



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION SUPPORTING

AMENDMENT NO. 106 TO FACILITY OPERATING LICENSE NO. 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 NO. 3

DOCKET NO. 50-278

Introduction

By letter dated September 28, 1984, the Philadelphia Electric Company, et al. (the licensee) made application to amend the Technical Specifications (TSs) for the Peach Bottom Atomic Power Station, Unit No. 3, to permit a temporary increase in the Main Steam Line High Radiation scram and isolation setpoints to facilitate the short-term testing of hydrogen addition water chemistry at Peach Bottom Unit 3. This proposed change is necessary to the test since it is anticipated that main steam line radiation levels may increase by a factor of five during maximum hydrogen addition rates over the routinely experienced dose rates due to increased N-16 carry-over in the steam. The licensee has evaluated all other aspects of the proposed test under 10 CFR 50.59.

Evaluation and Discussion

We have reviewed the licensee's proposed TS changes with a focus on the capability to monitor for fuel failures and the radiological implications of the dose rate increase associated with the expected N-16 equilibrium changes during the hydrogen addition test. In addition, we reviewed the licensee's considerations of radiation protection/ALARA measures to be used during the course of the test in accordance with 10 CFR 20.1(c) and Regulatory Guide 8.8 ("Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable"). The specific details of the licensee's plans for a hydrogen inspection test were discussed via a telephone conference call on September 21, 1984. In addition, we also reviewed a description of the proposed short-term hydrogen injection test provided by the licensee's letter dated October 29, 1984, as part of its continuing program to reduce intergranular stress corrosion cracking (IGSCC) in stainless steel piping.

The primary safety function of the Main Steam Line Radiation Monitor is in Rod Drop Accident mitigation. However, the Rod Drop Accident is only a concern below 20% thermal power. The proposed hydrogen injection test will not be performed with reactor thermal power less than 20%. In addition, the capability to monitor for fuel element failures, which could result in

increased occupational doses, will be maintained throughout the test by the continued capability of the Main Steam Line Radiation Monitor to detect fuel failures, the performance of routine radiation surveys, daily primary water analyses and the trends of these analyses, and the capability of downstream process monitors such as the Steam Jet Air Ejector Off-Gas monitor, to detect radioactivity from fuel failure.

The licensee has indicated that normal radiation protection/ALARA practices and procedures for the Peach Bottom site will be continued throughout the test. Additionally, main steam system dose rates will be monitored by surveys on a routine basis, particularly in accessible areas. An overall objective of the mini-test is to determine general in-plant dose rate increases as well as boundary dose rate increases, if any, as a result of hydrogen addition. Additionally, specific in-plant locations where shielding may be needed for long-term implementation of hydrogen injection will also be identified as a result of this test.

A similar test was proposed and conducted for the Dresden 2 facility following our review and approval of a similar Technical Specification change. Dose rate data taken from the Dresden test indicated that the increased main steam radiation levels could be readily accommodated by limiting access to certain turbine building areas and that shine at the site boundary meets regulatory requirements. Our review of the proposed radiation protection/ALARA measures to be implemented and the test conditions identified by the licensee leads us to the conclusion that these proposed measures and test conditions are consistent with those utilized at Dresden 2. During the May and June 1982 Dresden 2 hydrogen water chemistry test, personnel exposure problems were minimal because shielded areas were sufficiently over-shielded that the absolute increase in dose rate was very small. Access to unshielded areas was closely controlled, so that time spent in these areas was short, or if access was required, hydrogen addition was stopped temporarily to reduce main steam line N-16 activity levels. Similar precautions will be in place for the Peach Bottom 3 hydrogen water chemistry mini-test to assure no significant increase in personnel exposure.

The licensee has a radiation protection/ALARA program which has been recognized as adequate in overall NRC appraisals and includes the capability to conduct special tests and maintenance in accordance with 10 CFR Part 20 and consistent with the criteria of Regulatory Guide 8.8. An ALARA review of the test program will be performed.

Based on the adequacy of the licensee's radiation protection/ALARA program, the step-wise injection of hydrogen and the utilization of special surveys to monitor dose rate increases on site and at the site boundary, accompanied by appropriate action, including halting of the test, the capability to monitor for fuel failures, the success of the initial effort at Dresden 2 and the consistency of that effort with anticipated results, and the licensee's discussion of specific radiation protection/ALARA measures to be utilized, we find that the licensee has the capability to assure adequate worker radiological protection and keep doses as low as is reasonably achievable. Based on these capabilities and the licensee's planned actions, we conclude that the proposed Technical Specification changes are acceptable.

Environmental Consideration

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets 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 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: November 14, 1984

The following NRC personnel have contributed to this Safety Evaluation:  
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