10 CFR PART 21 NOTIFICATION BOSTON EDISON COMPANY PILGRIM NUCLEAR POWER STATION

Subject: Initial Notification per 10 CFR Part 21.21(c)(3)(i) by Pilgrim Nuclear Power Station (PNPS), License No. DPR-35 regarding:

Degraded Scram Solenoid Pilot Valves made by Automatic Switch Company (ASCO) and Replacement Solenoid Pilot Valve Diaphragms Supplied by General Electric Nuclear Energy (GE), 175 Curtner Avenue, San Jose, CA 95125

Substantial Safety Hazards Determination:

In accordance with 10 CFR Part 21, all defects in basic components must be reported to the NRC. A defect can exist if a condition or circumstance which, if uncorrected, creates the potential for exceeding a safety limit contained in Technical Specifications.

Inspections of BUNA-N diaphragms in scram solenoid pilot valves (SSPVs) removed from service at Pilgrim Nuclear Power Station (PNPS) indicate some rods without increased scram times proved that embrittled material could exist in SSPVs without necessarily affecting performance. This indicates that functional failure of the SSPVs could be sudden and unpredictable.

The scram function is essential for mitigating the effects of over-pressure transients of which the Feedwater Controller Failure (maximum demand) is the most severe. Assuming the SSPVs failed to function, the worst coincident single failure would be common mode failure of the backup scram valves. Given these circumstances, improbable as they are, the Alternate Rod Insertion subsystem would insert rods before clad temperatures exceeded 1353°F, the limiting result of a sustained ATWS at PNPS.

Although fuel integrity is assured and no radioactive release would occur, the Minimum Critical Power Ratio (MCPR) safety limit would be exceeded during the above postulated transient. This in itself constitutes a substantial safety hazard, and the condition must be reported as a 10 CFR Part 21 defect.

Background:

On April 17, 1994, control rod scram time testing was performed per PNPS Procedure 9.9 "Control Rod Scram Time Evaluation". The scram times associated with the first seventeen rods had increased 10% from the last time they were tested. One of the rods also failed to insert within the seven seconds required by the PNPS Technical Specifications. Twelve additional rods were tested with a similar 10% increase in scram times.

Root Cause:

9406220078 940620 PDR ADOCK 05000293 PDR

Preliminary root cause evaluations indicate that premature aging of BUNA-N diaphragms in the scram solenoid pilot valves are significant contributors to the increased scram times. It is postulated that the material becomes embrittled and subsequently cracks thereby degrading the performance of the SSPVs. Further inspections of SSPVs associated with rods that did not exhibit increased scram times proved that embrittled material could exist in SSPVs without necessarily affecting their performance. For the purpose of expediting this substantial safety hazards analysis, it is assumed that the conclusion of this preliminary root cause evaluation is valid.

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Written notification to the NRC will be made within 30 days following this notification persuant to the requirements of 10 CFR Part 21.21(c)(3)(ii).

Questions regarding this notice should be directed to Mr. James D. Keyes, Acting Licensing Division Manager, Regulatory Affairs and Emergency Preparedness Department, (508)-830-7942