

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of

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:

Docket No. 50-277

50-278

PHILADELPHIA ELECTRIC COMPANY

APPLICATION FOR AMENDMENT

OF

FACILITY OPERATING LICENSES

DPR-44 & DPR-56

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setpoints to accommodate testing of hydrogen injection as a possible IGSCC mitigating activity.

The purpose of hydrogen injection testing is to determine the feasibility of hydrogen water chemistry as a means of reducing intergranular stress corrosion cracking (IGSCC) of stainless steel BWR piping. The test involves the addition of hydrogen to the primary coolant to lower the free oxygen concentration by suppressing radiolysis of water. The reduction of free oxygen would eliminate one of the three necessary causative agents of IGSCC. Any Peach Bottom testing will be predicated upon favorable results from the hydrogen water chemistry programs developed and conducted by General Electric at their San Jose facilities and at the Dresden-2 Unit, Commonwealth Edison Company.

A by-product of the oxygen suppression by hydrogen addition is an increase in nitrogen carry-over in the main steam and an increase of radiation from the main steam lines caused by N-16. The increase carry-over of nitrogen is due to a conversion of N-16 from a soluble form to a volatile form in the reactor.

Plans are being developed to conduct the hydrogen injection test on Unit 3 over a 3-4 day period in late October, 1984. A delay in the test schedule beyond the late October time frame may jeopardize our ability to perform the test due to other work assignment commitments of General Electric personnel essential to the support of this program. The test involves the

injection of hydrogen into the feedwater system at increasing increments over a range of approximately 0 to 70 SCFM.

The requested revision to Tables 3.1.1 and 3.2.A would permit a temporary increase in the Main Steam Line High Radiation scram and isolation setpoints to facilitate operation with expected higher radiation levels as the result of hydrogen injection. All other aspects for the test will be conducted under 10 CFR 50.59. The main steam high radiation setpoint will remain at three times the background radiation level; however, due to the increased N-16 carry-over in the steam, the background radiation level used to determine the high radiation setpoint will be increased prior to the test based on a calculation of the anticipated background level. Without this change, the test cannot be performed. The license amendment would permit the full load background radiation level to be adjusted during the test to correct for uncertainties in the initial computation. Restoration to pretest setpoints will be implemented promptly following conclusion of the test or when power is decreased to below 20% power. The hydrogen injection test will not be performed with the reactor power less than 20% power.

At the maximum planned hydrogen injection rate, an increase of approximately five times in the normal main steam line background radiation level is expected. The only event which takes credit for the main steam line high radiation trips is the design basis control rod drop accident (CRDA). As stated in Section 14.6.2 of the Peach Bottom FSAR, a CDRA is only of

concern below 10% of rated power. Since the Main Steam Line Radiation Monitor (MSLRM) setpoint will be adjusted at power levels above 20% power, there is no impact on the FSAR analysis or the design function of the trips. An increase in the MSLRM setpoint will not impact other FSAR Chapter 14 accident or transient analysis since no credit is taken for these trips. Consequently, the proposed technical specification change will not reduce overall plant safety margins. The effect of hydrogen injection on the gaseous effluent release rate is expected to be negligible, considering the short decay time for N-16.

While the test is planned for late October 1984, the proposed license amendment would remain in effect to accommodate any unforeseen delays in the test schedule.

Normal radiation protection/ALARA practices and procedures will continue in effect during the course of the test. Prior to performing the test, an ALARA review will be performed on the test program. As part of this review, potential problem radiation areas will be identified and administrative controls established to control access. During the hydrogen injection test, special surveys will be performed to monitor the expected main steam system dose rate increases, emphasizing accessible affected areas. As radiation levels increase in accessible areas, protective actions will be taken as appropriate to control personnel exposure.

The objective of the hydrogen injection test is to determine the feasibility of hydrogen water chemistry as a means of providing the following benefits:

1. Eliminate or reduce IGSCC safety concerns.
2. Eliminate a costly utility problem.
3. Reduced radiation exposure to personnel engaged in pipe crack repairs and non-destructive examinations.

