



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT NO. 72 TO LICENSE NO. DPR-44

AND

AMENDMENT NO. 70 TO LICENSE NO. DPR-56

PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3

PHILADELPHIA ELECTRIC COMPANY

DOCKET NOS. 50-277 AND 50-278

Introduction

In its letter dated August 1, 1978, the Philadelphia Electric Company (PECo) requested an amendment to the licenses for the Peach Bottom Atomic Power Station Units 2 and 3 to increase the maximum suppression pool temperature during normal plant operation from 90°F to 95°F. That request was made to allow for potentially high river water temperatures during the summer months which might result in suppression pool temperatures in excess of Technical Specification limit. Because of the recent heat wave over a large part of the continental United States, the suppression pool temperatures are nearing the existing Technical Specification limit.

Discussion

The Technical Specifications for the Peach Bottom plant require that: (1) in the event that the suppression pool temperature exceeds 90°F during normal plant operation, the plant shall be in a cold shutdown condition within 24 hours; (2) in the event that the suppression pool temperature exceeds 100°F during testing which adds heat to the pool, the pool temperature shall be reduced below 90°F in 24 hours or the plant shall be in a cold shutdown condition in the subsequent 24 hours; (3) in the event that the suppression pool temperature reaches 110°F, the reactor shall be scrammed and power operation shall not be resumed until the pool temperature is reduced below 90°F; and (4) in the event that the suppression pool temperature reaches 120°F during reactor isolation conditions, the reactor shall be depressurized to less than 200 psig at normal cooldown rates. These requirements stem from the initial conditions assumed in the containment response analyses for loss-of-coolant accident (LOCA) and safety-relief valve (SRV) discharge transients. In its submittal, PECo requested that the 90°F limit be increased to 95°F and provided analyses of the design basis LOCA and SRV discharge events which consider the revised limit.

Evaluation

With respect to LOCA transients, the principal considerations are (1) the containment design pressure and temperature, (2) the pressure and temperature envelope used for the environmental qualification of equipment

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located within the containment, (3) the net positive suction head (NPSH) for the Emergency Core Cooling System (ECCS) pumps, and (4) the maximum suppression pool temperature for steam condensation. To address these considerations, PECO submitted the original suppression chamber response analyses for Peach Bottom, which used the 90°F initial condition, and compared it to similar analyses for the Browns Ferry plant, which used a 95°F limit. Based on this comparison, PECO concluded that the resultant change is in the order of 5°F (with a corresponding pressure change of approximately 0.5 psi).

Both analyses were performed using assumptions for containment response analyses which are acceptable to the staff (Standard Review Plan, Section 6.2.1.1.C). Further, we concur that these analyses are reasonably comparable. Based on the comparison presented, we conclude that the resultant containment response for Peach Bottom with an initial pool temperature of 95°F will be well within the design values of 56 psig and 281°F and the change in the envelope used for environmental qualification will be insignificant.

With respect to NPSH, PECO submitted a comparison of the minimum required NPSH for the ECCS pumps with that obtained with the minimum containment pressure. These analyses indicate that there is at least a two to three psi margin in the NPSH. These analyses hypothetically assumed a maximum pool temperature of 202°F in conjunction with a 0 psig containment pressure, in accordance with the requirements of Regulatory Guide 1.1, and are, therefore, acceptable.

The original design basis LOCA for the Peach Bottom plant was predicated on maintaining the pool temperature below 170°F to assure complete consideration of the steam evolving from the postulated break and the subsequent removal of heat from the containment via the suppression pool and the Residual Heat Removal (RHR) system. The 170°F limit was based on data from the Bodega Bay and Humboldt Bay test facilities which formed the original basis for the containment design, as described in the plant's Final Safety Analysis Report (FSAR). The suppression pool temperature response in the licensee's submittal and the FSAR show a peak pool temperature of approximately 190° at 10 hours after the postulated accident for minimum cooling capability. However, steaming from the break ends much earlier in the transient (i.e., within minutes) and subsequent heat removal from the core to the pool is via subcooled ECCS water. The pool temperature reached 170°F at approximately 1.1 hours for an initial pool temperature of 90°F and approximately 15 minutes sooner for an initial pool temperature of 95°F, still well after steaming has stopped. Further, recent tests in the Mark I Full Scale Test Facility (General Electric topical report NEDE-24539) have indicated condensation effectiveness at pool temperatures above 170°F. Therefore, we conclude that the

proposed change will not adversely affect the condensation effectiveness or the heat removal capability of the containment system.

With regard to SRV discharge transients, the limiting event is a stuck-open valve. In its submittal, PECO presented revised pool temperature transients for the SRV discharge events. For the limiting event, the controlling parameter is the time of reactor scram. Since the Technical Specification requirement for reactor scram at a pool temperature of 110°F has not been changed, we conclude that the proposed change will not significantly affect the SRV discharge transients.

Summary

Based on the evaluation described above, we conclude that the proposed increase in the maximum suppression pool temperature during normal plant operation from 90°F to 95°F will not adversely affect the containment design basis and is, therefore, acceptable.

Environmental Consideration

We have determined that the amendments do 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 amendments involve an action which is insignificant from the standpoint of environmental impact and pursuant to CFR 51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: August 1, 1980