

BEFORE THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of : Docket No. 50-278  
PHILADELPHIA ELECTRIC COMPANY :  
:

APPLICATION FOR AMENDMENT  
OF  
FACILITY OPERATING LICENSE  
DPR-56

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Philadelphia Electric Company, Licensee under Facility Operating License DPR-56 for the Peach Bottom Atomic Power Station Unit No. 3, hereby requests that the Technical Specifications contained in Appendix A of the Operating License be temporarily amended as indicated in the following discussion. This temporary revision will permit Unit 3 to remain at power operation with the E-1 diesel generator out-of-service for a total of fourteen continuous days in lieu of the seven-day time limit specified in Technical Specification 3.5.F.1.

E-1 diesel generator has been out-of-service for its annual inspection since Sunday, September 28, 1986. During the annual inspection, it was discovered that the generator bearing and bearing insulation had degraded. If uncorrected, further

degradation could lead to either of two potential modes of diesel generator failure: (1) The loss of bearing structural support could lead to rotation of parts which are required to remain stationary, with subsequent heatup and failure of the generator bearing; or (2) The loss of insulation electrical resistance could cause propagation of electrical currents on the generator shaft, which could eventually lead to complete engine failure. Philadelphia Electric Company replaced the generator bearing and bearing insulation and performed related inspections to avoid potential adverse consequences of diesel generator failure. Further, because this problem with the generator bearing could degrade the engine bearings, the inspection program was expanded to include these additional bearings. Subsequent testing after reassembly may extend the E-1 diesel generator outage beyond the seven-day LCO ending on Sunday, October 5, 1986. While we expect that an extension of only several days will be necessary to assure the operability of the diesel generator, up to seven days beyond the current seven-day LCO is requested to provide sufficient contingency.

Peach Bottom Technical Specification 3.5.F.1 permits continued operation of Unit 3 for seven days with one of the four diesel generators inoperable. Return to service of the E-1 diesel generator is expected on or before Sunday, October 12, 1986. Licensee is requesting that Technical Specification 3.5.F.1 be temporarily amended on an expedited basis to permit

Unit 3 to continue power operation for seven days beyond the seven-day period now specified, until October 12, 1986. All of the low pressure core and containment cooling subsystems are being demonstrated to be operable daily and the remaining diesel generators are being demonstrated to be operable daily as required by Technical Specification 4.5.F.1. This provision provides the necessary compensatory measure for assuring the availability of the three operable diesels. As an additional compensatory measure, the control operator will verify the operable status of both off-site power sources by monitoring the supervisory instrumentation in the control room at least once per shift. Further, neither the emergency service water system nor the emergency cooling water system will be removed from service for preventive maintenance until E-1 diesel is returned to service.

Philadelphia Electric Company requests that this Technical Specification change become effective immediately and remain effective until October 12, 1986. This time frame will allow Philadelphia Electric Company to replace the generator bearing and bearing insulation on E-1 diesel generator, expand the inspections to include the engine bearings, and return E-1 diesel generator to service without removing Unit 3 from power operation.

Licensee further requests, in accordance with Section 50.91(a)(5) of the Commission's Regulations, that the license amendment requested herein be issued without prior notice and opportunity for a hearing or for public comment. The Commission's Regulations recognize that the notice provisions may

be dispensed with if failure to act in a timely manner would result in derating or shutdown of the unit. Such an emergency exists at Peach Bottom Unit 3 in that if the requested relief is not granted by October 5, 1986, Unit 3 must be placed in the cold shutdown condition within 24 hours. The economic penalty associated with a seven-day outage to complete repairs to the E-1 diesel generator is \$4.9 million based on replacement power costs. Considering the unexpected nature of this problem, the licensee could not have avoided this emergency situation and the license amendment is being requested in a timely manner.

