NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Pilgrim Nuclear Power Station - Unit No. 1 | 0 5 0 0 0 2 9 3 | 1 OF 0 2 |

TITLE (4)
HPCI System Inoperable

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| 0 3 | 3 1 | 8 5 | 8 5 | — 0 0 8 | — 0 0 | 0 4 | 2 6 | 8 5 | | 0 5 0 0 0 |
| | | | | | | | | | | 0 5 0 0 0 |

| OPERATING MODE (9) | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 1 0 0 | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| | | 20.405(a)(1)(i) | 50.36(c)(1) | X 50.73(a)(2)(v) | 73.71(c) |
| | | 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| | | 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| | | 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| Paul J. Hamilton - Sr. Plant Engineer | AREA CODE 6 1 7 — 7 4 6 - 7 9 0 0 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X | B J | C O N | A 3 8 0 | Y | | X | B J | R P D | B 2 9 5 | Y | |
| X | B J | S N B | B 2 0 9 | Y | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| X YES (If yes, complete EXPECTED SUBMISSION DATE) | NO | | 0 7 | 1 2 | 8 5 |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)


On 3/31/85, while performing a routine HPCI operability flow test, the HPCI turbine tripped on overspeed. Subsequently, a blown rupture disc, broken snubber, and two degraded baseplates were identified on the HPCI turbine exhaust line.

Cause of the trip was the result of a faulty connector in the HPCI turbine control system. Probable cause of the blown rupture disc, broken snubber and degraded baseplates is believed to be the result of an anomalous event (i.e., waterhammer).

Corrective action was to replace the connector, replace the rupture disc, and rebuild the snubber and baseplates. The faulty connector is considered an isolated event. To preclude recurrence of the rupture disc, snubber, and baseplate problem, the duration and frequency of the HPCI turbine exhaust line blowdown has been increased. Final corrective action is pending Engineering analysis of root cause.




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TEXT (If more space is required, use additional NRC Form 366A's) (17)

On 3/31/85, while performing the HPCI Pump Operability Flow Rate Test (Ref.: Procedure 8.5.4.1), the HPCI turbine tripped on overspeed. Reactor power was approximately 100% at the time of the event.

Immediate corrective action was to initiate a maintenance investigation and proceed with surveillance testing required for an inoperable HPCI system.

Cause of the overspeed trip was found to be a faulty cable connector in the speed control system of the HPCI turbine. Specifically, the cable between the EG/M control assembly and the EG/R actuator assembly became disconnected at the EG/R. This was the result of a broken retaining ring in the female connector at the EG/R end of the cable. (A threaded collar at the end of the cable is tightened against the retaining ring to secure the connection.)

Corrective action was to replace the female connector which is manufactured by Amphenol and supplied by the Terry Turbine Co. Root cause of the retaining ring failure could not be determined. Replacement of the connector is considered adequate to preclude recurrence. A search of records identified no previous failures of a similar nature.

On 4/2/85, after replacement of the faulty connector, the HPCI operability test was rerun. During the test, a HPCI turbine exhaust high pressure alarm was received. Investigation found rupture disc PSD-68, the first in a series of two, was blown. The redundant second disc remained intact.

While replacing the rupture disc, a 6", 20 KIP snubber (Bergen Paterson Serial No. 2500-6-513) on the HPCI turbine exhaust line was observed to have a broken shaft at the point where it threaded into the clevis rod. Further investigation found the front baseplate of both snubbers in that hanger assembly in a degraded condition.

Cause of the blown rupture disc, broken snubber, and degraded baseplates is believed to be the result of an anomalous event (i.e., waterhammer). Root cause analysis is in progress and will be discussed in an update to this LER.

Corrective action was to restore the two baseplates, and, in addition, increase the length and diameter of the anchor bolts (Ref.: FRN 83-19B-219). The broken snubber was rebuilt. The second snubber of the hanger assembly tested satisfactorily in the as-found condition. To preclude recurrence, HPCI procedures (Ref.: 8.5.4.1, 8.5.4.3, and 8.5.4.6) were revised to increase the turbine exhaust line blowdown duration from 2 to 3 minutes following system operation and to require an inspection of the HPCI baseplates and pipe clamps (in addition to the snubbers) following system operation. In addition, a 3-minute $N_2$ blowdown of the turbine exhaust line is being performed once per day.

Redundant systems that were operable included Core Spray, LPCI, ADS, and RCIC. This event did not impact the health and safety of the public.

The HPCI system was successfully tested and returned to service on 4/7/85.

BOSTON EDISON COMPANY
800 BOYLSTON STREET
BOSTON, MASSACHUSETTS 02199

WILLIAM D. HARRINGTON
SENIOR VICE PRESIDENT
NUCLEAR

April 26, 1985
BECo Ltr. #85-081

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

Docket Number 50-293
License DPR-35

Dear Sir:

The attached Licensee Event Report 85-008-00, "HPCI System Inoperable," is hereby submitted in accordance with the requirements of 10CFR50.73.

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

Respectfully submitted,

W. D. Harrington

PH:caw

Enclosure: LER 85-008-00

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

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