

PHILADELPHIA ELECTRIC COMPANY

NUCLEAR GROUP HEADQUARTERS

955-65 CHESTERBROOK BLVD.

WAYNE, PA 19087-5691

(215) 640-6000

NUCLEAR ENGINEERING & SERVICES DEPARTMENT

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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Inservice Testing Program

REFERENCE: Letter from W. R. Butler (NRC) to G. J. Beck
(PECo) dated January 17, 1991

Dear Sir:

The above referenced letter transmitted the NRC's Safety Evaluation (SE) for the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 second 10-year interval Inservice Testing (IST) Program. The purpose of this letter is to provide a voluntary response to the SE, and to provide an updated, uncontrolled copy of Revision 2 to the IST Program (Enclosure 1). This revision includes changes recommended by the NRC in the SE, and was issued for use within six months of receipt of the SE.

Appendix C of the above referenced letter listed ten IST Program anomalies identified by the NRC during review. Enclosure 2 to this letter contains a restatement of each anomaly followed by our response.

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Very truly yours,

cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PB

Peach Bottom Atomic Power Station, Units 2 and 3
PFCo Response to NRC Identified Anomalies
in Second 10-Year Interval IST Program

1. The licensee shall categorize all excess flow check valves A/C instead of C.

PECo Response

Relief Request GVRR-2 and the associated valve tables have been revised in Revision 2 of the Program to categorize excess flow check valves as A/C.

2. The licensee stated at the working meeting that the main steam safety/relief valve tailpipe vacuum breakers would be included in the IST program and a relief request would be provided proposing to manually exercise the valve disks during cold shutdowns when the drywell is de-inerted and during refueling outages. The licensee has instead proposed to test these vacuum breaker check valves in accordance with the requirements of ANSI/ASME OM-1-1981 which states that vacuum breaker devices are to be tested at least once each ten year interval. This proposal is not in agreement with Section XI, Paragraph IWV-3522(b), which states, in part, "except that for vacuum breaker valves the exerciser force or torque delivered to the disk may be equivalent to the desired functional pressure differential force. The disk movement shall be sufficient to prove that the disk moves freely off the seat." This exercising test is required to be performed at the quarterly test frequency stated in Paragraph IWV-3521 with reference to Paragraph IWV-3522. Since the vacuum breakers in question are simple check valves with no external means of operation or required differential pressure setpoint, they should be exercised in accordance with the requirements of Section XI in order to demonstrate valve operational readiness. These valves are inaccessible during power operation because they are located inside the drywell and the drywell atmosphere is inerted with nitrogen gas. They are also inaccessible during most cold shutdowns because the drywell is not de-inerted, therefore, they cannot be exercised each cold shutdown in accordance with the applicable requirements of Section XI.

The licensee should provide a relief request to perform exercise testing during those cold shutdowns when the drywell is de-inerted and during refueling outages. The valves are:

VRV-2-01-8096A
VRV-2-01-8096B
VRV-2-01-8096C

VRV-2-01-8096G
VRV-2-01-8096H
VRV-2-01-8096J

13-VRR-3, 14-VRR-2, 23-VRR-2, and 23-VRR-3. When valve disassembly is used as an alternative to Code testing, the valve internals should be visually inspected for worn or corroded parts and the valve disk should be manually exercised per Generic Letter 89-04, Attachment 1, Position 2. Further, the licensee should perform a partial flow test of each valve prior to returning it to service following the disassembly and inspection procedure.

The NRC staff considers valve disassembly and inspection to be a maintenance procedure that is not a test and not equivalent to the exercising produced by fluid flow. This procedure has some risk which may make its routine use as a substitute for testing undesirable when some method of testing is possible. Check valve disassembly is a valuable maintenance tool that can provide a great deal of information about a valve's internal condition and as such should be performed under the maintenance program at a frequency commensurate with the valve type and service. The licensee should actively pursue the use of alternate testing methods to full-stroke exercise these valves, such as using non-intrusive diagnostic techniques to demonstrate whether they swing fully open during partial flow testing or closed when flow is ceased. If another method is developed to verify the full stroke capability of the listed valves, the affected relief request should be revised or withdrawn.

