

SAFETY EVALUATION OF THE
PROPOSED ACTIONS
REGARDING BWR FEEDWATER
PUMP TRIP ON REACTOR HIGH WATER LEVEL

Introduction

An NRC letter dated February 1, 1978, regarding a concern of flooding of main steam lines or lines to other safety related equipment on BWRs, was transmitted to the licensees of the following six BWR units: Big Rock Point - 1, Dresden - 1, Oyster Creek, Nine Mile Point - 1, Millstone - 1, and Pilgrim - 1. The letter referenced a report entitled "Evaluation of Incidents of Primary Coolant Release from Operating Boiling Water Reactors" issued by the U. S. Atomic Energy Commission on October 30, 1972 in which the regulatory staff reported the results of a study of eight incidents involving the unintentional discharge of primary coolant through safety and relief valves during reactor operation. One of the staff recommendations resulting from this study was that the BWR feedwater control system should be designed to automatically control reactor vessel water level during anticipated transients without flooding of the main steam line or the lines to safety-related equipment. The installation of an automatic feedwater pump trip function on reactor vessel high water level for most operating BWR-3 and BWR-4 facilities has satisfied the intent of the staff's recommendation in this regard.

The February 1, 1978 letter requested that the licensees for the above six sited facilities transmit their plans for addition of the automatic feedwater pump trip. Jersey Central Power & Light Company (JCP&L) responded to our request by a letter dated May 10, 1978. In their response JCP&L indicated that they do not plan to install a feedwater pump trip because their technical review indicated that such a trip is neither necessary or desirable. Our evaluation of JCP&L's submittal is detailed below.

Discussion

The Oyster Creek Nuclear Plant has operated for over eight years with no incidents of main steam line flooding. The existing feedwater control system is designed to maintain reactor water level during operation without resulting in reactor trip on low level or flooding of main steam lines on high level.

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The feedwater pumps are available as a source of high pressure makeup to the core any time that off-site power is available. Installing a reactor high level trip feature to the feedwater pumps would, if actuated in some incidents, lead to decreasing water level. In this condition, the ADS and Core Spray are designed to automatically actuate in order to protect the core. Therefore, the feedwater pump trip function would increase the probability of ECCS component startup. (This increased probability could be mitigated by manual restart of the feedwater pump, but this would require timely operator action and is not considered significant in reducing the probability of ECCS startup).

Oyster Creek does not have any HPCI turbines connected to the main steam lines and thus damage to such equipment is not a problem on steam line flooding.

Based on our review, we find the action taken by JCP&L acceptable.

Conclusion

In the report entitled "Evaluation of Incidents of Primary Coolant Release from Operating Boiling Water Reactors" issued by the U. S. Atomic Energy Commission on October 30, 1972, the following suggested performance objectives for the feedwater control system were identified by the staff:

1. The maximum water level attained should not initiate isolation of any safety feature such as the high pressure coolant injection system, or disable any system or component required for the orderly shutdown of the reactor and
2. The minimum level attained should not require the activation of any safety system.

Therefore we conclude that JCP&L's decision not to install a feedwater pump trip is acceptable.