

12/3-175

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Docket No. 50-278

Philadelphia Electric Company  
ATTN: Mr. Edward G. Bauer, Jr., Esquire  
Vice President and General Counsel  
2301 Market Street  
Philadelphia, Pennsylvania 19101

Gentlemen:

The Commission has issued the enclosed Amendment No. 12 to Facility Operating License No. DPR-56 for the Peach Bottom Atomic Power Station, Unit 3 located at Peach Bottom, York County, Pennsylvania.

The amendment modifies the license to authorize modifications that will improve the functioning of the Low Pressure Coolant Injection System (LPCIS) of the Emergency Core Cooling System (ECCS). This amendment is in partial response to your application for license amendment dated July 9, 1975, and Supplement dated September 10, 1975.

Copies of the Safety Evaluation and the Federal Register Notice are enclosed.

Sincerely,

George Lear, Chief  
Operating Reactors Branch #3  
Division of Reactor Licensing

Enclosures:

1. Amendment No. 12
2. Safety Evaluation
3. Federal Register Notice

cc: See next page

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

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

DOCKET NO. 50-278

PEACH BOTTOM ATOMIC POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 12  
License No. DPR-56

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Philadelphia Electric Company, Public Service Electric and Gas Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees) dated July 9, 1975 and Supplement dated September 10, 1975, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

2. Accordingly, Facility Operating License No. DPR-56, as amended, is hereby further amended by adding a new paragraph as 2.C.(3) as follows:

"(3) The licensees may perform modifications to the Low Pressure Coolant Injection System as described in the licensees' application for license amendment dated July 9, 1975. The licensees shall not operate the facility prior to receipt of the Commission's authorization."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Karl R. Goller, Assistant Director  
for Operating Reactors  
Division of Reactor Licensing

Date of Issuance: December 30, 1975



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT NO. 12 TO FACILITY OPERATING

LICENSE NO. DPR-56

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION, UNIT 3

DOCKET NO. 50-278

Introduction

As part of an application dated July 9, 1975 and supplement thereto dated September 10, 1975, Philadelphia Electric Company (PECO) requested authorization to modify the Low Pressure Coolant Injection System (LPCIS) of the Emergency Core Cooling System (ECCS) for the Peach Bottom Atomic Power Station Units 2 and 3. This request was made in order to improve the ECCS performance and was submitted in conjunction with the licensee's reanalysis of ECCS performance in conformance with the requirements of 10 CFR Part 50, Section 50.46.

The proposed modifications to the LPCIS involve:

1. The removal of the LPCIS recirculation loop selection logic;
2. Changing the action of the recirculation loop discharge valves such that they are both required to close upon signal to the modified LPCIS to mitigate the consequences of a postulated loss-of-coolant accident (LOCA);
3. Closing the cross-tie valve between the two LPCIS headers, key-locking the valve closed, and providing an annunciator to indicate an open condition;
4. Rewiring of the system so that the accident initiation signals direct both the normally closed LPCIS injection valves to open upon detection of LOCA conditions;

5. Changing the LPCI pump start signal to be initiated from two divisions instead of one.

The NRC staff has reviewed and approved comparable modifications for the Vermont Yankee and Brunswick Unit 2 facilities. Similarly for Peach Bottom Units 2 and 3, the proposed changes in the LPCIS as indicated above are being made to achieve a reduction in the peak cladding temperature following a LOCA that results from a postulated recirculation suction line break. The criteria set forth in 10 CFR Part 50, Section 50.46 require, in part, that the peak cladding temperature following a LOCA not exceed 2200°F. Since this limitation is more conservative than that previously imposed by the interim acceptance criteria, it would result in greater operating restrictions if the LPCIS were not modified as proposed. The proposed modification takes advantage of, and allows credit for, the flooding effect in the reactor vessel lower plenum achieved through the availability of additional LPCI pumps under the worst single failure condition and break location.

#### Discussion

The licensee will make the modifications in the LPCIS concurrent with the installation of plugs in the bypass flow holes in the lower core support plate of Peach Bottom Unit 3.

