



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 223 AND 227 TO FACILITY OPERATING

LICENSE NOS. DPR-44 and DPR-56

PECO ENERGY COMPANY  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
DELMARVA POWER AND LIGHT COMPANY  
ATLANTIC CITY ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION, UNIT NOS. 2 AND 3

DOCKET NOS. 50-277 AND 50-278

1.0 INTRODUCTION

By letter dated May 23, 1997, as supplemented by letter dated September 11, 1998, the PECO Energy Company (the licensee) submitted a request for changes to the Peach Bottom Atomic Power Station (PBAPS), Unit Nos. 2 and 3, Technical Specifications (TSs). The requested changes would revise the Technical Specifications (TSs) to exclude the measured Main Steam Line Isolation Valves (MSIVs) leakage from the total Type B and Type C Local Leak Rate Test (LLRT) results. The September 11, 1998, letter provided the typed TS pages and did not change the Nuclear Regulatory Commission (NRC) staff's proposed no significant hazards consideration determination.

2.0 EVALUATION

The original PBAPS Units 2 and 3 TSs (as approved in Safety Evaluation Report dated August 11, 1972) excluded the measured MSIVs leakage from the total Type B and Type C LLRT results. This exclusion was deleted from the TSs as part of the Improved Technical Specifications that were approved in a Safety Evaluation (Amendment Nos. 210 and 214) dated August 30, 1995.

On September 12, 1995, the NRC approved issuance of a revision to 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," which was subsequently published in the Federal Register on September 26, 1995, and became effective on October 26, 1995. Option B, "Performance-Based Requirements," was added to Appendix J to allow licensees to voluntarily replace the prescriptive testing requirements with testing requirements based on both overall leakage rate performance and the performance of individual components. Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," endorses the Nuclear Energy Institute (NEI) 94-01, Revision 0, "Industry

Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," as guidance for developing a performance-based leakage-testing program. Further, if an exception is to be taken from the methods endorsed in RG 1.163, this exception is to be identified in Section 5.5 of the TS.

The leakage rate acceptance criterion for total Type B and Type C LLRT results is currently limited to  $0.6 L_a$ , where  $L_a$  is equivalent to a 0.5% air weight per day primary containment leak rate, as described in TS Section 5.5.12, "Primary Containment Leakage Rate Testing Program." No exceptions to the methods endorsed in the RG are currently identified by the licensee. The MSIV leakage is currently included in the  $0.6 L_a$  total, even though the MSIVs also have a separate TS Surveillance Requirement (SR) limit of 11.5 standard cubic feet per hour (scfh) per valve.

The primary-to-secondary containment leakage rate analyzed in design basis dose consequence calculations, as described in the Updated Final Safety Analysis Report (UFSAR), is based on 0.635% primary containment air weight per day, or  $1.27 L_a$ . This leakage is filtered by the standby gas treatment system (SGTS) and then released through the stack. All of the measured Type B and Type C leakage, except the MSIV leakage, is included in the primary-to-secondary containment leakage.

In addition to the primary-to-secondary containment leakage rate analyzed in design basis calculations, secondary containment bypass leakage is also analyzed. MSIV leakage is considered to be the sole contributor to secondary containment bypass leakage. The additional secondary containment bypass leakage (through the MSIVs at their TS limit of 11.5 scfh per valve) is identified as a separate 0.145% primary containment air weight per day containment leak rate in the design-basis dose consequence calculations. This leakage has an expected release path through the steam lines and turbine/condenser. In a manner similar to the primary-to-secondary leakage calculation, the 0.145% primary containment air weight per day bounds the total TS-allowable MSIV leakage rate rather than being equal to it (11.5 scfh per valve, times 4 valves, or 46 scfh which is approximately 0.085% primary containment air weight per day).

Because the MSIVs have a low and separate TS leakage limit of 11.5 scfh per valve and the fact that the dose consequence analysis for MSIV leakage continues to be considered separately from all other containment leakages, it is not considered to be necessary to include the MSIV leakage as part of the primary-to-secondary containment leak rate which has been analyzed as  $1.27 L_a$ . Further, the proposed TS maintains the safety objective of the MSIVs to close automatically to (1) prevent damage to the fuel barrier by limiting the loss of reactor coolant in case of a major leak from the steam piping outside the primary containment, (2) limit release of radioactive materials by closing the nuclear system process barrier in case of gross release of radioactive materials from the reactor fuel to the reactor cooling water and steam, and (3) limit release of radioactive materials by closing the primary containment barrier in case of a major leak from the nuclear system inside the primary containment.