#### Safety Assessment

Justification for the requested temporary change is based on the favorable impact of the current Unit 2 outage, the low probability of a loss-of-coolant event concurrent with the loss of all offsite electrical power, the inherent stability of the Pennsylvania, New Jersey, Maryland Interconnection (PJM) electrical transmission system connecting with the Peach Bottom facility, the demonstrated high reliability of the Peach Bottom diesel generators, and the implementation of compensatory measures. Grid specific studies have indicated that loss of off-site power frequency for Peach Bottom is more than 25% lower than the generic failures currently used in NRC risk studies. There are two off-site power supplies available and currently in service. Due to the high reliability of the off-site electrical transmission system, Peach Bottom has not experienced a total loss of off-site power. The reduced residual heat load on Unit 2 (which is presently shutdown) reduces the potential load demand

on the emergency power system below that considered in the design basis for the plant and thus provides an additional safety margin. As required by Technical Specification 3.9.A.2, Unit 2 will remain shutdown until the E-1 diesel generator is returned to service. With Unit 2 currently shutdown, if another diesel generator in addition to the E-1 unit becomes disabled (limiting single failure), coincident with a total loss of off-site power, the Unit 3 plant can be safely shutdown and shutdown cooling maintained on both units.

Historically, Peach Bottom Atomic Power Station has had one of the best diesel generator reliability rates in the nuclear power industry. From the completion of Peach Bottom startup activities in 1974 through the end of calendar year 1985, only 26 failures have been experienced in over 3,400 valid tests for an overall reliability rate of 99.2%. This data is based upon the valid test and failure criteria of NRC Regulatory Guide 1.108. This is less than half the number of failures which could have been expected had the Peach Bottom diesel generator reliability been equal to the industry average. Several studies performed by Philadelphia Electric Company in support of Electric Power Research Institute (EPRI) efforts in this area show that Peach Bottom diesel generator reliability for 1983-1985 is even greater. For this three-year period, the Peach Bottom diesels demonstrated a starting reliability of 99.9% (based on over 1,200 start attempts) and a load-carrying reliability of 99.4% (based on over 600 load-carrying attempts for greater than or equal to a one-hour period). These reliability rates are well above the minimum diesel generator reliability rate of 95% which is under

consideration as a part of NRC's proposed rulemaking on station blackout (USI A-44). Consequently, the high reliability of the remaining three operable diesel generators is supported by past performance.

The shared diesel generator and Emergency Service Water (ESW)/Emergency Cooling Water (ECW) configuration at Peach Bottom has been the subject of an in-depth Probabilistic Risk Assessment (PRA) study involving the interdependencies of the two systems. The diesel generators require cooling water for continued operation. The heat sink for this cooling water is supplied by the ESW/ECW system. The configuration and interdependence of the systems is such that diesel generators E-2, E-3 and E-4 supply power to 'A' ESW pump, 'B' ESW pump, and the ECW pump, respectively. Operation of any one of these three pumps is sufficient for proper cooling of the diesels. PRA studies show that, because of the cooling water dependency, the loss of the E-1 diesel generator has negligible value when only one of the two Peach Bottom units is operating.

The capabilities of the Peach Bottom Standby AC Power System are discussed in the Final Safety Analysis Report. FSAR Section 8.5.2.3 states that:

"The total number of standby diesel-generator units is such that sufficient power is available to provide for the functioning of required engineered safeguard systems for one reactor unit and the shutting down of the other unit, assuming failure of one standby diesel-generator and loss of all off-site power sources."

Further, FSAR Section 8.5.4 states that:

"The normal off-site power sources are extremely reliable and the probability of failure of all off-site power is low. Probability of failure of one of the diesel-generators with simultaneous loss of off-site power is even lower. However, with one diesel out-of-service, the standby AC supply system is capable of furnishing power for safe shutdown of both reactors, assuming the hypothetical design basis accident has occurred in one reactor. The engineered safeguards loads are so divided (Figures 8.4.3 and 8.4.4) among the four 4-kV emergency buses for each reactor that the failure of one diesel-generator or one 4-kV emergency bus would not prevent a safe shutdown of both reactor units. Each diesel-generator and its associated system are separated so that failure of any one component affects the operation of only one diesel-generator system."

In summary, the reliability of the Peach Bottom diesel generators and the results of PRA studies involving the diesel generators, as discussed above, information obtained from the Peach Bottom FSAR, and the fact that one of the two Peach Bottom units will be shutdown during the requested extension period, all support continued operation of Peach Bottom Unit 3 with E-1 diesel generator out-of-service for an additional seven days beyond the current seven-day limiting condition for operation.

