



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 87 AND 49 TO FACILITY OPERATING  
LICENSE NOS. NPF-39 AND NPF-85  
PHILADELPHIA ELECTRIC COMPANY  
LIMERICK GENERATING STATION, UNITS 1 AND 2  
DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated August 22, 1994, the Philadelphia Electric Company (the licensee) submitted a request for changes to the Limerick Generating Station, Units 1 and 2, Technical Specifications (TS). The request consisted of five items: (1) control rod block instrumentation, (2) standby liquid control system operability in Mode 5 (3) scram discharge volume valve testing, (4) optional method of scram timing, and (5) definition of core alteration. This amendment addresses two of those items. There are three remaining items to be reviewed in the application. These amendments revise (1) TS 3/4.1.5, "Standby Liquid Control System," (SLCS), to remove the operability requirement for the SLCS in Operational Condition (OPCON) 5, Refueling, with any control rod withdrawn and (2) the TS definition of CORE ALTERATION to exclude control rod movement in a control cell that contains no fuel assemblies.

2. EVALUATION

The purpose of the SLC system is to provide the capability of shutting down the reactor from a full power condition, and maintaining it subcritical until the cold shutdown condition is achieved without control rod movement. The SLCS injects sodium pentaborate solution into the reactor core upon initiation. In OPCOM 5, the reactor is already shut down with control rods fully inserted in any core cells that have fuel assemblies in them.

The one-rod-out interlock associated with the Refuel position of the reactor mode switch provides protection against inadvertent criticality while the reactor is in OPCOM 5. Specifically, the reactor mode switch will be in the Refuel position (and locked) and this initiates the Refuel position one-rod-out interlock which prevents the selection of a second control rod for movement when any other control rod is not fully inserted. The core is designed such that adequate shutdown margin (SDM) is maintained with one control rod fully withdrawn.

Additional protection against inadvertent criticality is also achieved in OPCON 5 because in accordance with TS and procedural controls, the amount of reactivity present in the core will be constantly reduced during core offloading. This means that the SDM of the core is the same or greater than its initial value during the entire core offloading process. SDM is analytically determined prior to fuel being reloaded into the reactor vessel. The calculated SDM is the acceptance criterion used in TS Surveillance Requirement 4.1.1. If a control rod is withdrawn in OPCON 5 and SDM has not been demonstrated (i.e., during reload) additional restrictions are placed on the plant by TSs 3/4.9.2 and 3/4.10.3. Specifically, if adequate SDM has not been demonstrated, at least two source range monitor channels must be operable with the shorting links removed from the reactor protection system (RPS) circuitry prior to and any time one control rod is withdrawn. In the extremely unlikely event that an inadvertent criticality occurs during this time, these additional restrictions assure that the control rod system will be automatically actuated by the RPS.

The NRC staff has concluded that the SLCS should not be required to be operable in OPCON 5 when any control rod is withdrawn since adequate SDM in conjunction with TS requirements for operability of the Refuel position one-rod-out interlock will assure that an inadvertent criticality event will not occur during refueling operations. The staff, therefore, finds the TS changes proposed by the licensee to be acceptable.

The current TS definition of CORE ALTERATION includes control rod movement in a control cell that contains no fuel assemblies. The licensee has proposed to exclude this item from the definition since the movement of a control rod by methods other than normal control rod drive is not a core alteration when there are no fuel assemblies in the associated core cell. The definition change will eliminate the requirement to have an SRO or LSRO supervise control rod withdrawal in the off-loaded cell. When the fuel assemblies surrounding the control rod are removed, there is no significant reactivity change from movement. Therefore, movement of control rods in such a manner should not reduce the SDM. This change adopts the definition of the staff approved improved BWR-4 TS (NUREG-1433). The staff has reviewed the licensee's proposal and finds the proposed definition of core alteration acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 55881). Accordingly, the amendments meet 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 the amendments.

#### 5.0 CONCLUSION

The Commission has 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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