

10 CFR 50.55a(g)(6)(ii)(A)(5)

**PECO NUCLEAR**

A Unit of PECO Energy

PECO Energy Company
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

January 30, 1997

Docket No. 50-278

License No. DPR-56

U.S. Nuclear Regulatory Commission
Attn: Document Control Center
Washington, DC 20555Subject: Peach Bottom Atomic Power Station, Unit 3
Alternative Plan In Accordance with 10 CFR 50.55a(g)(6)(ii)(A)(5)

Dear Sir:

In accordance with 10 CFR 50.55a(g)(6)(ii)(A)(5), PECO Energy Company (PECO Energy) is submitting an alternative plan for the examination of the Peach Bottom Atomic Power Station (PBAPS), Unit 3 Reactor Pressure Vessel (RPV). The examination of the RPV will occur during the Peach Bottom Atomic Power Station (PBAPS), Unit 3 refueling outage (3R11) currently scheduled to begin in the late September to early October, 1997 time frame. This outage is the last scheduled outage prior to the conclusion of the PBAPS, Unit 3 second Inservice Inspection interval. This alternative plan is being submitted at this time in order to support completion of the planning of the upcoming 3R11 outage. In order to finalize this planning, we request approval of the attached alternative plan by May 1, 1997.

The PECO Energy alternative plan includes examination of all portions of the subject shell welds accessible from the inside of the reactor vessel. However, PECO Energy endorses the Boiling Water Reactor Vessel and Internals Project (BWRVIP) efforts towards approval of an alternative plan based on "BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations," BWRVIP-05, concerning the examination of the reactor vessel shell welds. If the recommendations of the BWRVIP are approved, PECO Energy will reevaluate the planned scope of examinations described in the attached alternative plan in conformance with the approved guidance.

If you have any questions, please contact us.

Very truly yours,

G. A. Hunger, Jr.
G. A. Hunger, Jr.,Director
Licensing Section

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Attachment

cc: H. J. Miller, Administrator, Region I, USNRC
W. L. Schmidt, USNRC Senior Resident Inspector, PBAPS

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ALTERNATIVE PLAN
ATTACHMENT

REQUIREMENT

10 CFR 50.55a(g)(6)(ii)(A)(2) states that all licensees shall augment their reactor vessel examinations by implementing the examination requirements for Reactor Pressure Vessel (RPV) shell welds specified in Item B1.10 of Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of Section XI, Division I, of the ASME Boiler and Pressure Vessel Code, subject to the conditions specified in 50.55a(g)(6)(ii)(A)(3) and (4). For the purpose of this augmented examination, essentially 100% as used in Table IWB-2500-1 means more than 90% of the examination volume for each weld. Additionally, 10 CFR 50.55a(g)(6)(ii)(A)(5) requires licensees that are unable to completely satisfy the augmented RPV shell weld examination requirement to submit information to the U. S. Nuclear Regulatory Commission to support the determination, and propose an alternative to the examination requirements that would provide an acceptable level of quality and safety.

PROPOSED ALTERNATIVE EXAMINATIONS

PECO Energy Company (PECO Energy) is unable to meet the 90% volume coverage requirement for each weld of the PBAPS, Unit 3 reactor vessel. Therefore, PECO Energy proposes that an alternative plan be accepted.

PECO Energy intends to inspect the Peach Bottom Atomic Power Station (PBAPS), Unit 3 RPV during the upcoming PBAPS, Unit 3 refueling outage (3R11), currently scheduled to begin in the late September or early October, 1997 time frame. The proposed alternative is to perform an examination of the RPV shell welds to the maximum extent practical from the Inner Diameter (ID), within the constraints of vessel internal restrictions. This examination would be performed for shell welds specified in Item B1.10 of Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of Section XI, Division I, of the ASME Boiler and Pressure Vessel Code. Further examination from the ID is not practical without disassembly of the vessel internal components. Accessibility studies of the PBAPS, Unit 3 RPV have determined that the accessible area of coverage from the ID of the RPV is approximately 76% of the cumulative length of the shell welds. Accessibility limitations preclude the capability to achieve the required 90% volume coverage required for each weld. In order to increase the amount of coverage from the ID closer to the 90% volume coverage for each weld, reactor vessel internals would need to be removed from the RPV and reinstalled. Removal of the RPV internals would present undue hardship as a result of additional radiation exposure to personnel, increased costs, and increased outage length, without a compensating increase in safety.

Accessibility studies have also determined that an examination from the Outside Diameter (OD) of the RPV would only yield an additional coverage of approximately 8% of the shell weld length. Obtaining this additional coverage would still result in less than 90% volume coverage for each weld. In order to perform the OD examinations, an estimated cost of

approximately \$460,000, beyond the cost of performing the ID examinations, would be incurred. Additional disassembly and modification of components outside the vessel, in order to increase OD coverage to meet the 90% volume coverage requirement, would result in further increases in personnel exposure, costs, and outage length. Therefore, performing OD examinations to increase examination coverage beyond that achieved from the ID would result in undue hardship without a compensating increase in safety.

During the fabrication process of the PBAPS, Unit 3 RPV, all of the shell welds were thoroughly examined using several examination methods as required by the original construction code. Additionally, all of the shell welds received volumetric examinations prior to initial plant operations (1972), as prescribed by the ASME Section XI Preservice Inspection requirements. Selected shell welds have received volumetric examinations during the first and second Inservice Inspection interval in accordance with ASME Section XI Inservice Inspection requirements. No reportable indications were identified during any of these examinations.

The General Electric (GE) GERIS-2000 System will be used to perform the remote-controlled, automated UT examinations of the RPV. This tool has been used previously at other Boiling Water Reactors for the purpose of RPV examinations. GE demonstrated this system at the Performance Demonstration Initiative (PDI), qualification Session No. 61-02, in accordance with the 1992 Edition, 1993 Addenda of ASME Boiler and Pressure Vessel Code, Section XI, Appendix VIII requirements. Appendix VIII was developed to ensure the effectiveness of UT examinations within the nuclear industry by means of a rigorous, item-specific, performance demonstration. The performance demonstration was conducted on an RPV mockup containing flaws of various sizes and locations. The demonstration established the capability of equipment, procedures, and personnel to find flaws that could be detrimental to the integrity of the RPV. Although Appendix VIII is not currently required by regulation, the qualification of equipment, procedures, and personnel to Appendix VIII criteria demonstrates examination and evaluation techniques that surpass the requirements of the ASME Boiler and Pressure Vessel Code, Section XI referenced by the rule.

PECO Energy will provide a summary report of the results of the RPV examinations to the NRC no later than 90 days from the completion of the outage, in the "Summary Report Submittal," required by Article IWA-6000 of the ASME Boiler and Pressure Vessel Code, Section XI. This submittal will include the individual weld coverage obtained with the GERIS-2000 System, and the examination results.

As described in the industry basis document; 1) the inherent flaw tolerance of the Boiling Water Reactor (BWR) vessel due to lower radiation embrittlement and less challenging design and operational loadings, 2) the quality of the original vessel fabrication, 3) the lack of significant degradation mechanisms, and 4) the results of previous vessel examinations, provides the basis to conclude that the proposed alternative plan to perform extensive and distributed, high-quality, vessel-shell-weld examinations will provide an acceptable level of quality and safety.