10 CFR 50.54(f)
GL 92-04


**PHILADELPHIA ELECTRIC COMPANY**

NUCLEAR GROUP HEADQUARTERS

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NUCLEAR SERVICES DEPARTMENT


September 25, 1992

Docket Nos. 50-277
50-278
50-352
50-353

License Nos. DPR-44
DPR-56
NPF-39
NPF-85

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

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Response to Generic Letter 92-04, "Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs Pursuant to 10 CFR 50.54(f)"

Dear Sir:

Attached are our responses to the "Requested Actions" of the subject Generic Letter 92-04, dated August 19, 1992. Generic Letter 92-04 requests information regarding the adequacy and corrective actions for Boiling Water Reactor (BWR) water level instrumentation with respect to the effects of noncondensible gases on system operation.

The attached responses are consistent with the guidance provided by the Boiling Water Reactor Owner's Group (BWROG) and the numerous correspondence between the BWROG and the Nuclear Regulatory Commission (NRC). Philadelphia Electric Company is an active participant in the BWROG and will be closely monitoring and participating in the activities associated with this issue.



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If you have any questions, please contact us.

Very truly yours,

G. J. Beck, Manager
Licensing Section
Nuclear Services Department

Attachment

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cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PBAPS
T. J. Kenny, USNRC Senior Resident Inspector, LGS

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

G. R. Rainey, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, that he has read the response to Generic Letter No. 92-04, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

G. R. Rainey
Vice President

Subscribed and sworn to
before me this 25th day
of September 1992.

Erica A. Santoro
Notary Public

Notarial Seal
Erica A. Santoro, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires July 10, 1995

Philadelphia Electric Company
Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Response to Generic Letter 92-04

The following information represents the Philadelphia Electric Company (PECo) response to the specific "Requested Actions" in Generic Letter 92-04 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 and Limerick Generating Station (LGS), Units 1 and 2.

Requested Action 1

"1. In light of potential errors resulting from the effects of noncondensible gas, each licensee should determine:

a. The impact of potential level indication errors on automatic safety system response during all licensing basis transients and accidents;

b. The impact of potential level indication errors on operator's short and long term actions during and after all licensing basis accidents and transients;

c. The impact of potential level indication errors on operator actions prescribed in emergency operating procedures or other affected procedures not covered in (b)."

Responses

1a. The Boiling Water Reactor Owners' Group (BWROG) provided to the NRC and each of the member utilities a report entitled "BWR Reactor Vessel Water Level Instrumentation", Revision 1, August, 1992 (Reference 1). This report addresses the safety impact of potential water level indication errors on automatic system response during all licensing basis transients and accidents. The report concluded that for those design basis accidents and transients that require automatic Emergency Core Cooling System (ECCS) initiation on low reactor water level, automatic safety system initiation is assured even with consideration of the postulated effects of the generic concern. In addition, the diverse parameter of "High Drywell Pressure" is unaffected and available for those design basis accidents for which this parameter is analyzed to initiate ECCS systems. The analytical basis for the report's conclusions is contained in Section 6.0 ("Safety Analysis") of the report and is summarized in Section 2.2 ("Plant Responses to Postulated Accident Scenarios").

The conclusions documented in the BWROG report are applicable to the design of PBAPS, Units 2 and 3, and LGS, Units 1 and 2. This conclusion is based on our review of the report (Reference 1) and the evaluation made by General Electric Company as contained in

Attachment 2 to the Reference 1 report. PECo recognizes that there are differences between the designs of the BWR plants and systems cited in the Reference 1 report, and PBAPS, Units 2 and 3 and LGS, Units 1 and 2. As an example, low pressure injection safety systems are initiated by "High Drywell Pressure" and "Low Reactor Pressure" at PBAPS, Units 2 and 3 and LGS, Units 1 and 2. However, our review of the BWROG report and General Electric Company's evaluation of generic applicability in Attachment 2 to this report reinforces PECo's understanding that the basic plant response to the design basis transients and accident events is sufficiently similar to obviate the need for additional plant unique detailed re-analysis.

In addition, based on PECo's understanding of the potential phenomena related to reactor water level instrumentation, plant specific piping geometries of the reactor water level instrumentation systems at PBAPS, Units 2 and 3 and LGS, Units 1 and 2 will not invalidate the safety analysis provided in the BWROG report.

Based on PECo's review of the Reference 1 report and its evaluation of postulated effects of the generic issue, it is our conclusion that the appropriate automatic safety systems shall respond adequately to mitigate the consequences of a licensing basis accident or transient. Therefore, this generic issue does not present an immediate safety concern.

1b. The Reference 1 report addresses in Section 6.9 ("Operator Responses"), the operator actions that could be anticipated in response to potential water level indication errors. Section 6 of the Reference 1 report states that the automatic safety systems will respond as required. These short term automatic responses are not anticipated to be interrupted by operator intervention.

At PBAPS, Units 2 and 3, and LGS, Units 1 and 2, short and long term actions during and after all licensing basis accidents and transients are directed by the pertinent "Off-Normal Procedure," "Operational Transient Procedure," or "Transient Response Implementation Plan (TRIP)" procedures (i.e., TRIP procedures are the plant specific emergency operating procedures) (ON/OT/T). The latest version of PECo's TRIP procedures incorporate guidance provided in the NRC approved Emergency Procedure Guidelines (EPGs), Rev. 4.

