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ATTACHMENT TO
LER 78-002/01X-1
BOSTON EDISON COMPANY
PILGRIM NUCLEAR POWER STATION
DOCKET NO. 50-293

Description

On January 20, 1978, during a snow storm at approximately 1454 hours while the plant was in cold shutdown, a 100-foot shielding mast located in the 345 KV switchyard fell across the 345 KV yard bus works. Line 355, one of two off-site transmission lines feeding the startup transformer was immediately isolated via overcurrent protective relaying from the fault.

Following an investigation, the line disconnects on both sides of the damaged bus works were opened, Line 355 re-energized and Air Circuit Breaker ACB 362-102 closed reconnecting Line 355 to the startup transformer.

Operations personnel, as a precaution against loss of the startup transformer, manually initiated the diesel generators to ensure their availability. Throughout the duration of this event, the startup transformer supplied uninterrupted power to the Station 4 KV buses.

Cause and Corrective Action

The shielding mast separated at its base just above the base flange. Observation of the cross section of the tapered cylindrical mast at the break indicated that approximately 180 degrees of the circumference of the mast sustained a through-wall crack, and another 140 degrees was torn as the mast fell. The mast fell in a southeasterly direction across the 345 KV bus works coming to rest on a Phase A disconnect switch and remained anchored to its base pedestal by two ground cables tied to the mast above the fracture.

The shielding mast's impact with the 345 KV, 3-phase buses damaged approximately 130 feet of the 345 KV buses, 6 stand-off insulators, and three disconnect switches. All damaged bus works, insulators, and disconnect switches have been repaired or replaced.

Inspection of the two remaining masts revealed extensive cracking at the top of the fillet weld that connects each mast to its base plate.

Sections of the failed mast were removed and sent for metallurgical analysis to determine the cause of separation. Results of the analysis revealed the cause to be wind-induced motion, which resulted in cyclical fatigue cracking at a point of stress concentration (base plate fillet weld), from the repeated stress reversals as the mast spun around.

All three masts were replaced with masts of improved design, whereby the bottom tubular section of each mast is continuously welded to its base plate. Also, a tuned mass damper consisting of a 40 pound, 18-inch diameter steel ring, designed to reduce the wind-induced motion, has been installed on each mast.

BOSTON EDISON COMPANY
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WILLIAM D. HARRINGTON
SENIOR VICE PRESIDENT
NUCLEAR

November 12, 1985
BECO Ltr. #85-200

Dr. Thomas E. Murley
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Docket Number 50-293
License DPR-35

Dear Sir:

The attached update Licensee Event Report 78-002/01X is hereby submitted in accordance with the previous requirements of Pilgrim Nuclear Power Station Technical Specification 6.9.B.1.i. Please note that a review of our files identified a group of LER's, submitted prior to 1983, which require an update report. These reports had been on hold pending receipt of additional data.

If there are any questions on this subject, please do not hesitate to contact me.

Respectfully submitted,

W.D. Harrington

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PH:caw

Enclosure: LER 78-002/01X-1

cc: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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