The dominant contributor to onsite (control room, technical support center, vital areas, and vital area access routes) airborne activity-caused doses is the secondary containment bypass leakage. The proposed exclusion would have no impact on these doses. Loadings on the control room and technical support center charcoal intake filters consider both primary-to-secondary containment leakage and secondary containment bypass leakage. Therefore, loadings are not increased by this change.

The combined dose rates from the two release paths, the primary-to-secondary containment leakage, and the secondary containment bypass leakage are unchanged as a result of the proposed change, are within the dose guidelines of 10 CFR Part 100, and are in conformance with NUREG-0737 post-accident access requirements.

Current TS 5.5.12, "Primary Containment Leakage Rate Testing Program," requires conformance with the guidelines in RG 1.163, which in turn endorses NEI 94-01. The requirements for maintaining total Type B and Type C leak test results are specified in NEI 94-01. The proposed license change application (LCA) revises Section 5.5.12 of the PBAPS Units 2 and 3 TSs to exclude the measured MSIVs leakage from the total Type B and Type C LLRT results and is identified as an exception to the endorsed methodology in RG 1.163. The benefit of excluding the measured MSIV leakage from 0.6  $L_a$  acceptance criterion is to provide an additional operational margin when evaluating the total Type B and Type C LLRT leakage against the current TS limit. This exclusion is proposed because MSIVs have separate leakage limits (covered under TS 3.6.1.3), and the onsite and offsite post loss-of-coolant-accident (LOCA) doses from MSIVs leakage during a design basis accident have been, and will continue to be, analyzed separately from the primary-to-secondary containment leakage. The proposed change does not impact the design-basis dose rate calculational methodology or consequences.

However, Appendix J, Option B, Section III.B., states, in part:

The tests must demonstrate that the sum of the leakage rates at accident pressure of Type B tests, and... Type C tests, is less than the performance criterion ( $L_a$ ) with margin, as specified in the Technical Specification.

The phrase "( $L_a$ ) with margin, as specified in the Technical Specification", in accordance with the current TS and NEI 94-01, means that the limit on the sum of Type B and Type C leakage rates is 0.6  $L_a$ ; in other words, the margin is 0.4  $L_a$ . Further, the summation cannot exclude any measured Type B or Type C leakage rate, not even MSIVs leakage. The summation limit would become:

$$0.6 L_a + (\text{MSIVs leakage}) = \text{approximately } 0.77 L_a$$

This is greater than the 0.6  $L_a$  limit stated in NEI 94-01. However, the LCA takes an exception to NEI 94-01 which implicitly redefines the margin referred to in the Appendix J requirement quoted above. Instead of 0.4  $L_a$ , the margin will be approximately 0.23  $L_a$ . In other words, the margin to  $L_a$ , "as specified in the Technical Specification," will be different from the norm. The revised TS

will establish a new margin, smaller than the norm. The staff finds this to be acceptable, because, as stated above, the radiological analysis for the plant will not change. Therefore, the revised TS will be in compliance with the requirements of Appendix J, Option B.

Several additional TS Bases changes are also included as a part of the LCA request:

1. Bases SR 3.6.1.1.1 is revised to delete a discussion concerning leakage limits. Specific leakage limits no longer exist in SR 3.6.1.1.1. Primary containment leakage limits are contained in TS 5.5.12, "Primary Containment Leakage Testing Program."
2. Bases SR 3.6.1.3.14 is clarified to state that MSIV leakage is secondary containment bypass leakage, and is independent of the primary-to-secondary containment leakage.
3. Reference 1 to Bases Section 3.6.1.1 is revised to reflect a new reference to Section 14.9, "Evaluations Using AEC Method," replacing a former reference to Section 14.6.3, "Loss-of-Coolant Accident," under Section 14.6, Analysis of Design Basis Accidents.

The staff has determined that the proposed LCA engineering change request (ECR) 96-02324 to modify the PBAPS Units 2 and 3 TSs to exclude the measured MSIV leakage from the total Type B and Type C local leakage rate is acceptable and is consistent with 10 CFR Part 50, Appendix J, Option B. The LCA is consistent with the original design basis for PBAPS Units 2 and 3. The methodology and consequences for design basis accident LOCA evaluations are not changed as a result of the proposed LCA. Based on the above, the proposed changes are acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change the surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (62 FR 35852). Accordingly, the amendments meet 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 amendments.

## 5.0 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: E. D. Throm  
J. C. Pulsipher

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