Duquesne Light

Nuclear Construction Division
Robinson Plaza, Building 2, Suite 210
Pittsburgh, PA 15205

2NRC-5-053
(412) 787-5141
(412) 923-1960
Telecopy (412) 787-2629

March 27, 2985

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

ATTENTION: Dr. Thomas E. Murley
Administrator

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
EFCO-600 Actuator Latching Mechanisms for MSIVs
Potential Significant Deficiency Report 85-02

Gentlemen:

This final report is in reference to the Potentially Reportable Significant Deficiency relating to the EFCO-600 Actuator Latching Mechanisms for MSIVs supplied by Crosby Valve & Gage Company. Pursuant to the requirements of 10CFR50.55(e), it is anticipated that no additional reports will be submitted to Region I.

DUQUESNE LIGHT COMPANY

By J. J. Carey
J. J. Carey
Vice President

SDH/wjs
Attachment

cc: Mr. R. DeYoung, Director (3) (w/a)
Mr. B. K. Singh, Project Manager (w/a)
Mr. G. Walton, NRC Resident Inspector (w/a)
INPO Records Center (w/a)
NRC Document Control Desk (w/a)

SUBSCRIBED AND SWORN TO BEFORE ME THIS
27th DAY OF March, 1985.

Notary Public

SHEILA M. FATTORE, NOTARY PUBLIC
SHIPPINGPORT BORO, BEAVER COUNTY
MY COMMISSION EXPIRES SEPT. 10, 1985
Member, Pennsylvania Association of Notaries

A11
IE27

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 25th day of March, 1985, before me, a Notary Public in and for said Commonwealth and County, personally appeared J. J. Carey, who being duly sworn, deposed and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge.

Notary Public

SUSAN B. FATTEYE, NOTARY PUBLIC
SHIPPINGPORT BORO, BEAVER COUNTY
MY COMMISSION EXPIRES SEPT. 16, 1985
Member, Pennsylvania Association of Notaries

BEAVER VALLEY POWER STATION - UNIT NO. 2
DUQUESNE LIGHT COMPANY

Report on Potential Significant Deficiency No. 85-02
EFCO-600 Actuator Latching Mechanisms for MSIVs

1. SUMMARY

During vibration aging and seismic testing of Main Steam Isolation Valve (MSIV) actuators for Nine Mile Point - Unit 2, a failure was observed of the latch roller bearing in an MSIV actuator. Duquesne Light Company (DLC) was subsequently notified by the manufacturer of the actuators that similar failures could occur in the MSIV actuators supplied for BVPS-2.

2. IMMEDIATE ACTION TAKEN

On February 27, 1985, Mr. S. D. Hall, Lead Compliance Engineer in DLC's Regulatory Affairs Department, notified Mr. Lowell Tripp of the NRC Region I Office of this potential significant deficiency (SDR 85-02).

3. DESCRIPTION OF THE PROBLEMS

The failure of a latch roller bearing occurred in an EFCO-600 actuator manufactured by Gulf & Western Fluid Systems Division (G&W). These actuators are used in conjunction with MSIVs also manufactured by G&W. Following the acquisition by the Crosby Valve and Gage Company (Crosby) of G&W's ball valve operations, Crosby supplied BVPS-2 with three EFCO-600 actuators and three 24-inch MSIVs under purchase order 2BV-211.

The EFCO-600 actuators use a hydraulic system which opens and latches the MSIV while simultaneously compressing springs that are used to subsequently close the valve. With the MSIV in the open position, the force of these springs is transmitted through the latching mechanism to the latch roller bearing. Failure of this roller bearing, which manifests itself as a crack that results in a flat spot on the bearing's round surface, could prevent required movement of the bearing rendering the latching mechanism inoperable and the valve stuck in the open position.

Crosby and G&W have determined, following testing to verify the actual loads on the latch roller bearings, that the static and dynamic loads on the bearing exceed the maximum design loads specified by the manufacturer of the latch bearings.

4. ANALYSIS OF SAFETY IMPLICATIONS

The BVPS-2 MSIVs are required during certain design basis events to isolate the steam flow path from the steam generators to preclude uncontrolled cooldown of the reactor coolant system. Failure of the latch roller bearing, due to excessive loads on the bearing, could prevent the MSIV actuator from closing the valve, thus jeopardizing the safe shutdown of the plant under design basis event conditions.

5. CORRECTIVE ACTION TO REMEDY DEFICIENCY

The latch roller bearing in the MSIV actuators will be replaced by a modified latching mechanism. Tests currently being performed by Crosby and G&W indicate that a sleeve type bushing may function adequately under all postulated loading conditions within the actuator.

It is anticipated that, following scheduled completion of the manufacturer's tests, the latch roller bearings in the BVPS-2 MSIV actuators will be replaced with qualified sleeve type bushings by January 1, 1986.

6. ADDITIONAL REPORTS

This is the final report regarding the potential significant deficiency with actuator latching mechanisms for MSIVs. It is anticipated that no additional reports will be submitted.

