BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

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| In the Matter of | : | |
| | : | Docket No. 50-352 |
| PHILADELPHIA ELECTRIC COMPANY | : | |

APPLICATION FOR AMENDMENT

OF

FACILITY OPERATING LICENSE

NPF-39

Eugene J. Bradley

2301 Market Street
Philadelphia, Pennsylvania 19101

Attorney for
Philadelphia Electric Company

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Philadelphia Electric Company, Licensee under Facility Operating License NPF-39 for Limerick Generating Station, Unit 1, hereby requests that the Technical Specifications contained in Appendix A to the License be amended as indicated by a vertical bar in the margin of the attached pages 3/4 6-22, 3/4 6-24, 3/4 6-26 and 3/4 6-29. Licensee proposes to modify certain containment penetrations whose inboard containment isolation valves have their stem packing exposed to containment atmosphere and proposes to revise testing methods in order that the stem packing be included during leak testing. The penetrations will be modified to allow periodic testing to include leakage through

the valve(s) stem packing in accordance with 10 CFR 50, Appendix J. Licensee also proposes to revise the associated Technical Specifications which lists the isolation valves, deleting the page notes which reference "Reverse" testing of affected isolation valves. Modifications to these penetrations would allow "Forward" testing to test valve packing leakage along with the leakage through the valve seat.

Licensee requests approval of the changes to the isolation valves and to the Technical Specifications so that the proposed modifications can be completed during the next refueling outage, scheduled to begin in January 1989. Licensee further requests that the Technical Specification changes be made effective after completion of the physical modifications.

Containment Isolation System

The design basis for the Primary Containment Isolation System allows the normal and emergency passage of fluids through the containment boundary. Isolation valves are installed at each penetration to prevent (or limit) the escape of fission products which would accumulate inside the containment during an accident. At least two barriers are required at each containment penetration. Generally, two valves are located between the containment atmosphere (or the reactor coolant system) and the outside atmosphere, to act as barriers, so that failure of any single valve would not prevent isolation of the containment penetration during an accident.

At Limerick Station both isolation valves are sometimes located outside the primary containment, rather than one valve inside containment and one valve outside containment. The two isolation valves are sometimes located outside of the containment for the following reasons:

- Most of these valves would be required to operate during an accident and the containment environment might be unacceptable for valve operation during an accident.

- Since the containment is inerted during operation, locating these valves outside of the containment allows periodic inspection, testing and maintenance to be performed while the plant is operating.

Various types of valve (i.e. gate, globe, etc.) are installed at Limerick Station for use as primary containment isolation valves. All of these valves require periodic testing for leak tightness. The methods used for periodic leak tightness testing are designated in 10 CFR 50 Appendix J as type A tests, type B tests and type C tests. Only type C testing of globe valves is discussed below, with type A tests, type B tests, and the type C tests of other valve types being outside the purview of this request.

Type C testing is accomplished on individual valves and is sometimes accomplished in the "Reverse" direction, i.e., the

test pressure is not from the containment direction, but is from outside the containment, directed toward the valve in the containment direction. "Forward" testing would refer to type C testing of valves from the same direction as that which the valve would be subjected to during an accident. Testing is accomplished on some valves in a manner, (or from a direction), which would not include the leakage through the valve packing, because the packing is opposite from the valve globe which effectively blocks the test pressure from the packing. In those cases where the valve is installed with the packing on the containment side of the valve, i.e., exposing the stem packing to possible containment pressures and creating a potential path for containment fluid leakage during an accident, the packing must be leak tested during type C testing. Once the affected penetrations are modified, the valves' stem packing could then be type C tested. In the case of two of the isolation valves, the valve testing methods are going to be revised, without making any physical modifications, in order to allow the packing leakage to be tested.

During type C testing, both the direction of the test pressure on the valve, the position of the valve in relationship to the containment and the position of the valve stem packing in relationship to the test pressure are of prime importance:

- <u>Direction of Test Pressure</u>

Test pressure used for type C testing of valves is normally required to be from the same direction as containment pressure during an accident ("Forward" direction), unless it can be demonstrated that the valve has the same, or more conservative, leak tightness when tested from a different direction.

- Position of Valve Stem Packing in Relationship to Test Pressure

The valve stem packing, if it would also be exposed to containment atmosphere during an accident, is also tested for leak tightness during type C testing. Further, valves which are open during an accident, such as blocking valves used for testing, would have their packing exposed, because they are only closed during testing. Therefore, the packing on block valves is also exposed to test pressure during testing.

Blocking Valves Needed

Blocking valves are installed between the containment boundary wall and some of the isolation valves to accommodate testing. The closed blocking valve maintains gas pressure introduced via a test tap permanently installed between the blocking valve and the isolation valve to be used during Type C testing. Block valves remain open except when they are being used during Type C testing. Licensee proposes to add new blocking valves between containment and the existing isolation valves HV-57-111, HV-57-105 and valve 60-1073 so that gas

pressure can be applied to these valves from the containment "Forward" direction during type C testing. The "Forward" direction of testing would, therefore, allow leakage testing of these isolation valves' stem packing. The new blocking valves will be oriented such that their packings are included in the type C test boundary.

