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AUG 17 1987

MEMORANDUM FOR: M. W. Hodges, Chief  
Reactor Systems Branch  
Division of Engineering & Systems Technology

THRU: R. C. Jones, Section Chief  
Thermal-Hydraulics Performance Section  
Reactor Systems Branch  
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FROM: T. M. Su  
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Division of Engineering & Systems Technology

SUBJECT: TRIP REPORT - MEETING JULY 22-23, 1987,  
BOSTON EDISON COMPANY

On July 22, 1987, a meeting was held at Boston Edison Company (BECO), Braintree, MA between the staff and the representatives from BECO. The purpose of this meeting was to discuss the Safety Enhancement Program (SEP) proposed by the BECO for the Pilgrim Nuclear Station.

The SEP includes modifications and/or additions to the existing containment systems, electrical systems and reactor systems for the Pilgrim facility. Enclosure 1 is a copy of the meeting handout, which shows all issues discussed in the meeting.

The discussion of the issues related to the Reactor Systems, for which I was responsible for the safety review, are summarized in the following:

1. Automatic Depressurization System (ADS) Logic Modifications

This modification provides a timed bypass of the high drywell pressure initiation signal and a manual inhibit of existing ADS actuation logic. This modification responds to the BWROG evaluation for Item II.K.3.18 of NUREG 0737.

The licensee has submitted a proposed Technical Specification change (BECO letter dated May 20, 1987). I indicated that SRXB has completed its review and finds the proposed modifications acceptable.

2. Addition of Enriched Boron to Standby Liquid Control System

The use of enriched sodium pentaborate in the Standby Liquid Control System (SLCS) allow Pilgrim to meet the requirement of the Anticipated Transient Without Scram (ATWS) Rule (10 CFR 50.62) with one pump operable, thereby retaining the redundancy of the SLCS design.

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The licensee submitted a proposed Technical Specification change which was approved by the staff.

3. ATWS Feedwater Pump Trip

This change will provide an automatic trip to all feedwater pumps at 1400 psig reactor vessel pressure. This setpoint is selected so that feedwater pump trip occurs only when an ATWS event occurs following closure of Main Steam Isolation Valves. It serves as a backup to the existing ATWS protection. The current ATWS design consists of trips of the recirculation pumps and initiation of the Automatic Rod Insertion (ARI) system on low water level or high reactor pressure.

The existing reactor feedwater pump trip logic will be modified to accept an additional trip signal from ATWS. A new trip coil (in addition to the existing trip coil) will be installed in the breaker associated with each reactor feed pump. The coils are "energized to trip" coils.

I indicated that since the trip pressure of 1400 psig is expected to be well above most transient pressures, this modification may not contribute to the reduction of core melt frequency. Instead, this modification may increase the potential of feedwater pump trip frequency. BECo indicated that they have not determined how much improvement to core melt frequency results from this modification. However, BECo expected that the additional trip logic will not have an adverse safety impact.

4. Modification to Reactor Core Isolation Cooling (RCIC) System Turbine Exhaust Trip Setpoint

During Station Blackout (SBO) events, the RCIC system is available to supply cooling water to the reactor and maintain the reactor water level. The RCIC pump is driven by a turbine using the primary system steam. The turbine exhaust is piped to the suppression pool. Continuous discharge of the steam to the suppression pool, however, will increase the suppression pool temperature and the containment pressure. The existing RCIC exhaust trip pressure is 25 psig, which will be reached at about 8.5 hours into the SBO event. To extend the use of the RCIC system, the licensee proposed to increase the trip pressure to 46 psig. This increase of trip pressure will allow the RCIC system to operate until about 15.5 hours into the event.

I indicated that our experience with suppression pool hydrodynamic loads show that steam condensation loads increase significantly with increasing exhaust back pressure. Assessment of the magnitude of these loads is required in order to ensure that the RCIC exhaust pipe will not fail during the increased trip setpoint. The BECo staff indicated that they had assessed the loads on the basis of static pressure. Since experiments and analytical methods indicate that the dynamic load differs substantially from static load, BECo's present method based on static pressure is not sufficient to ensure the integrity of the RCIC exhaust pipe. I indicated that additional analysis on

the air clearing loads and steam condensation loads will be required to support this modification.

5. Additional ATWS Recirculation Pump Trip

Trip of the recirculation pumps is a feature for the mitigation of ATWS events. Pilgrim currently has the capability of tripping the recirculation pumps by opening the field breakers. Installation of a new trip coil within the breaker associated with each recirculation pump motor/generator set will increase the pump trip reliability.

The licensee has analyzed this modification and concluded that it does not degrade the existing recirculation system, ATWS system or safety related power supplies. I indicated that the ICSB staff will review the logic modification and provide comment later.

On July 23, the staff visited the Pilgrim facility and met with the NRC resident inspector and Region I personnel to brief the discussions we had on July 22 meeting at BECo office.

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Enclosure:  
As stated

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