



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO A REQUEST FOR RELIEF 01A-VRR-1 REGARDING INSERVICE TESTING  
OF AUTOMATIC DEPRESSURIZATION SYSTEM SAFETY RELIEF VALVES  
AT PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3  
DOCKET NUMBERS 50-277 AND 50-278

## 1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2 and 3 pumps and valves be performed in accordance with the ASME Boiler and Pressure Vessel Code and applicable addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), (a)(3)(i), or (a)(3)(ii). In proposing alternatives or requesting relief, the applicant must demonstrate that: (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

## 2.0 LICENSEE'S RELIEF REQUEST

By letter dated May 1, 1998, PECO Energy Company, the licensee for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, submitted a request for relief 01A-VRR-1 from certain ASME Code IST requirements pertaining to testing of the plant Automatic Depressurization System (ADS) safety relief valves (SRVs).

Specifically, the licensee requests relief from paragraph ISTC 4.2 which requires quarterly stroke and stroke-time testing of category B valves and paragraph I.3.4.1(d) of Appendix I which requires remote actuation of the ADS SRVs at reduced system pressure after being maintained or refurbished in place, removed for maintenance or testing, or both, and reinstalled. The ADS SRVs have both ASME Code category B and C functions. The category B function is the ADS function, and the category C function is the self-actuating function. This request for relief relates only to the category B function of these valves.

### 2.1 Code Requirement

The applicable ASME Code IST requirements for the plant ADS SRVs are provided in ASME Operation and Maintenance (OM) Code-1990, Appendix I, which was approved by the staff for use at PBAPS, Units 2 and 3 in a letter dated May 11, 1998.

## 3.0 BASIS FOR RELIEF

Each plant ADS SRV is a Target Rock 3-Stage pilot-operated SRV with an attached pneumatic actuator. There are a total of five SRVs in each of the Units 2 and 3 main steam systems which perform the ADS function and are identified below:

Unit 2: RV-2-02-071A, B, C, G, and K  
Unit 3: RV-3-02-071A, B, C, G, and K



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October 1, 1998

Mr. Garrett D. Edwards  
Director - Licensing, MC 62A-1  
PECO Energy Company  
Nuclear Group Headquarters  
Correspondence Control Desk  
P. O. Box No. 195  
Wayne, PA 19087-0195

SUBJECT: REQUEST FOR RELIEF 01A-VRR-1 FROM INSERVICE TESTING OF  
AUTOMATIC DEPRESSURIZATION SYSTEM SAFETY RELIEF VALVES AT  
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 (TAC NOS.  
MA1741 AND MA1742)

Dear Mr. Edwards:

By a letter dated May 1, 1998; PECO Energy Company (the licensee) requested amendments to change the Peach Bottom Atomic Power Station (PBAPS) Technical Specifications (TSs); and relief from American Society of Mechanical Engineers (ASME) Operational Maintenance (OM) Code Inservice Testing (IST) requirements of plant Automatic Depressurization System (ADS) safety relief valves (SRVs). The request for amendments to the TSs will be addressed as a separate action. This action addresses the request for relief from ASME OM Code IST requirements.

The U.S. Nuclear Regulatory Commission staff authorizes the proposed alternative to inservice testing of the ADS SRVs required by the ASME OM Code - 1990, paragraph ISTC 4.2 and paragraph I 3.4.1(d), Appendix I at PBAPS, Units 2 and 3.

The NRC staff has reviewed the licensee's request and has determined that the licensee has demonstrated that the proposed alternative to Code requirements provides assurance of adequate valve performance, and compliance with the Code would result in hardship or unusual difficulty without a compensating increase in quality and safety. Therefore, the proposed alternative testing is authorized pursuant to 10 CFR 50.55a(a)(3)(ii). The staff's safety evaluation is enclosed.

If you have any questions regarding this matter, please contact Mohan C. Thadani at 301-415-1476.

