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 MINECK,D.L. Iowa Electric Light & Power Co.
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SUBJECT: Unique Rept 80-1: on 800227, during refueling outage insp of HPCI turbine, two reversing chambers found cracked. Caused by flaws in reversing chamber bottom to reversing chamber wall transition metal. Chambers replaced.

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 MAY 29 1980

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MAY 23 1980

Iowa Electric Light and Power Company

May 20, 1980
DAEC 80-238

Mr. James G. Keppler, Director
Office of Inspection and Enforcement
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Unique Report 80-1

File: A-118, NRC-1, NRC-7

Dear Mr. Keppler:

This report is submitted in accordance with the requirements of Appendix A to Operating License DPR-49, Specification 6.11.3.

Problem

On February 27, 1980 during a DAEC refueling outage inspection of the HPCI turbine, the turbine was found to have two reversing chambers which were cracked. There were no completely broken or missing pieces of the reversing chambers. This problem has occurred previously at DAEC (refer to Unique Report 78-1).

Cause

The vendor, Terry Steam Turbine Company, has indicated that the problem resulted due to flaws in the reversing chamber bottom to reversing chamber wall transition metal in the original chamber castings. These flaws are thought to have propagated as a result of pressure "pulsing" fatigue caused by the cyclic duty experienced by the HPCI turbines rather than as a result of a thermal fatigue problem. The vendor is continuing to study this problem generic to BWR HPCI turbines of this type.

Corrective Action

All of the HPCI turbine reversing chambers were replaced with new reversing chambers received from the vendor. The vendor has advised that the reversing chamber design has been changed to include

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Page 2

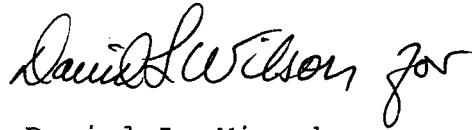
Mr. James Keppler

May 20, 1980

a more substantial fillet transition section connecting the bottom and wall of the reversing chamber. Also the vendor changed the reversing chamber mold venting arrangement and tightened quality controls on the casting cooling process in an effort to minimize flaws in the new chamber castings. All the new chambers were completely x-ray and magnetic particle tested by the vendor prior to shipment.

This report has been reviewed and approved by the DAEC Operations Committee.

Very truly yours,



Daniel L. Mineck
Chief Engineer
Duane Arnold Energy Center

Docket No. 50-0331

DLM/DWT/rs

cc: P. Ward