Specifically, the test will provide the following information:

1. The relationship of hydrogen level to oxygen level in the primary coolant system.
2. Identification of changes to plant chemistry, ion transport, conductivity, and reduction potential.
3. Determine general in-plant and site boundary radiation increases due to increased N-16 activity. We expect the areas to be affected by this increase to be the main steam line pipe tunnel, the main turbine area, and the moisture separator area.
4. Offgas system performance.
5. Specific locations where additional shielding may be required to support continued use of hydrogen injection.

6. Adequacy of the injection locations.
7. Adequacy of sampling equipment and procedure requirements.
8. Effectiveness of the hydrogen addition system to control free oxygen levels.
9. Evaluation for a permanent hydrogen injection installation.

Additionally, Licensee requests that an obsolete note on the bottom of page 38 (Unit 2) be deleted, since the testing program authorized by Amendment No. 34 has been completed.

Significant Hazards Consideration Determination

The license amendment would permit the normal full power background level, associated with the Main Steam High Radiation scram and isolation setpoints, to be increased so as to compensate for an anticipated increase in the main steam radiation levels during a hydrogen injection test. This adjustment to the setpoint will be in effect only for a period of time necessary to accommodate the test (expected to be less than one week on a continuous basis). The capability to monitor for fuel failures will be maintained through: (1) the continued operability of the main steam radiation monitors, which provide signals to the reactor protection system and primary containment isolation system; (2) routine radiation surveys; (3) the

performance of daily primary coolant water analyses; and (4) the continued operability of the Steam Jet-Air Ejector Off-Gas Radiation Monitor. The proposed change is necessary to perform an evaluation of a potential mitigating action for IGSCC of primary coolant piping.

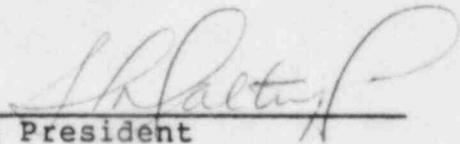
The Commission has provided guidance concerning the application of the standards for determining whether license amendments involve no significant hazards considerations by providing certain examples (48 FR 14870). An example (vi) of actions involving no significant hazards consideration is a change which may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria. The change proposed by this application fits this example. Considering the limited duration of the test, the multiple means for detecting fuel failures, and the potential benefits associated with protection of primary coolant system piping, the amendment does not constitute a significant hazards consideration since it does not:

- (1) involve a significant increase in the probability or consequences of an accident previously evaluated, or
- (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or
- (3) involve a significant reduction in a margin or safety.

The Plant Operating Review Committee and the Nuclear Review Board (off-site safety review committee) have reviewed the proposed change to the Technical Specifications and have concluded that it does not involve an unreviewed safety question or a significant hazard consideration and will not endanger the health and safety of the public.

Respectfully submitted,
PHILADELPHIA ELECTRIC COMPANY

By


Vice President


COMMONWEALTH OF PENNSYLVANIA :

: SS.

COUNTY OF PHILADELPHIA :

S. L. Daltroff, being first duly sworn, deposes and says:

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



Subscribed and sworn to
before me this ^{28th} day

of *September 1984*

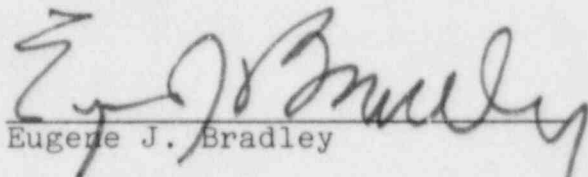
Patricia D. Scholl

Notary Public

PATRICIA D. SCHOLL
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires February 10, 1986

CERTIFICATE OF SERVICE

I certify that service of the foregoing Amendment 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 28th day of September, 1984.



Eugene J. Bradley

Attorney for
Philadelphia Electric Company