Guidance on the possible effects of noncondensible gases in the instrument reference legs has been provided to the appropriate plant operations personnel through shift training bulletins (at LGS, Units 1 and 2, "Shift Training Documentation," SOL-92-070, issued August 26, 1992, and, at PBAPS, Units 2 and 3, "Required Reading Bulletin," RE-92-22B-LO/NLO, issued August 31, 1992). This interim guidance information has sensitized the operators to the possible concerns with inaccurate water level readings following a

rapid depressurization while not necessitating a change to the existing long term guidance provided in the ON/OT/T procedures.

1c. As stated in Section 6.9 of the Reference 1 report and the response to item 1b. above, the operators have adequate information in the present ON/OT/T procedures as augmented by the recent shift training bulletins in order to ensure that the potential level errors will not result in improper operator actions.

The Emergency Procedures Committee of the BWROG is continuing to review the potential need for any additional guidance to the EPGs to further address the potential water level indication errors. The review of the EPGs and consideration of enhancements to the existing station ON/OT/T procedures will take into account the information from the BWROG long term program discussed in the Reference 2 letter, and the analysis and testing regarding the causes and effects of noncondensible gases in the reactor water level instrumentation system's reference legs.

Requested Action 2

"2. Based upon the results of (1), above, each licensee should notify the NRC of short term actions taken, such as:

a. Periodic monitoring of level instrumentation system leakage; and,

b. Implementation of procedures and operator training to assure that potential level errors will not result in improper operator actions."

Response

2a. Station procedures currently include requirements to perform "leak inspections" on accessible process lines of the reactor water level instrumentation system after each refueling outage, prior to plant startup. In addition, instrument surveillances and maintenance practices require inspection of the associated instrument components for leakage, prior to return to service following any disturbance of the process boundary. The appropriate personnel at PBAPS, Units 2 and 3, and LGS, Units 1 and 2, have been sensitized to the possible contribution of system leakage to the postulated migration of noncondensible gases into the reference legs in order to assure that this concern is weighed in decisions associated with system maintenance activities.

Based on the Reference 1 report and available information on this generic concern, no additional periodic surveillance procedures for inspection for system seepage from the reference legs of the reactor water level instrumentation system is planned at this time.

The BWROG long term program (Reference 2) has been established to determine the actual mechanism and effects of noncondensible gas migration into the reference legs. Appropriate actions shall be taken based upon the BWROG's conclusions.

The configuration of the reactor water level instrumentation systems at PBAPS, Units 2 and 3 and LGS, Units 1 and 2 have been reviewed and provided to the BWROG to be factored into the test configurations in the BWROG program.

2b. Currently, our understanding of the postulated effects of noncondensible gases in the reference legs of the reactor water level instrumentation has been based on conservative analyses. The BWROG program (Reference 2) will evaluate the possible effects of the generic concern and identify any pertinent causal factors. Following completion of the BWROG program, the need and identification of any corrective actions will be better defined. Based on the available information, no changes to the ON/OT/T procedures are currently being implemented in response to the subject generic concern.

In the interim, PECo has informed its operators of available information and guidance through shift training bulletins.

An industry chronology and technical discussion, based on information presented to the NRC by the BWROG has been supplied to the appropriate training personnel and will be addressed as an emergent issue at both stations for the operator training programs.

It should be noted that PECo does have post-accident TRIP Procedures, T-255 (LGS) and T-260 (PBAPS), for backfilling reactor water level instrument system reference legs at both stations. These post-accident procedures are available for implementation to restore accurate water level indication.

Requested Action 3

"3. Each licensee should provide its plans and schedule for corrective actions, including any proposed hardware modifications necessary to ensure the level instrumentation system design is of high functional reliability for long term operation. Since this instrumentation plays an important role in plant safety and is required for both normal and accident conditions, the staff recommends that each utility implement its longer term actions to assure a level instrumentation system of high functional reliability at the first opportunity but prior to starting up after the next refueling outage commencing 3 months after the date of this letter."

Response

3. PECo endorses the BWROG plans originally provided in the Reference 2 BWROG letter to the NRC. We reaffirm our support of the BWROG plan by endorsing the BWROG letter of September 24, 1992 (Reference 3). Therefore, PECo has not scheduled any hardware modifications in response to this generic issue.

   Currently, our understanding of the postulated effects of noncondensible gases in the reference legs of the reactor water level instrumentation has been based on analyses assuming conservative conditions. As the BWROG's investigation has progressed, more information has become available to suggest that the actual effects of noncondensible gas saturation into the reactor water level instrumentation reference legs will be greatly reduced below the bounding errors presented in the BWROG report (Reference 1). The BWROG program (Reference 2) has been designed to evaluate the actual dynamic effects of the generic concern through the use of testing and analysis. The goal of this program is to identify any pertinent causal factors and the requirements for procedural or hardware modifications for PBAPS, Units 2 and 3 and LGS, Units 1 and 2.

   If the BWROG program indicates that either procedural or hardware modifications are necessary to assure that the level instrumentation is of high functional reliability, a review of the proposed changes will be conducted and a schedule will be provided to the NRC at that time. PECo is an active participant in the BWROG activities regarding this issue and will monitor the progress of the BWROG on this issue and continue to review possible hardware modifications.

References:

1) BWROG Report No. GENE-770-15-0692 titled "BWR Reactor Vessel Water Level Instrumentation" transmitted in BWROG Letter No. BWROG-92074 from G. J. Beck (BWROG/RRG) to W. T. Russell (NRC), dated August 28, 1992.

2) BWROG Letter No. BWROG-92072 from G. J. Beck (BWROG/RRG) to W. T. Russell (NRC), dated August 12, 1992.

3) BWROG Letter No. BWROG-92082 from G. J. Beck (BWROG/RRG) to USNRC, dated September 24, 1992.

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