PECo Response

Relief Requests 13-VRR-2 and 23-VRR-2 have been deleted from the IST Program since they are no longer needed. The design flow rates for the valves covered by these Relief Requests can be achieved which allow for verification of the full-stroke capabilities of the valves. For the valves covered by the remaining Relief Requests 13-VRR-3, 14-VRR-2 and 23-VRR-3, maintenance procedures require visual inspection of valve internals for worn or corroded parts. A requirement to manually exercise the valve disk after reassembly has been added to these procedures in accordance with Generic Letter 89-04. Relief Requests 13-VRR-3, 14-VRR-2 and 23-VRR-3 have been revised in Revision 2 of the Program to require partial flow testing of each valve following disassembly. These three remaining Relief Requests address only Unit 3 valves. It is expected that these three Relief Requests will no longer be needed following completion of Modification 1498 during the Unit 3 refueling outage which began September 1991. This modification will replace the valves with valves whose operators are capable of full stroke testing. Consequently, pursuit of alternate testing methods such as non-intrusive diagnostic techniques will not be necessary.

6. The licensee has identified check valve disassembly as the alternate testing to verify the reverse flow closure capability for the valves addressed in relief requests 10-VRR-1, 13-VRR-1, 14-VRR-1, and 23-VRR-1. When valve disassembly is used as an alternate to Code testing, the valve internals should be visually inspected for worn or corroded parts and the valve disk should be manually exercised per Generic Letter 89-04, Attachment 1, Position 2. Further, the licensee should perform a partial flow test of each valve prior to returning it to service following the disassembly and inspection procedure.

The NRC staff considers valve disassembly and inspection to be a maintenance procedure that is not a test and not equivalent to the exercising produced by fluid flow. This procedure has some risk which may make its routine use as a substitute for testing undesirable when some method of testing is possible. Check valve disassembly is a valuable maintenance tool that can provide a great deal of information about a valve's internal condition and as such should be performed under the maintenance program at a frequency commensurate with the valve type and service. The licensee should actively pursue the use of alternate testing methods to verify the reverse flow closure of these valves, such as using non-intrusive diagnostic techniques to demonstrate whether they swing fully closed upon cessation or reversal of flow. If another method is developed to verify the reverse flow closure capability of the listed valves, the affected relief request should be revised or withdrawn.

PECo Response

Maintenance procedures require visual inspection of valve internals for worn or corroded parts. A requirement to manually exercise the valve disk after reassembly has been added to these procedures in accordance with Generic Letter 89-04. Relief Requests 10-VRR-1, 13-VRR-1, 14-VRR-1 and 23-VRR-1 have been revised in Revision 2 of the Program to require partial flow testing of each valve following disassembly.

In response to the NRC recommendation to pursue an alternate testing method, PECO is active in the Nuclear Industry Check Valve Group (NIC) and is reviewing NIC Report NIC-01, "Evaluation of Nonintrusive Diagnostic Technologies for Check Valves." The methods discussed in this report will be evaluated to determine if they are acceptable as an alternative to the presently approved NRC method of check valve disassembly. In the interim, PECO is pursuing a check valve sample disassembly and inspection program that will reduce the number of valves being disassembled during an outage.

7. The licensee's proposed alternate testing in relief request GVRR-1 for leak rate testing containment isolation valves may not be conservative and may, therefore, permit excessive leakage through certain individual valves without requiring corrective actions. Although individual leakage rates will be assigned for each containment isolation valve, it appears that the corrective actions will be based on leakage limits calculated for each local leak rate test. Each containment isolation valve should be individually leak rate tested if practicable. When valves can only practically be tested in groups, the group limit should be set such that excessive leakage through any individual valve, even the smallest, is detected and appropriate corrective actions taken.

