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| Iowa Electric Light & Pwr.<br>Cedar Rapids, Iowa<br>G.G. Hunt | 4-29-75 | 5-5-75 | XX | | | |

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| Mr. James G. Keppler | no origin. | 1 | | XX | XX |

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DESCRIPTION:

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PLANT NAME: Duane Arnold, Unit #1

ENCLOSURES:

Abnormal Occurrence Report No. A.O. 50-331/75-23 on 4-19-75 concerns HPCI Swing Check Valve malfunction...

1 copy encl. rec'd

FOR ACTION/INFORMATION WTM 5-7-75

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# IOWA ELECTRIC LIGHT AND POWER COMPANY

*General Office*

CEDAR RAPIDS, IOWA

DUANE ARNOLD ENERGY CENTER
PALO, IOWA
APRIL 29, 1975
DAEC-75-183



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

SUBJECT: Abnormal Occurrence No. A.O. 50-331/75-23
FILE: A-110 A-118a

Dear Mr. Keppler:

In accordance with Appendix A to Operating License DPR-49, Technical Specifications and Bases for Duane Arnold Energy Center, please find enclosed a written report on the subject abnormal occurrence.

Mr. R. Knopp, of your office, was notified of the abnormal occurrence by telephone on April 19, 1975.

Very truly yours,

G. G. Hunt
Chief Engineer
Duane Arnold Energy Center

DLW:GGH:bh
Enclosure

CC: B. C. Rusche
C. W. Sandford
J. A. Wallace
H. W. Rehrauer-Chairman, Safety Committee
J. R. Newman
E. L. Hammond

4907

# IOWA ELECTRIC LIGHT AND POWER COMPANY

*General Office*

CEDAR RAPIDS, IOWA

| | |
|---|---|
| Subject: | Abnormal Occurrence |
| Report Number: | A.O. 50-331/75-23 |
| Report Date: | April 29, 1975 |
| Occurrence Date: | April 19, 1975 |
| Facility: | Duane Arnold Energy Center, Unit #1, Palo, Iowa |

## Identification of Occurrence

HPCI Swing Check Valve malfunction, reportable in accordance with DPR-49, Specification 1.0.4.d.

## Conditions Prior to Occurrence

HPCI Subsystem declared inoperable.
A special test of the HPCI Subsystem to verify flow capabilities was in progress. (See Abnormal Occurrence Report No. A.O. 50-331/75-19.)

## Description of Occurrence

During a manual start of the HPCI Subsystem for testing purposes, operating personnel observed a high pressure indication in the HPCI turbine exhaust line and manually tripped the HPCI turbine. Operating personnel were closely monitoring the turbine exhaust pressure since a rupture disk in the HPCI turbine exhaust line had blown during similar testing the previous day.

During a subsequent investigation into the cause of the high pressure condition, it was determined that the valve disk had become separated from the hinge arm and was laying on the bottom of the HPCI Swing Check Valve (V-22-16). The disk retaining nut and washer were missing; however, the missing nut and washer were later found in the torus.

HPCI Stop Check Valve V-22-17 immediately downstream from the HPCI Swing Check Valve was subsequently disassembled to search for the missing nut and washer. Although the nut and washer were not found in the Stop Check Valve, it was observed that the two tack welds between the valve disk and the disk retaining nut were broken.

## Designation of Apparent Cause of Occurrence

The apparent cause of the disk becoming separated from the swing arm in the HPCI Swing Check Valve was a manufacturing deficiency. The retaining nut apparently had not been welded to the disk stud as indicated on the valve vendor's design drawing. The design drawing indicates one tack weld and maintenance personnel could find no evidence of such a weld during a visual inspection.

The apparent cause of the broken tack welds between the valve disk and the disk retaining nut in HPCI Stop Check Valve was a design deficiency. The two tack welds provided by design apparently were insufficient to secure the nut and disk under normal operating conditions.

Analysis of Occurrence

The detached disk in the HPCI Swing Check Valve could have prevented performance of the design function of the HPCI Subsystem. The disk could have lodged against the discharge of the valve causing over pressurization of the HPCI turbine exhaust line and a subsequent trip of the HPCI turbine. It should be noted that performance of the design function of the HPCI Subsystem is only required when normal makeup water to the reactor is not available. There have been no occassions at this facility when normal make-up to the reactor vessel was not available. In addition, if operation of the HPCI Subsystem is required and the system does not perform, the ADS Subsystem in conjunction with the LPCI Subsystem and Core Spray Subsystem are available.

If the valve disk in the HPCI Stop Check Valve would have become separated from the valve stem as a result of the broken tack welds, the above analysis would also be applicable to that valve.

It also should be noted that the detached disk in the HPCI Swing Check Valve would have prevented the valve from performing its' function as a boundary isolation valve. However, in the as-found condition, the HPCI Stop Check Valve would have performed its' isolation function and would have isolated the HPCI turbine exhaust line even if the HPCI Swing Check Valve did not.

Corrective Action

The retaining nut and disk stud in the HPCI Swing Check Valve were tack welded in two locations in accordance with an approved design change.

The valve disk and retaining nut in the HPCI Stop Check Valve were tack welded in four locations in accordance with vendor recommendations and an approved plant design change.

Similar Swing Check and Stop Check Valve installations in the RCIC were also inspected to ensure the disk retaining nuts were adequately secured. The disk retaining nut in the RCIC Swing Check Valve was secured with a pin in accordance with the vendor's design. Two tack welds were added to provide additional assurance the nut will remain secured. The RCIC Stop Check Valve disk retaining nut was found secured with two tack welds in accordance with the vendor's design. Two additional tack welds were added to this nut also.

Failure Data

There have been no previous malfunctions of the subject valves at this facility.

HPCI Swing Check Valve

| | |
|---|---|
| Vendor: | Anchor Valve Company |
| Model: | 16" - HBB - CK |
| Type: | 16" - 150 pound Swing Check Valve |

HPCI Stop Check Valve

| | |
|---|---|
| Vendor: | Anchor Valve Company |
| Model: | 16" - HLE - SCK |
| Type: | 16" - 150 pound Globe Valve, Stop-Check |

Conclusion

This report was reviewed and approved by the DAEC Operations Committee on April 29, 1975. The Committee concluded that the occurrence did not present a hazard to the health and safety of the public.

G. G. Hunt
Chief Engineer
Duane Arnold Energy Center

DLW:GGH:bh