REQUIREMENTS (continued)

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	SURVEILLANCE	FREQUENCY
SR 3.6.1.3.6		
	Perform leakage rate testing for each primary containment purge valve with resilient seals.	(184 days) 24 MONTHS
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	24 months
SR 3.6.1.3.9	Verify a representative sample of reactor Instrumentation line EFCVs actuate to check flow on a simulated instrument line break.	24 months
		(continued)

SUSQUEHANNA - UNIT 1

PPL Rev.-8-1. PCIVs 3.6.1.3

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SURVEILLANCE REQUIREMENTS (continued)

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	SURVEILLANCE	FREQUENCY
SR 3.6.1.3.6	Only required to be met in MODES 1, 2 and 3.	
	Perform leakage rate testing for each primary containment purge valve with resilient seals.	(184 days) 24 MONTHS
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	24 months
SR 3.6.1.3.9	Verify a representative sample of reactor instrumentation line EFCVs actuate to check flow on a simulated instrument line break.	24 months
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	24 months on a STAGGERED TEST BASIS

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(continued)

SUSQUEHANNA - UNIT 2

Amendment 468~

ATTACHMENT 2 to PLA-5728

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Proposed Technical Specification Pages

(Camera Ready)

PPL Rev. 1 PCIVs 3.6.1.3

SURVEILLANCE REQUIREMENTS (continued)

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	SURVEILLANCE	FREQUENCY	
SR 3.6.1.3.6	NOTENOTE Only required to be met in MODES 1, 2 and 3.		
	Perform leakage rate testing for each primary containment purge valve with resilient seals.	24 months	!
SR 3.6.1.3.7	Verify the isolation time of each MSIV is \geq 3 seconds and \leq 5 seconds.	In accordance with the Inservice Testing Program	
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	24 months	
SR 3.6.1.3.9	Verify a representative sample of reactor instrumentation line EFCVs actuate to check flow on a simulated instrument line break.	24 months	
		(continued)	

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PPL Rev. 1 PCIVs 3.6.1.3

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SURVEILLANCE REQUIREMENTS (continued)

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	SURVEILLANCE	FREQUENCY
SR 3.6.1.3.6	NOTE Only required to be met in MODES 1, 2 and 3.	
	Perform leakage rate testing for each primary containment purge valve with resilient seals.	24 months
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	24 months
SR 3.6.1.3.9	Verify a representative sample of reactor instrumentation line EFCVs actuate to check flow on a simulated instrument line break.	24 months
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	24 months on a STAGGERED TEST BASIS

(continued)

ATTACHMENT 3 to PLA-5728

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Changes To Technical Specification Bases

(Provided For Information)

SURVEILLANCE REQUIREMENTS

THE APPENDIX J LEAKAGE RATE TEST INTERVAL OF 24 MONTHS IS SUFFICIENT. full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the Final Safety Analyses Report. The isolation time and Frequency of this SR are in accordance with the requirements of the Inservice Testing Program.

SR 3.6.1.3.6

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option B, (Ref. 3), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established. The acceptance criteria for these valves is defined in the Primary Containment Leakage Rate Testing Program, 5.5.12.

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

<u>SR 3.6.1.3.7</u>

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. This ensures that the calculated radiological consequences of these events remain within 10 CFR 100 limits. The Frequency of this SR is in accordance with the requirements of the Inservice Testing Program.

(continued)

SUSQUEHANNA - UNIT 1

Revision 0 Corrected

PPL Rev. 0 PCIVs B 3.6.1.3

BASES

SURVEILLANCE REQUIREMENTS

THE APPENDIXJ LEAKAGE RATE TEST INTERVAL OF 24 MONTHS IS SUFFICIENT.

<u>SR 3.6.1.3.5</u> (continued)

OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the Final Safety Analyses Report. The isolation time and Frequency of this SR are in accordance with the requirements of the Inservice Testing Program.

<u>SR_3.6.1.3.6</u>

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option B, (Ref. 3), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established. The acceptance criteria for these valves is defined in the Primary Containment Leakage Rate Testing Program, 5.5.12.

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SR 3.6.1.3.7

Verifying that the isolation time of each MSIV is within the specified limits is required to demonstrate OPERABILITY. The isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. This ensures that the calculated radiological consequences of these events remain within 10 CFR 100 limits.

(continued)

SUSQUEHANNA - UNIT 2

Revision 1