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NUCLEAR

June 20, 1984
BECO 84- 089

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Operating Reactors Branch #2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

License No. DPR-35
Docket No. 50-293

NUREG 0737, Item II.K.3.16: Reduction
of SRV Challenges and Failures

Dear Sir:

By letter dated April 3, 1984, the NRC requested Boston Edison to advise it of which, if any, recommended actions were planned or implemented to reduce SRV challenges or failures. This responds to that request.

Background

The April 3, 1984 letter states that "Most boiling water reactors were equipped with Target Rock (T/R) three-stage safety/relief valves (SRVs)..." Boston Edison, during the 1980 Refueling Outage, modified the Model 67F Target Rock three-stage SRVs originally used at Pilgrim Nuclear Power Station (PNPS) to employ Target Rock two-stage "topworks". This was done because the three-stage "topworks" were believed to be extremely sensitive to leakage past the first pilot stage, a leak of 15 lbs//hour being sufficient to cause the valves to self activate and remain open until the reactor depressurized.

By letter dated May 25, 1982, Boston Edison discussed its actions relative to the BWR Owners' Group (BWROG) study, BWROG-8134, which your April 3, 1984 letter references. We stated that it was our belief that the two-stage valves in conjunction with PNPS operating procedures resulted in a reduction in challenges and failures.

Update

Request: Implement Low-Low Set (LLS) Relief Logic System or equivalent manual actions.

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Response:

Boston Edison does not propose to implement Low-Low Set (LLS) relief valve logic. Instead, we are in the process of rewriting PNPS Emergency Procedures, per BWR Emergency Procedure Guidelines, to implement equivalent manual action intended to reduce the number of SRV challenges from transient events.

The equivalent manual action calls for one (or more, if necessary) selected SRVs to be manually held open by an operator beyond the reclosure setpoint so that the extent of reactor depressurization before reclosing an open SRV is increased when compared to blowdown for normal SRV setpoints. The specific guidance is contained in a new emergency procedure, Pilgrim Nuclear Power Station EOP-1, "RPV Control, Level and Pressure" which instructs the operator to reduce RPV pressure (i.e., blowdown) to 930 psig upon manually initiating SRVs. The nominal SRV lift setpoint is 1115 psig. This procedure will be in effect prior to startup from the present refuel outage.

Request: Lower the reactor pressure vessel water level isolation setpoint for main steam isolation valve closure from Level 2 to Level 1.

Response:

As stated in your April, 1984 letter, this system modification is not applicable to Pilgrim because of the BWR 2/3 level instrument design.

Request: Increase SRV simmer margin.

Response:

During Cycle 6 Pilgrim's simmer margin was increased to 55 lbs by lowering nominal operating pressure to 1040 psi from 1050 psi. SRV set pressure was 1095.

During Cycle 7 we intend to return to a nominal operating pressure of 1050 psi, and to raise the SRV setpoint to 1115 psi. This results in a 65 lb simmer margin without the penalty imposed by a decrease in operating pressure.

Request: Each licensee should have a preventive maintenance program designed to enhance performance of SRVs.

Response:

Boston Edison has implemented a preventive maintenance program designed to enhance SRV performance. This program uses industry experience information from I&E Bulletins, Information Notices, and General Electric Service Information Letters (SILs) to improve SRV performance. A new preventive maintenance procedure, 3.M.4-6, is in preparation to enhance implementation of the applicable recommendations and good practices.

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During the current refueling outage, 100% of the in-service Target Rock SRV "topworks" were sent to Wyle Laboratories. At Wyle the "topworks" are steam/nitrogen tested to determine pilot leakage and setpoint calibration. As-needed refurbishment and recalibration is then performed by Target Rock.

The SRV discharge tailpipe temperature is constantly monitored when the plant is operating to ensure early detection and removal of leaking SRVs. Pilgrim Technical Specification 3/4.6.D describes the limiting conditions for operation, and the specific actions to be taken when high tailpipe temperatures are experienced. We believe this monitoring complements preventive maintenance.

Two of the four SRVs experienced pilot valve sticking during the recent tests. This was reported to NRC May 4, 1984 in LER 84-005. We are in the process of determining the cause of the sticking and a remedy for it. Our findings will be provided to the NRC at the conclusion of the effort. As specified in PNPS Technical Specification 4.6.D, we shall retest all four in-service SRVs next refueling outage, and at least two in-service SRVs during subsequent refueling outages.

Very truly yours,

W.D. Harrington

PMK/kmc