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VICE PRESIDENT
NUCLEAR SERVICES

July 18, 1988

Docket No. 50-277
50-278

Mr. W. R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Regulatory Guide 1.97, Rev. 3, "Instrumentation
for Light Water Cooled Nuclear Power Plants
to Assess Plant and Environs Conditions During and
Following an Accident"

REFERENCES: 1) Correspondence dated January 15, 1988
R. E. Martin, NRC to E. G. Bauer, Jr., PECO
2) Correspondence dated August 5, 1985
S. L. Daltroff, PECO to J. F. Stolz, NRC

Dear Mr. Butler:

In reference 2, Philadelphia Electric Company requested an exception from the R.G. 1.97, Rev. 3 criteria requiring (1) the neutron flux monitoring instrumentation to be environmentally qualified for harsh environmental conditions and the power sources to be class 1E, and (2) the primary containment isolation valve position indicating lights to be seismically qualified. In reference (1) the NRC denied the exceptions and requested the licensee to install and have operational instrumentation to monitor the subject variables that conforms with the design requirements of R.G. 1.97, Rev. 3. This letter proposes an action plan that (1) defers a decision regarding the upgrade of the neutron monitoring system until completion of the NRC's review of the BWR Owners' Group study requesting exceptions to the R.G. 1.97 criteria on neutron monitors, and (2) verifies the seismic qualification of the isolation valve position indicating lights.

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I. Neutron Monitoring

NRC Position

The justification provided by the Company for not fully qualifying the neutron flux instrumentation was that the variable is only needed for long term use in the event of an anticipated transient without scram (ATWS), which does not result in an environment that is more severe than a normal operating environment. The NRC concluded, however, that neutron flux instrumentation is required for monitoring purposes as related to the mitigation of any reactivity addition situation resulting from accidents. Thus, the Staff found the licensee's justification unacceptable.

Although the staff concluded that the existing instrumentation has not been shown to provide reliable neutron flux data in a post-accident situation in accordance with R.G. 1.97, Revision 3, it also recognized that a Category 1 neutron flux monitoring system that meets all the criteria of R.G. 1.97, Revision 3 is an item currently under development by industry. The Staff concluded that the existing neutron flux instrumentation is acceptable for interim operation pending satisfactory implementation of a fully qualified indication system. The staff requested the licensee to monitor industry progress related to the development of this equipment, evaluate the newly developed systems, and install neutron flux monitoring instrumentation which fully complies with the Category 1 criteria including environmental qualification.

PECo's Response

Most portions of the Peach Bottom neutron monitoring systems are designed and tested to Category 1 standards. However, some portions, notably the SRM and IRM drive mechanism and controls, do not meet the harsh environmental qualification requirements of Category 1. In addition the SRM, IRM, and APRM power sources, do not meet Category 1 requirements. R.G. 1.97, Rev. 3, requires all portions of the neutron monitoring system to meet Category 1 criteria.

As noted by the NRC, a neutron monitoring system that fully complies with the category 1 criteria of R.G. 1.97 is under development by industry. Following its development, an evaluation would need to be conducted to assess the practicability of its application to the Peach Bottom design. The development, evaluation, and subsequent installation to upgrade the monitors to R.G. 1.97 will involve a long-term program with an uncertain completion date. Further, the costs associated with upgrading the monitoring system once equipment becomes available is expected to exceed 1.5 million dollars for each unit. This raises concerns

about the cost effectiveness of upgrading these systems. For these reasons, we have concluded that it is premature to commit to an upgrade of the neutron monitors to the provisions of R.G. 1.97.

In an effort to obtain resolution of this issue, PECO is participating in the BWR Owners' Group (BWROG) subcommittee on the R.G. 1.97 neutron monitoring issue. Currently, 15 of the 22 BWR utilities are participating in this task. The subcommittee has produced a technical basis for an alternative design criteria to that set forth in R.G. 1.97. This is based on a detailed evaluation of the transients and accidents for which neutron monitoring instrumentation is required.

The design criteria is more aligned with Category 2, rather than Category 1 as required by R.G. 1.97. A plant evaluation must be performed to determine Peach Bottom's compliance with the subcommittee's design requirements. This evaluation may identify the need to upgrade some plant equipment.

This approach is more practicable than installing a new fixed incore or excore detector system, since neutron monitoring equipment, with appropriate accuracy, demonstrated reliability, and qualified to Category 1 requirements, is not currently available.

Since the NRC has not issued their position on the BWROG subcommittee's report (submitted April 1, 1988), we are unable to provide a schedule that details the plans for responding to the R.G. 1.97 neutron monitoring issue. Within 90 days of being notified by the BWROG that the NRC has issued their position on the report, we will identify, in a submittal to the NRC, the changes and schedule proposed for Peach Bottom.

II. Primary Containment Isolation Valve Position

NRC Position

R.G. 1.97, Revision 3 recommends that Category 1 instrumentation be provided to monitor containment isolation valve position. The licensee has provided instrumentation which conforms with the criteria of Category 1 variables with the exception of seismic qualification of the indicating lamps. The licensee has stated that the operator would be expected to replace damaged indicator lamps following a seismic event. The staff does not consider this to be a feasible approach since the staff believes that under actual circumstances, operators would not have adequate time to replace damaged indicator bulbs in an effective manner due to

other priority demands on their responses associated with the mitigation of the event itself. Therefore, the licensee should either qualify the existing indicator lamps for the worst-case postulated seismic event or install new lamps that are seismically qualified.

PECo's Response

To bring Peach Bottom into conformance with this provision of R.G. 1.97, Revision 3, we are embarking on a program to verify the seismic qualification of the installed indicating lights. This program is based on the seismic verification methodology of the Seismic Qualification Utility Group (SQUG). The SQUG methodology uses earthquake experience data to demonstrate the seismic adequacy of selected components, including indicating lights. The SQUG effort is in response to Unresolved Safety Issue A-46 (Generic Letter 87-02).

Consistent with the SQUG methodology, the PECO program will compare the earthquake experience data seismic capacity against Peach Bottom seismic demand as represented by plant specific median centered seismic response spectra. The Senior Seismic Review and Advisory Panel (SSRAP), an independent review body jointly selected by SQUG and the NRC to make an independent assessment of the SQUG program, has recommended the use of median centered response spectra for comparison with the generic Seismic Motion Bounding Spectrum that was developed from actual earthquake sites which experienced estimated mean peak ground accelerations in excess of about 0.4 g. This comparison is expected to show that the potential seismic exposure of the indicating lights at Peach Bottom was experienced and resisted by similar equipment in actual earthquakes which were larger than those which are the basis for the Peach Bottom design. This verification program will be completed by December 1, 1988.

If a complete documentation package cannot be developed as a result of the verification program, we will either subject the lights to a seismic test or upgrade the appropriate primary containment isolation valve position indication lights with seismically qualified lights by the end of the next refueling outage for each unit (i.e., the eighth refueling outage for both units). These dates are contingent upon material or equipment availability. By December 31, 1988, a status report on the verification program will be submitted to the NRC.

Should you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

Jim Ballagha

cc: Addressee

W. T. Russell, Administrator, Region I, USNRC
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