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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 184 AND 189 TO FACILITY OPERATING

LICENSE NOS. DPR-44 AND DPR-56

PHILADELPHIA ELECTRIC COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION, UNIT NOS. 2 AND 3

DOCKET NOS. 50-277 AND 50-278

1.0 INTRODUCTION

By letter dated November 1, 1993 as supplemented on January 26, 1994 and February 18, 1994, Philadelphia Electric Company (the licensee) submitted a request for changes to the Peach Bottom Atomic Power Station, Unit Nos. 2 and 3, Technical Specifications (TS). The requested changes would revise the Radiation Monitoring Systems - Isolation and Initiation Functions section of the Technical Specifications to support modification 5281. Modification 5281 updates the obsolete control room ventilation radiation monitoring equipment and replaces it with a microprocessor based in-duct system. The Control Room Emergency Ventilation (CREV) System actuation logic would also be revised. Currently, CREV is initiated via high radiation signals from either detector (using a one out of two logic) or failure signals from both detectors or failure of one detector and low flow in the other detector sample line or low flow in both detector sample lines. With the new system, CREV will be initiated on 1) high radiation (using a one out of two taken twice logic), 2) low flow in the control room ventilation duct, 3) loss of power in one division at the local radiation monitoring system (RMS) panel, or 4) downscale/failure of the radiation indicating switches (RIS) using a one out of two twice logic). The January 26, 1994 letter corrected typographical errors in the originally submitted TS pages. The February 18, 1994 letter provided clarifying information. The supplemental letters did not change the original no significant hazards consideration determination.

Additionally, the proposed amendment would revise page 240v of the TS to change the title of Item 3 of Table 4.15 from "Triaxial Response-Spectrum Recorders" to "Central Recording and Analysis System." This administrative change was requested to correct an omission that occurred during the preparation of TS Change Request 92-11, which was previously approved by the staff in license amendments 176 and 179 for Units 2 and 3.

2.0 EVALUATION

The licensee's submittal lists nine TS changes. The changes are evaluated below (the TS page numbers are the same for Units 2 and 3):

1) Page 59

   a) Insert proposed Limiting Condition for Operation (LCO) 3.2.D.2., "Main Control Room" which states:

      "The limiting conditions for operation are given in Table 3.2.D."

   b) Insert proposed Surveillance Requirements (SR) 4.2.D.2., "Main Control Room" which states:

      "Instrumentation shall be functionally tested, calibrated and checked as indicated in Table 4.2.D."

Previously the TS did not have an LCO or SR associated with the control room radiation moritoring system in the radiation monitoring systems section in the TS. The previous TS relied on the LCO and SR for the Main Control Room Emergency Ventilation System (i.e., TS 3.11.A). Therefore, the licensee's proposal clarifies the TS by explicitly stating the LCO and SR associated with this radiation monitor in a more appropriate TS section. The staff reviewed the new LCOs and SRs for acceptability. The staff determined that the proposed LCO provides acceptable actions in the event a radiation monitor becomes inoperable. The staff also determined that the licensee's proposed SR provide an acceptable means for testing the operability of the radiation monitors.

2) Page 75 (Table 3.2.D), "Radiation Monitoring Systems that Initiate and/or Isolate Systems"

   a) Revise the column heading "Minimum No. of Operable Instrument Channels" to read: "Minimum No. of Operable Instrument Channels per trip System," to provide clarity regarding the minimum number of instruments required for each trip system.

   b) Insert Trip Function "Main Control Room" and its associated information.

   c) Insert Item D, under Note 2, "Action," as follows: "As described in LCO 3.11.A.5."

   d) Insert Note 4, in "Notes for Table 3.2.D," as follows: "The trip function is required to be operable whenever secondary containment is required on either unit."

These changes provide details of the LCOs discussed in item 1 above. Therefore, the staff's evaluation of item 1 above also applies to these changes.

3) Page 84, (Table 4.2.D), "Minimum Test & Calibration Frequency for Radiation Monitoring Systems"

Insert proposed "Instrument Channel" Item 4, "Main Control Room" and its associated information.

This change provides the details of the SR discussed in item 1 above. Therefore, the staff's evaluation of item 1 above also applies to these changes.

4) Page 93, 3.2 BASES (Cont'd)

Insert proposed 4th paragraph which states:

"Four channels of in-duct radiation monitors are provided which initiate the Main Control Room Emergency Ventilation System. Each set of instrument channels are arranged in a one (1) out of two (2) twice trip logic."

This bases change merely provides a system description and is acceptable.

5) Page 97, 4.2 BASES (Cont'd)

Insert proposed 3rd paragraph which states:

"The Control Room Intake Air Radiation Monitors are safety-related and are required to be operable at all times when secondary containment is required. The calibration interval is as described in Section 4.11.A."

This bases change merely provides clarifying information and is acceptable.