PECo Response

This issue was discussed among the NRC, EG&G-Idaho and PECO in a telecon on April 18, 1991. During the telecon, PECO described a Residual Heat Removal (RHR) penetration which has a 24-inch and a 1-inch valve in parallel. Because of the difference in size between the two valves, we are unable to assign a maximum penetration leak rate that is low enough to detect significant leakage from the 1-inch valve and high enough to allow acceptable leakage from the 24-inch valve. The NRC indicated that installation of block valves, which would allow individual testing of the valves, is discouraged because of the risk of the block valves being inadvertently closed. The NRC also indicated that they would not encourage assigning a low leakage rate, suitable for the 1-inch valve, because it could result in unnecessary corrective actions on the non-degraded 24-inch valve. Therefore, it was concluded that the provisions of the Relief Request approval had been met.

8. The licensee has identified check valve disassembly as the alternate testing to verify the reverse flow closure capability for the keep fill valves addressed in relief requests 14-VRR-1 and 14-VRR-3. The NRC staff considers valve disassembly and inspection to be a maintenance procedure that is not a test and not equivalent to the exercising produced by fluid flow. This procedure has some risk which may make its routine use as a substitute for testing undesirable when some method of testing is possible. The licensee is encouraged to investigate methods of verifying the reverse flow closure of these check valves other than disassembly and inspection. For these keep fill series check valve pairs, the NRC has found acceptable verifying by positive means (such as leak testing) that at least one of the series valves is closed once every three months. No additional testing needs to be performed unless there is an indication that the closure capability of the pair of valves is questionable, then both valves must be

declared inoperable and repaired or replaced before being returned to service.

PECo Response

Maintenance procedures require visual inspection of valve internals for worn or corroded parts. A requirement to manually exercise the valve disk after reassembly has been added to these procedures in accordance with Generic Letter 89-04. Relief Requests 14-VRR-1 and 14-VRR-3 have been revised in Revision 2 of the Program to require partial flow testing of each valve following reassembly.

As stated previously in response to Anomaly 6, PECO is pursuing alternate test methods than valve disassembly and is pursuing options for reducing the number of valves being disassembled. PECO will also consider the potential for testing series check valves in pairs.

9. The licensee has proposed to test the series-parallel check valves that serve as vacuum breakers for the HPCI/RCIC turbine exhaust lines as units by verifying a forward flow path through each group, refer to relief request GVRR-4. These valves also perform a safety function in the closed position to prevent steam from being directly introduced into the torus airspace. In a telephone conversation, the licensee recognized the closed safety function of these valves; this change should be reflected in future IST program submittals. Also, the licensee should verify the reverse flow closure of these valves as a unit during quarterly HPCI/RCIC pump testing. If the forward flow capability or reverse flow closure capability of the valve group is questionable, the licensee should declare all valves in the group inoperable and replace, repair, or verify the operational readiness of each valve prior to placing it back into service.

PECo Response

Relief Request GVRR-4 has been revised in Revision 2 of the Program to include reverse exercising.

10. The licensee has requested relief from exercising and measuring the stroke time of the main steam automatic depressurization valves, RV-2(3)-01-071A, -071B, -071C, -071G, and -071K. The licensee proposed to exercise these valves during refueling outages which should demonstrate their ability to stroke to their safety function position. However, the proposed alternate testing does not adequately monitor for degradation of these valves. Therefore, the licensee should assign a maximum stroke time limit that is based on previous test data to these valves and verify that they stroke within that limit during testing. The measured

stroke times need not be trended or compared to previous values, but if the maximum limit is exceeded, the valve should be declared inoperable and corrective actions taken in accordance with IWV-3417(b).

PECo Response

Relief Request 01-VRR-1 has been revised in Revision 2 of the Program to include stroke time requirements. No actual stroke time test history currently exists for these valves which would allow the assignment of meaningful maximum stroke time limits. Test data will be obtained for each unit during startup from each unit's next refueling outage. The resultant maximum stroke time limits will then be included in the appropriate Surveillance Tests (STs). STs for Unit 2 will be revised within 6 months from startup of Cycle 10 and STs for Unit 3 will be revised within 6 months from startup of Cycle 9. As stated by the NRC in Anomaly 10, the measured stroke times will not be trended or compared to previous values, but if the maximum limit is exceeded, the valve will be declared inoperable.

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