On December 29, 1975, the licensee will submit an ECCS evaluation, in accordance with the requirements of 10 CFR, Part 50, Section 50.46. This ECCS evaluation will include both the plugging modification and modified LPCIS to determine acceptable reactor operating conditions with the criteria of 10 CFR Part 50, Section 50.46. The NRC staff will evaluate the PECO submittal and, if acceptable, will issue a license amendment with appropriate Technical Specifications for the revised ECCS analysis and LPCIS modification. This license amendment will be issued prior to the reactor start up.

#### Evaluation

The NRC staff's evaluation of the proposed changes to the LPCIS are as follows:

1. During the review of the removal of the LPCIS recirculation loop selection logic system, the NRC staff compared the ability of the ECCS to deliver adequate cooling water to the core, post LOCA, for the worst-case single failure with and without the LPCIS modification. The worst-case single failure for the unmodified LPCIS was failure of the LPCIS injection valve to open so that only the two core spray subsystems (4 core spray pumps) would be available to cool the core following a break in the recirculation line on the suction side of the recirculation pump. The worst-case single failure for the modified LPCIS is also a failure-to-open of the LPCIS injection valve on the unbroken loop. However, with the loop selection logic eliminated, and modifications to direct the opening of both LPCIS injection valves upon detection of LOCA conditions, there will be at least one LPCIS subsystem (2 LPCI pumps) available in addition to the two core spray subsystem (4 core spray pumps) to cool the core. The worst-case failure for the modified LPCIS will have two operable LPCIS pumps<sup>1/</sup> in the broken recirculation loop upstream of the suction line break. Thus, the ECCS with the modified LPCIS will have a minimum "worst-case" capacity of: (1) two core spray subsystems and; (2) one LPCI subsystem in the broken loop for core cooling. Therefore, for the suction side recirculation line break with LPCI injection valve failure, the capacity of the ECCS to perform its function of core cooling is significantly increased.

For a break in the discharge side of the recirculation loop the capability of the ECCS to perform its function with the worst single failure (LPCI injection valve) remains unchanged with the LPCI modification. Two core spray subsystems are available to cool the core for both modified or unmodified LPCI systems. This break location is not, however, the limiting break because the blowdown area is smaller.

2. Changing the function of the recirculation loop discharge valves such that they are both required to close at the time of the postulated LOCA was reviewed by the NRC staff to determine the capability of the valve to operate under the accident conditions. For the modified LPCIS to perform its function as designed, the NRC staff required assurance that the discharge valves would not receive the permissive signal to close until the reactor vessel pressure had decayed to less than 350 psig and would not experience a differential pressure of

1/ Isolation from the break will be provided by the closure of the recirculation loop discharge valve.

greater than 200 psig during closure. The information submitted by the licensee for Peach Bottom Units 2 and 3 has satisfied the NRC staff that a differential pressure greater than 200 psig will not occur.

3. The loop selection logic circuitry of the LPCI system will be removed from the control room panels. Removal of this logic circuitry allows both injection valves to open, given an accident signal, no matter where the pipe break is located. This situation of opening both injection valves requires that the RHR crosstie valve remain closed during normal plant operations and accident conditions. The applicant has proposed that the keylock switch on the control room panel which operates the crosstie valve will be changed from keylock open to keylock close, and the crosstie valve circuit breaker at the motor control center cubical is padlocked open with the valve closed. An annunciator will be added to alarm whenever the crosstie valve is open. We find these proposed changes to be an acceptable method of assuring that this valve will remain closed during normal plant operation and accident conditions and are, therefore, acceptable.
4. Due to the elimination of the loop selection logic, the accident initiation signals have been rewired to direct (1) both LPCI injection valves to open, (2) both recirculation loop discharge valves to close when reactor pressure decreases to an appropriate setting and (3) LPCI pumps to start from two divisions instead of one (i.e., each pump and valve will receive a one-out-of-two logic initiation) upon detection of accident conditions.