## Significant Hazards Consideration Determination

The Commission has provided guidance concerning the application of the standards for determining whether license amendments involve no significant hazards considerations by providing certain examples (48 FR 14870). One of the examples of actions involving no significant hazards consideration is a change which may result in some reduction in a safety margin, but where the results of the change are clearly within all acceptable criteria. The temporary amendment request of this submittal conforms to this example due to the favorable impact of the Unit 2 outage on the emergency power requirements, the high reliability of the remaining diesel generators and off-site power sources, and the compensatory measures provided.

The proposed temporary change to Technical Specification 3.5.F.1 does not involve a significant hazards consideration because operation of Peach Bottom Atomic Power Station with this change does not:

- (1) involve a significant increase in the probability or consequences of an accident previously evaluated. The Peach Bottom standby AC power system is designed with sufficient redundancy such that one diesel generator may be removed from service for testing, inspection, or repairs and the remaining three diesel generators are still capable of carrying sufficient loads to maintain the safe shutdown status of Unit 2 and mitigate the consequences of an accident on Unit 3. In this case, with Unit 2 already shutdown, if another diesel

generator in addition to the E-1 unit becomes disabled, coincident with a total loss of off-site power, the Unit 3 plant can be safely shutdown. Therefore, the probability or consequences of an accident previously evaluated is not significantly increased.

- (2) create the possibility of a new or different kind of accident from any accident previously evaluated. The requested temporary change is limited to increasing a limiting condition for operation time limit and this in itself does not create the possibility of a new or different kind of accident.
- (3) involve a significant reduction in a margin of safety. The Peach Bottom standby AC power system is designed with sufficient redundancy such that one diesel generator may be removed from service for testing, inspection, or repairs and the remaining three diesel generators are capable of carrying sufficient loads to satisfy the FSAR requirements for shutdown of both units. In this case, with Unit 2 already shutdown, if another diesel generator in addition to the E-1 unit becomes disabled, coincident with a total loss of off-site power, the Unit 3 plant can be safely shutdown. Considering this fact, as well as the high reliability of the remaining diesel generators and off-site power sources, adding seven days to the existing limiting condition for operation time limit does not significantly reduce a margin of safety.

The proposed temporary change to the Technical Specifications does not have an environmental impact since the change will not result in any increase in the amount, or result in any changes in the type of any effluent which may be released off-site, and there will be no significant increase in individual occupational radiation exposures.

The Plant Operational Review Committee and the Nuclear Review Board have reviewed this proposed change to the Technical Specifications and have concluded that it does not involve an unreviewed safety question or a significant hazards consideration and will not endanger the health and safety of the public.

Based upon the foregoing, Licensee hereby requests that the Commission expeditiously amend Facility Operating License DPR-56 as requested herein, find that an emergency situation exists, dispense with prior public notice, and make the amendment immediately effective.

Respectfully submitted,  
PHILADELPHIA ELECTRIC COMPANY

By *John S. Kuehn*  
Vice President

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF PHILADELPHIA :

J. S. Kemper, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing Application for Amendment of Facility Operating License 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.

John S. Kemper

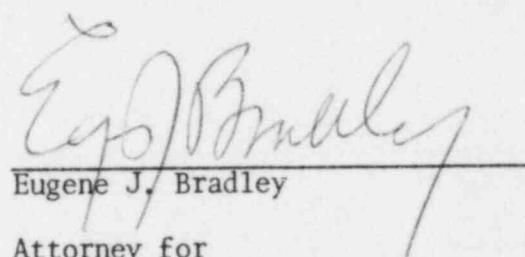
Subscribed and sworn to  
before me this 3rd day  
of Oct., 1986

Judith Franklin  
Notary Public

JUDITH Y. FRANKLIN  
Notary P. - Phila. Co.  
My Commission Expires July 28, 1987

CERTIFICATE OF SERVICE

I certify that service of the foregoing Application was made upon the Commonwealth of Pennsylvania, by mailing a copy thereof, via first-class mail, to Thomas R. Gerusky, Director, Bureau of Radiological Protection, P. O. Box 2063, Harrisburg, PA 17120; all this 3rd day of October, 1986.

  
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Eugene J. Bradley

Attorney for  
Philadelphia Electric Company