Sincerely,

Robert A. Capra, Director  
Project Directorate I-2  
Division of Reactor Projects - VII  
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 278

Enclosure: Safety Evaluation

cc w/encls: See next page

Each of the ADS SRVs operate in the safety mode or the depressurization mode. In the safety mode, each SRV opens when system pressure exceeds the self-actuating setpoint pressure, which is controlled by the setpoint spring acting on the pilot disk. When the pilot disk opens, the resulting differential pressure across the second stage piston opens the second stage disk which then results in a differential pressure across the main piston which opens the main disk to relieve system overpressure. The depressurization mode functions are accomplished by applying electric power to solenoids which provide instrument gas to the pneumatic diaphragm assembly that forces the second stage disk to open. Once the second stage is open, steam pressure provides the necessary force to open the main SRV disk.

Currently, in order to meet the above OM Code requirements, the PBAPS, Units 2 and 3 ADS SRVs are in situ exercised open and closed with reactor steam pressure at least once every 24 months during startup from a refueling outage. The licensee has linked this testing to second stage disk seat leakage degradation and has provided an example where second stage leakage and a subsequent plant shutdown occurred following SRV stroke testing. The licensee states that, if second stage leakage becomes severe enough, it could result in inadvertent valve actuation and require shutdown of the plant. The licensee also states that the current stroke-time testing of the ADS SRVs is performed by indirect means through the detection of steam flow by acoustic monitoring which is of limited value in detecting degradation since the ADS SRVs are fast acting valves.

#### 4.0 PROPOSED ALTERNATIVE TESTING

As an alternative to the in situ testing of the ADS SRVs required by the ASME OM Code-1990, paragraph ISTC 4.2 and paragraph I 3.4.1(d) of Appendix I, the licensee proposes to energize the ADS SRV solenoids, stroke the actuators, and verify second stage movement in accordance with Technical Specification (TS) Surveillance Requirements (SRs) 3.4.3.2 and 3.5.1.12. The licensee states that the performance of all of the required ADS SRV components are verified when these TS SRs are combined with the following required testing:

- A. Appendix I also requires testing of the ADS SRV safety mode. This is accomplished by removing approximately 50% of the plant SRVs each refueling outage and shipping them to an offsite testing facility for "as-found" testing which includes visual inspection, leakage testing, valve body leakage testing, delay time testing, and set pressure testing. Following any necessary maintenance or refurbishment, the same testing would again be repeated.
- B. TS SR 3.3.5.1.5 requires a logic system functional test every 24 months to demonstrate operability of the initiation logic for the ADS.
- C. TS SR 3.5.1.11 requires verification that individual channel calibrations and functional tests of the ADS have been completed within 24 months.
- D. IST tests are performed on the instrument gas/accumulator to ensure that there will be adequate pneumatic pressure to actuate the ADS SRVs.

The licensee states that testing of the SRVs every 4 years, compared to the current 2-year testing, is adequate based on a review of plant test data which indicated there were no failures of the main disks to open during setpoint testing.

#### 5.0 EVALUATION

The staff has reviewed the licensee's proposed TS changes and finds that the ASME Code requirement to perform in situ stroke testing of the ADS SRVs may contribute to undesirable leakage and could result in inadvertent actuation of the valves during power operation. The alternative testing proposed by the licensee provides periodic verification of all of the individual ADS SRV components which are currently being tested except that the tests of the SRV main stages would be performed every 4 years at a test facility instead of in situ with reactor steam every 2 years. The staff finds that this is an acceptable testing frequency of the main stages of the ADS SRVs based on the reliable performance of the main stages in performing their safety function. The staff also finds that the proposed testing for measuring the delay time of the ADS SRVs at an offsite testing facility is acceptable as an alternative to the current stroke-time testing method. The staff further finds that the proposed surveillance and testing of the SRVs and associated components provide reasonable assurance of adequate valve performance. Therefore, the staff finds that the proposed alternative testing method to that required by ASME OM Code-1990, paragraph ISTC 4.2 and paragraph I 3.4.1(d) of Appendix I is acceptable.

#### 6.0 CONCLUSION

Based on the above evaluation, the licensee's alternative to ASME OM Code requirements is authorized pursuant to 10 CFR 50.55a(a)(3)(ii). As described above, the staff has determined that the licensee has demonstrated that compliance would result in degradation of the valve without a compensating increase in the level of quality and safety in that the proposed alternative testing provides assurance of adequate valve performance.

Principal Contributor: G. Hammer

Date: October 1, 1998