PRC

Non-Conformance Report

BEAVER VALLEY POWER STATION UNIT 2

CFR

SDR 85-02

NR

PRELIMINARY NON-CONFORMANCE ANALYSIS

A. Description of Potential Item:

During the course of a Vibration Aging and Seismic Testing Program of EFCO-600 Series actuators manufactured by Gulf and Western Fluid Systems Division, a latch roller bearing failure occurred. The bearing is the latching roller located on the blocking lever mechanism. The EFCO-600 Series actuators are quarter turn actuators used to actuate MSIVs manufactured by Gulf and Western Fluid Systems. Static load tests conducted by Crosby Valve and Gage Company showed that the static loads imposed on the bearing exceeded the bearing manufacturer's maximum published load. These were for the Nine Mile Point Plant.

B. Affected Structure(s), System(s), Component(s), or Activity(ies):

3 - EFCO-600 Actuators and MSIVs

C. Preliminary Safety Evaluation and Reportability:

A failure of the latch roller bearing, in service, would render the MSIV inoperative; and under the provisions of 10CFR50.55(e), this is being reported as a potential significant deficiency.

(Letter dated 2-15-85)

D. Reported by: W. D. Greenlaw (Name) 2-26-85 (Date) Crosby Valve and Gage Company (Organization)

Additional Details Reported by: _____ (Name) _____ (Date) _____ (Organization)

REPORTABILITY

E. Reportability Status:

1. Item Classification: [x] 10CFR50.55(e) [ ] 10CFR21

2. Reportable [x] Yes (Potential) [ ] No

3. Initial NRC Notification Due: 2-27-85 (Date) 4:30 PM (Time)

4. If Not Reportable, Reason: _____

5. By: _____ (Manager, Regulatory Affairs) _____ (Date) _____ (Time)

REPORTING

F. NRC Report Status

1. Initial Notification

On 2-27-85 (Date) at 21:15 (Time) to Lowell Tripp (Name of NRC Person)

By [x] Telephone [ ] Telegram [ ] Letter [ ] Other

By S. D. Hall for EFK (Manager, Regulatory Affairs)

2. Interim Report(s) Submitted on:

_____ (Date) _____ (Letter No.) _____ (Date) _____ (Letter No.)

3. Final Report submitted on: _____ (Date) _____ (Letter No.)

Nuclear Construction Division File

TELECOPY

DATE: 3/19/85

TO: Stan Hall

THE ATTACHED TELECOPY WAS JUST RECEIVED FOR YOU FROM:

NAME: A. Dobrzeniecki

PHONE: 617-589-7304

LOCATION: SWEC - Boston

SUBJECT: Draft Response to SDR 85-01 3/19/85

SPECIAL REMARKS: Draft is ok per Stan Hall
ZOOS-29747
3/19/85

TOTAL NUMBER OF PAGES RECEIVED IN THIS TRANSMITTAL EXCLUDING THE COVER PAGE: ✓

RON HOGUE
EXT. 148

BEAVER VALLEY POWER STATION - UNIT 2
DUQUESNE LIGHT COMPANY
REPORT ON POTENTIAL SIGNIFICANT
DEFICIENCY WITH ACTUATOR LATCHING
MECHANISMS FOR MSIVs (DLC SDR 85-02)

DRAFT

1. SUMMARY

During vibration aging and seismic testing of Main Steam Isolation Valve (MSIV) actuators for Nine Mile Point - Unit 2, a failure was observed of the latch roller bearing in an MSIV actuator. Duquesne Light Company (DLC) was subsequently notified by the manufacturer of the actuators that similar failures could occur in the MSIV actuators supplied for BVPS-2.

2. IMMEDIATE ACTION TAKEN

On February 27, 1985, Mr. S. D. Hall, Lead Compliance Engineer in DLC's Regulatory Affairs Department, notified Mr. Lowell Tripp of the NRC Region I Office of this potential significant deficiency (SDR 85-02).

3. DESCRIPTION OF THE PROBLEM

The failure of a latch roller bearing occurred in an EFCO-600 actuator manufactured by Gulf & Western Fluid Systems Division (G&W). These actuators are used in conjunction with MSIVs also manufactured by G&W. Following the acquisition by the Crosby Valve & Gage Company (Crosby) of G&W's ball valve operations, Crosby supplied BVPS-2 with three EFCO-600 actuators and three 24 in. MSIVs under purchase order 28V-211.

The EFCO-600 actuators use a hydraulic system which opens and latches the MSIV while simultaneously compressing springs that are used to subsequently close the valve. With the MSIV in the open position, the force of these springs is transmitted through the latching mechanism to the latch roller bearing. Failure of this roller bearing, which manifests itself as a crack that results in a flat spot on the bearing's round surface, could prevent required movement of the bearing rendering the latching mechanism inoperable and the valve stuck in the open position.

Crosby and G&W have determined, following testing to verify the actual loads on the latch roller bearings, that the static and dynamic loads on the bearing exceed the maximum design loads specified by the manufacturer of the latch bearings.

4. ANALYSIS OF SAFETY IMPLICATIONS

The BVPS-2 MSIVs are required during certain design basis events to isolate the steam flow path from the steam generators to preclude uncontrolled cooldown of the reactor coolant system. Failure of the latch roller bearing, due to excessive loads on the bearing, could prevent the MSIV actuator from closing the valve, thus jeopardizing the safe shutdown of the plant under design basis event conditions.