The LPCI system redundant injection valves, pumps and recirculation valves are controlled by ac control power relays in their control circuitry. These relays are in turn controlled by redundant 125-volt dc output relays provided in each actuation train in the LPCI logic panels. This assures that failure of the 120-volt dc power supply of either train will not prevent operation of any valve and pump in either train. Separation has been provided within the logic panels and wiring between the two logic panels is run through separate conduit. Separation of A & B circuits is maintained by the conduit so that any assumed failure of a conduit run will not prevent the operation of the redundant or associated control systems. We conclude that these design changes do not compromise the separation and independence of the two safety trains and are acceptable.

5. In the existing onsite power system for Peach Bottom, the train A Low Pressure Coolant Injection (LPCI) valves are powered from swing bus N210025A which has swing capabilities between MCC 20B36 and MCC 20B38 connected to diesel generators A & C, respectively. The train B LPCI valves are powered from swing bus N210025B which has swing capabilities between MCC 20B37 and MCC 20B39 connected to diesel generators B & D, respectively.

Our review of this swing bus concept has shown it to be unacceptable as proposed. There are certain undetectable failures within the transfer circuitry that, if present when the bus transfer were required, would prevent the bus from transferring to its alternate source. There are also certain single failures that could tie the two diesel generators together through either of the swing buses. We informed the applicant that this design was unacceptable and that separate and independent buses would be required to bring the 480-volt portion of the onsite emergency power system into conformance with the recommendations of Regulatory Guide 1.6. However, we will allow the licensee reasonable time to institute their proposed design after the submission (and acceptance by the NRC staff) of their modified design.

In order to alleviate the problem of potential undetected failure prior to completion of required electrical modifications, we shall place a technical specification requirement on these transfer circuits that they be tested bi-monthly and that the test procedure used be submitted for our approval. Within one month after completion of required mechanical modifications, we will also require the licensee to perform a functional test of the existing electrical scheme to verify that the two independent undervoltage schemes on each swing bus have been set with sufficient margin such that the swing buses will not be transferred to their alternate source when the maximum voltage dip occurs during diesel generator load sequence and verification that the protective relaying and circuit breaker coordination between each swing bus and the diesel generators are within their design specification. The licensee has agreed to make the necessary modifications to his present design so that the modified design meets Regulatory Guide 1.6. We find this commitment to be an acceptable short term solution to the electrical power system problem. We will review the design changes proposed to meet Regulatory Guide 1.6 when they are submitted.

6. The operating modes of the LPCI pumps will be changed such that two pumps discharge into each injection header thereby changing the discharge flow characteristics from that previously established. Prior to reactor start up the licensee will conduct flow tests to establish pump discharge path characteristics from which pump flow curves will be developed. This information will be used to assure satisfaction of pump net positive suction head requirements.

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental statement, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have 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, and
- (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 30, 1975

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-278

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

NOTICE OF ISSUANCE OF AMENDMENT  
TO FACILITY OPERATING LICENSE

Notice is hereby given that the U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 12 to Facility Operating License No. DPR-56 issued to Philadelphia Electric Company, Public Service Electric and Gas Company, Delmarva Power and Light Company, and Atlantic City Electric Company for operation of the Peach Bottom Atomic Power Station, Unit 3, located in Peach Bottom, York County, Pennsylvania. The amendment is effective as of its date of issuance.

The amendment modifies the license to authorize modifications that will improve the functioning of the Low Pressure Coolant Injection System (LPCIS) of the Emergency Core Cooling System (ECCS). This amendment is in partial response to the licensees' application dated July 9, 1975, and Supplement dated September 10, 1975.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Notice of Proposed Issuance of Amendment to Facility Operating License in connection with this action was published in the FEDERAL REGISTER on August 18, 1975 (40 F.R. 34647). No request for a hearing or petition for leave to

intervene was filed following notice of the proposed action.

SURNAME >

DATE >

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental statement, negative declaration or environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated July 9, 1975 and Supplement dated September 10, 1975, (2) Amendment No. to License No. DPR-56, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Martin Memorial Library, 159 E. Market Street, York, Pennsylvania 17401.

A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland this 30 day of Dec 75

FOR THE NUCLEAR REGULATORY COMMISSION

George Lear, Chief  
Operating Reactors Branch #3  
Division of Reactor Licensing

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