Proposed Globe Valve Changes

Two types of changes are proposed for globe valves used for containment isolation:

(1) Add a Blocking Valve and Test Tap

A new blocking valve and test tap would be added to allow testing on valves HV-57-111 (Drywell Purge Exhaust), HV-57-105 (Suppression Pool Purge Exhaust) and 60-1073 (ILRT Data Acquisition System).

(2) Revised testing methods will allow testing valves 60-1057 and 60-1071 in the "Forward" direction to include leak testing of these two valve(s) stem packing

Penetrations 40 G-1 and 40 G-2 are isolated by valves 60-1057 and 60-1071 located outside containment. A revised method of testing these valves will allow "Forward" testing, including leak testing of the valve(s) stem packing. A temporary test plug and test rig will be used for type C testing from inside

the containment which will allow testing the valve(s) stem packing.

Categories of Proposed Technical Specification Changes

"Note 5" is presently listed in the Technical Specification, penetration listing on pages 3/4 6-22, 3/4 6-24, 3/4 6-26 and 3/4 6-29. "Note 5" states, "inboard globe valve tested in the reverse direction." All of the proposed changes to the technical specifications are related to deletion of "note 5" from the valve penetration listings for penetrations 26, 40G-1, 40G-2, 202 and 227. No other technical specification changes are being proposed. The changes to the Technical Specifications for these five valves are all related and involve the position of the valve and type C testing of the valve stem packing.

List of Proposed Changes to the Technical Specifications

Table 3.6.3-1

| Part A | Proposed Change |
|---|---|
| Penetration 26 | Delete reference to note 5 for valve HV-57-111. (Drywell Purge Exhaust) |
| Penetration 40G-1 | Delete reference to note 5 on valve 60-1057 (ILRT Data acquisition penetration) |

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| Penetration 40G-2 | Delete reference to note 5 on valve 60-1071 (ILRT Data acquisition penetration) |
| Penetration 202 | Delete reference to note 5 on valve HV-57-105. (Suppression Pool Purge Exhaust) |
| Penetration 227 | Delete reference to Note 5 on valve 60-1073. (ILRT Data Acquisition System) |

Safety Significance - Proposed Isolation Valve Changes

The addition of blocking valves and test taps and/or revised testing methods will allow the affected penetration isolation valves to be leak tested in the "Forward" direction including the valve stem packing. Leak testing of the valve stem packing will allow timely repairs to any valves which have excessive packing leakage. The timely repairs of defective valves decreases the possibility for containment atmosphere to escape to the environment during an accident. The effectiveness of the isolation system is therefore increased by the proposed changes.

Significant Hazards Considerations - Containment Isolation Valve Changes

The addition of blocking valves and test taps, and/or revising test methods, does not involve any Significant Hazards Considerations. In order to support a No Significant Hazards Consideration determination, necessary background supporting information is provided below, along with an evaluation of each of the three standards set forth in title 10 CFR section 50.92.

(1) Operation of the plant under the proposed Technical Specifications after the addition of Blocking valves and test taps and/or revising the leakage testing methods, would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The containment isolation system is evaluated in section 6.2.4.1 of the Final Safety Analysis Report. The Final Safety Analysis Report evaluated the containment isolation system in eleven design areas:

a. The containment isolation system is designed to allow the normal or emergency passage of fluids through the containment boundary while preserving the ability of the boundary to prevent or limit the escape of radioactive materials that can result from postulated accidents.

- The addition of blocking valves and test taps will not affect the ability of the isolation system to limit or prevent the escape of radioactive

materials that could result from postulated accidents.

b. The containment isolation system is designed to either automatically isolate fluid penetrations or provide the capability for remote manual isolation from the control room.

- o Automatic and remote manual isolation would remain the same after the proposed modifications.

c. The arrangement of containment isolation valves for fluid systems that penetrate the primary containment conforms to General Design Criteria 54, 55, 56 and 57 to the greatest extent practicable.

- o The isolation valves would continue to conform to General Design criteria 54, 55, 56 and 57 to the same degree as the original design, after the proposed modifications.

d. Fluid instrument lines that penetrate primary containment conform to the isolation criteria of Regulatory Guide 1.11 to the greatest extent practicable.

- o No fluid instrument lines are affected by the proposed modifications.

e. Containment isolation provisions are designed to withstand the most severe natural phenomenon or site-related event (e.g., earthquake, tornado, hurricane, flood, or transportation accident) without impairing their functions.

- o Stress and pipe support calculations have been reviewed to ensure that changes and additions satisfy the existing seismic design criteria.

f. The containment isolation system is designed with provisions for periodic operability and leak rate testing.

