



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 195 AND 78 TO FACILITY OPERATING  
LICENSE NOS. DPR-66 AND NPF-73  
DUQUESNE LIGHT COMPANY  
OHIO EDISON COMPANY  
PENNSYLVANIA POWER COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
THE TOLEDO EDISON COMPANY  
BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

By letter dated July 10, 1995, the Duquesne Light Company (the licensee) submitted a request for changes to the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and BVPS-2), Technical Specifications (TSs). The requested changes would modify the TSs to minimize the potential for boron dilution of the reactor coolant system (RCS) during startup of an isolated RCS loop. The changes would permit RCS loop isolation only during Modes 5 and 6 and would require the RCS loop isolation valves be open with power removed from their valve operators during Modes 1, 2, 3, and 4. The changes would also require isolation of primary grade water from the RCS during Modes 4, 5, and 6, except during planned boron dilution or makeup activities.

2.0 EVALUATION

2.1 Proposed Changes to BVPS-1 TSs

Currently, the BVPS-1 Updated Final Safety Analysis Report (UFSAR) does not describe boron dilution protection criteria during Modes 3, 4, and 5. Analyses conducted by the licensee indicate that the time available during a refueling operation for the operator to determine the cause of a boron dilution event, isolate the reactor makeup water source, and initiate boration before the available shutdown margin is lost during the design basis event, is 28 minutes. A new TS 3.1.2.9, "Isolation of Unborated Water Sources-Shutdown," is being added to the BVPS-1 TSs to provide the requirement for locking out the flow path of the primary grade water (unborated water) during Modes 4, 5, and 6, thus preventing the design basis deboration event. The licensee pointed out that the BVPS-2 TSs have the same numbered TS with similar criteria. The licensee also pointed out that power operation with

less than all reactor coolant loops in operation was not previously permitted and that the changes to TSs 3.4.1.1, "Reactor Coolant Loops--Normal Operation," and 3.4.1.4.1, "Loop Isolation Valves--Operating," reinforce this criteria.

The BVPS-1 UFSAR describes the startup of an isolated loop under two conditions: (1) with loop isolation valves open, and (2) with loop isolation valves closed. Originally, condition (1) was written to address the startup of an isolated loop while the reactor is critical. However, TS 3.4.1.1 prohibits this option while in Modes 1 and 2 and this option and its description are being deleted from the UFSAR. Condition (2) addresses the situation when the isolation valves are to be opened. It is stated in the BVPS-1 UFSAR that the interlocks provided by the reactor protection system ensure that the temperature and the boron concentration in the designated isolated loop are brought to equilibrium with the remainder of the system at an appropriate rate of speed (slow rate). This will ensure that the reactivity addition is slow enough to permit operator corrective actions to be taken before shutdown margin is lost.

TS 3.4.1.5, "Isolated Loop Startup," requirements for an isolated loop are such that the possibility of an inadvertent reactivity transient are minimized because the interlock system is designed to protect against a loop being filled with unborated water through inadequate blender operation. Consequently, the possibility of a boron dilution event is reduced significantly when unisolating an RCS loop which reduces the shutdown margin below the TS limits required by the TSs for operation in Modes 4, 5, and 6. The proposed changes to the BVPS-1 TSs are acceptable.

## 2.2 Proposed Changes to BVPS-2 TSs

The TS changes proposed by the licensee for BVPS-2 are for Modes 4, 5 and 6. Dilution during refueling is currently prevented by administrative controls. The licensee's UFSAR analyses for boron dilution events during Modes 4 and 5 previously required that administrative controls place an 85 gpm flow limiting device in the Primary Grade Water System (PGWS) flow paths feeding the Charging and Volume Control System (CVCS) in order to show that at least 15 minutes is available before total loss of shutdown margin would occur. Administrative changes to BVPS-2 TS 3.1.2.9, "Isolation of Unborated Water Sources--Shutdown," will require sealing the PGWS source to the CVCS thus preventing the design basis dilution event and hence the loss of shutdown margin. This in essence applies the same boron dilution administrative controls as those described for Mode 6. The licensee pointed out that the Refueling Water Storage Tank will always be available as a makeup source.

The amendment adds new TSs 3.4.1.4.1, "Loop Isolation Valves--Operating," and 3.4.1.4.2, "Loop Isolation Valves--Shutdown," to the BVPS-2 TSs. These new TSs prevent the startup of an isolated loop by providing additional

administrative controls in the way of preventing an inadvertent opening of an isolated loop isolation valve. These new TSs are consistent with those already in place at BVPS-1.

The startup of an inactive loop is evaluated in Section 15.4.4 of the BVPS-2 UFSAR. It provides the same description as that in the BVPS-1 UFSAR regarding the startup of an isolated loop under the same two conditions as those described in BVPS-1 UFSAR. General Design Criterion 10 requirements are not exceeded with respect to demonstrating specified acceptable fuel design by either of the BVPS Units. The proposed changes to the BVPS-2 TSs are acceptable.

### 2.3 Summary

The NRC staff has reviewed the licensee's proposed TS changes for BVPS-1 and BVPS-2. Based on the staff's evaluation of the TS changes and implementation requirements, the staff approves the modification of the criteria for the boron dilution during isolated loop startup and the isolation of primary grade water in Modes 4, 5 and 6.

### 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 and change surveillance requirements. 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 (60 FR 42602). 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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Date: February 12, 1996