6) Page 233a, Additional Safety Related Plant Capabilities

a) Revise LCO 3.11.A.5.

b) Insert proposed LCOs 3.11.A.5.a and 3.11.A.5.b.

c) Relocate and renumber SR 4.11.A.d. from page 234 to 4.11.A.2.e.

d) Revise SR 4.11.A.3 and 4.11.A.4.

e) Insert proposed SR 4.11.A.5 and 4.11.A.6.

These changes provide further details of the LCOs and SRs discussed in item 1 above. Therefore, the staff's evaluation of item 1 above also applies to these changes.

7) Page 234, Additional Safety Related Plant Capabilities

   a) Delete LCO 3.11.A.2 which is a restatement of existing 3.11.A.5 on page 233a.

   b) Insert proposed LCOs 3.11.A.6 and 3.11.A.7.

   c) Relocate and renumber SR 4.11.A.d to page 233a, 4.11.A.2.e.

   d) Delete SR 4.11.A.2 which is a restatement of 4.11.A.4 on page 233a.

These changes are editorial with the exception of inserting LCOs 3.11.A.6 and 7. The previous TS relied on the LCO for the Main Control Room Emergency Ventilation System (i.e., TS 3.11.A). Therefore, the licensee's proposal enhances safety by explicitly stating the LCOs associated with the main control room ventilation radiation monitors and flow supply switches. The staff determined that the proposed LCOs provide acceptable actions in the event a radiation monitor becomes inoperable. The editorial changes associated with this item were reviewed by the staff and determined to be acceptable.

8) Page 235, 3.11. BASES, "Main Control Room Emergency Ventilation System"

   Inserts justification for LCOs.

These bases changes provide the justification for the proposed LCOs and are acceptable.

9) Page 240v, Table 4.15, "Seismic Monitoring Instrumentation Surveillance Requirements"

   Revises "Instruments and Sensor Locations#," Item 3, title from "Triaxial Response-Spectrum Recorders" to "Central Recording and Analysis system."

This is an administrative change that corrects an omission that occurred during a previous TS Change Request (as noted in the Section 1.0 above). This change is acceptable.

In addition to reviewing the changes to the TS discussed above, the staff also reviewed the licensee's modification design as described in the submittal. The licensee designed the new system to meet the IEEE 279 recommendations regarding prevention of single failure susceptibility. The licensee's contractor (i.e., Nuclear Research Corporation) utilized methods endorsed by ANSI/IEEE 7.4.3.2, 1982, and ANSI/ANS 10.4, 1987 for validation and verification of its software. To ensure that central processing unit (CPU) lockup does not occur, the licensee's contractor uses an analog "watchdog" circuit to detect failures that may cause the microprocessor to lockup. This watchdog circuit will indicate equipment failure (including failures caused by common mode microprocessor failures) which will be annunciated in the main

control room. The staff believes the licensee and its contractor have appropriately considered the possibility of credible equipment failures in the design of this modification.

During a February 1, 1994, conference call, the staff asked tne licensee three questions. These questions were answered by the licensee during the phone call and in a February 18, 1994 supplemental letter. The questions and the licensee's responses are discussed below:

1) Compare the system responsiveness of the new system to the existing one.

The licensee stated that the new system used in-duct sensors 20 feet upstream of the existing sensors (which are external to the duct). Therefore, even with a new logic arrangement (i.e., one-out-of-two taken twice verses one-out-of-two in the original arrangement) the system will respond at least as fast as the original system.

The staff agrees that the new system will be at least as responsive as the original system because the delay in transporting the sample to the detector has been eliminated and the detectors are upstream of the original detectors.

2) Discuss why the instrument check frequency of once/day was chosen for the Main Control Room Instrument Channel.

The licensee stated that the requested frequency was consistent with similar instrumentation in the TS.

The staff reviewed the licensee's TS and agrees that the plant-specific TS (i.e., Table 4.2.D), specifies an instrument check frequency of once/day. Since the licensee's proposal is consistent with the current plant specific TS, the proposal is acceptable.

3) Discuss the deviations from the IEEE 279 recommendations.

The licensee stated that they complied with IEEE 279 in its entirety, but utilized an exception to Section 4.11 (authorized in IEEE 279) regarding the recommendation that a protective action not be initiated when a single channel of a system is tested. In this case, when the flow switches are tested, CREV will be initiated. The licensee stated that the initiation of CREV will not challenge the reactor or plant integrity.

The staff agrees that the exception used for the flow switches is appropriate. Therefore, the licensee's proposal is in compliance with the recommendations of IEEE 279.

Based on the above discussion, the staff finds the proposed main control room intake air radiation monitor system modification and the associated changes to the TS to be acceptable. The modification should improve the reliability of

the system and minimize spurious actuations. The TS changes will provide operability of the updated system consistent with the original TS.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (58 FR 64614). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Dembek

Date: March 15, 1994