- o The proposed modifications would allow more effective and accurate leak rate testing. Periodic operability and leak rate testing provisions on isolation valves will be enhanced by the proposed modifications and new testing methods.

g. Valve closure times are selected to minimize the release of containment atmosphere to the environs, to mitigate offsite radiological consequences, and to ensure that ECCS effectiveness is not degraded.

- o Valve closure times would not be affected by the proposed modifications.

h. Design provisions are made to detect possible leakage from lines provided with remote manually controlled isolation valves.

- The leak detection provisions would not be affected by the proposed modifications.

i. Isolation valves, actuators, and controls are protected against loss of functional capability from missiles and impact accident environments.

- The proposed modification has been evaluated for protection against loss of functional capability from missiles and impact accidents.

j. Redundancy and physical separation are provided in the electrical and mechanical design to ensure that no single failure in the containment isolation system can prevent the system from performing its intended function.

- No changes are proposed in the design of the electrical and mechanical redundancy and separation provisions for isolation valves.

k. The design of the control systems for automatic containment isolation valves is such that resetting the

isolation signal does not result in the automatic reopening of containment isolation valves.

- The design for isolation valves will continue to maintain the containment isolation valves closed after resetting the isolation signal.

Based on the design areas discussed above, as previously evaluated in the Final Safety Analysis Report, and based on the determination that there would be no significant changes to these areas following the proposed modifications, operation of the plant under the propoced technical specifications after the addition of blocking valves and test taps and/or revising the test methods would not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Operation of the plant under the proposed Technical Specifications after the addition of blocking valves and test taps and after revising the leakage test methods for valves 60-1057 and 60-1071, would not create the possibility of a new or different kind of accident from any accident previously evaluated.

Chapter 15 of the Final Safety Analysis Report examined postulated accidents to determine their effect on the containment isolation system. The barrier performance sections, (as explained in FSAR section 15.0.3.4) includes analysis of anticipated operational occurrences (e.g., Loss of Electrical

Load); off-design, abnormal transients; postulated accidents (e.g., sudden loss of a major component) and; hypothetical events such as an anticipated transient without scram. The proposed modifications would not adversely affect any of these analyses.

Adding block valves and test taps and/or revising the leakage test methods, would not change the evaluations made in the Final Safety Analysis Section 15, and therefore, the proposed changes would not increase the possibility of a new or different type accident from those previously evaluated.

(3) Operation of the plant under the proposed Technical Specifications after the addition of blocking valves and test taps and/or revising the leakage test methods, would not involve a significant reduction in a margin of safety.

The existing margin of safety for the containment isolation valves is based upon the assurance of operability, the isolation closure times of the valves and the leak tightness of these valves. This margin of safety is periodically confirmed by surveillance testing, which would continue on the same schedule following the valve modifications. Surveillance testing would continue, after making the proposed modifications, to verify that the isolation valves:

- Maintain leak tightness to a degree which provides an adequate margin of safety.

- Close after receipt of a closure signal in a time which would preclude escape of radioactive materials to the environs.

- Continue to remain operable, isolating the containment in the event of an accident and would continue to be periodically tested for continued operability.

Because of a new ability for better leakage testing of containment isolation valve stem packing, the proposed modifications would be more conservative in the event of challenges to the containment isolation system, because packing leakage if excessive, would be discovered and corrected. Based on continued testing of the containment isolation valves' operability, their closure times and their leak tightness, following modifications, the proposed changes would not involve a significant reduction in a margin of safety.

Conclusion:

Based on the three standards discussed above, operation of the facility after the addition of blocking valves and test taps used for testing containment isolation valves HV 57-111, HV-57-105 and 60-1073; and revising the testing methods for these valves and 60-1057 and 60-1071, so that the listing of isolation valves in the Technical Specifications can be revised to indicate "Forward" testing of these valves, involves no Significant Hazards Considerations.

Environmental Considerations

This amendment would allow "Forward" testing of five isolation valves in order to include leakage testing of the valves' stem packing and would also delete "note 5" from Technical Specification listing of the isolation valves.

The proposed changes do not involve any increase in the amounts and no changes in the types of effluents that may be released offsite. No increase will occur in the individual or cumulative occupational radiation exposure. Therefore, no environmental impact report is required.

Conclusion

The Plant Operations Review Committee and the Nuclear Review Board have reviewed these proposed changes to the Technical Specifications and have concluded that they do not involve Significant Hazards Considerations, do not involve an unreviewed safety question, do not involve environmental considerations and will not endanger the health and safety of the public.

Respectfully submitted,
PHILADELPHIA ELECTRIC COMPANY

JW Gallagher
Vice President

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF PHILADELPHIA :

J. W. Gallagher, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing Application for Amendment of Facility Operating License and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

J W Gallagher

Subscribed and sworn to
before me this 1st day
of November, 1988

Melanie R. Campanella

Notary Public

NOTARIAL SEAL
MELANIE R. CAMPANELLA, Notary Public
City of Philadelphia, Phila. County
My Commission Expires Feb. 12, 1990