DRAFT

5. CORRECTIVE ACTION TO REMEDY DEFICIENCY

The latch roller bearing in the MSIV actuators will be replaced by a modified latching mechanism. Tests currently being performed by Crosby and G&W indicate that a sleeve type bushing may function adequately under all postulated loading conditions within the actuator.

It is anticipated that, following scheduled completion of the manufacturers' tests, the latch roller bearings in the BVPS-2 MSIV actuators will be replaced with qualified sleeve type bushings by January 1, 1986.

6. ADDITIONAL REPORTS

This is the final report regarding the potential significant deficiency with actuator latching mechanisms for MSIVs. It is anticipated that no additional reports will be submitted.

TELECOPY

DATE: 3/21/85

TO: Stan Hall

THE ATTACHED TELECOPY WAS JUST RECEIVED FOR YOU FROM:

NAME: A.B. Dobrzeniecki

PHONE: 617-589-1307

LOCATION: SWEC - Boston

SUBJECT: 2015-24747

SPECIAL REMARKS:

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Mr. E. J. Woolever
Vice President, Nuclear Construction Division
Duquesne Light Company
Robinson Plaza Bldg. No. 2
Suite 210
PA Route 60
Pittsburgh, PA 15205

March 19, 1985
J.O.No. 12241
2DLS- 24747
RW8503190004

BEAVER VALLEY POWER STATION - UNIT NO. 2
J.O.NO. 12241-O.F.E.NO. 10080-C.O.NO. 6289
POTENTIAL SIGNIFICANT DEFICIENCY WITH MSIV
ACTUATOR LATCHING MECHANISMS (DLC SDR 85-02)

Reference: 2DLC-8010 dated March 13, 1985

In the letter referenced above, Duquesne Light Company (DLC) forwarded to Stone & Webster Engineering Corporation (SWEC) a report regarding possible failures of roller bearings in MSIV actuators (SDR 85-02). SWEC has reviewed SDR 85-02 and, as documented in the attached report, concludes that the subject conditions represent a potential significant deficiency at BVPS-2 that meets the criteria for reportability under the provisions of 10CFR50.55(e).

If you have any questions regarding this issue, please contact Mr. J. E. Niland at (617) 589-2234 or Mr. A. B. Dobrzeniecki at (617) 589-7304.

W. H. Bohlke
Senior Project Manager

Enclosure

ABD:mja

AR/NAR

BEAVER VALLEY POWER STATION - UNIT 2
DUQUESNE LIGHT COMPANY
REPORT ON POTENTIAL SIGNIFICANT
DEFICIENCY WITH ACTUATOR LATCHING
MECHANISMS FOR MSIVs (DLC SDR 85-02)

1. SUMMARY

During vibration aging and seismic testing of Main Steam Isolation Valve (MSIV) actuators for Nine Mile Point - Unit 2, a failure was observed of the latch roller bearing in an MSIV actuator. Duquesne Light Company (DLC) was subsequently notified by the manufacturer of the actuators that similar failures could occur in the MSIV actuators supplied for BVPS-2.

2. IMMEDIATE ACTION TAKEN

On February 27, 1985, Mr. S. D. Hall, Lead Compliance Engineer in DLC's Regulatory Affairs Department, notified Mr. Lowell Tripp of the NRC Region I Office of this potential significant deficiency (SDR 85-02).

3. DESCRIPTION OF THE PROBLEM

The failure of a latch roller bearing occurred in an EFCO-600 actuator manufactured by Gulf & Western Fluid Systems Division (G&W); these actuators are used in conjunction with MSIVs also manufactured by G&W. Following the acquisition by the Crosby Valve & Gage Company (Crosby) of G&W's ball valve operations, Crosby supplied BVPS-2 with three EFCO-600 actuators and three 24 in. MSIVs under purchase order 2BV-211.

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It is anticipated that, following scheduled completion of the manufacturers' tests, the latch roller bearings in the BVPS-2 MSIV actuators will be replaced with qualified sleeve type bushings by January 1, 1986.

6. ADDITIONAL REPORTS

This is the final report regarding the potential significant deficiency with actuator latching mechanisms for MSIVs. It is anticipated that no additional reports will be submitted.

B4-122406-146

Crosby Valve & Gage Company
A Moorco Company

P O Box 308
43 Kendrick Street
Wrentham, Massachusetts 02093
Telephone 617/384-3121
Telex 924443

MOORCO

February 15, 1985

Director,
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

During the course of a Vibration Aging and Seismic Testing Program of an EFCO-600 Series 600 Actuator manufactured by Gulf & Western Fluid Systems Division, a latch roller bearing failure was observed. The bearing is the latching roller located on the blocking lever mechanism. These tests were being conducted under a contract from Stone & Webster Engineering Corporation, the designated Architect/Engineer for Niagara Mohawk Power Corporation for the Nine Mile Point Plant. The EFCO-600 Series Actuators are quarter turn actuators used to actuate (on/off) main steam isolation valves (MSIV) that were manufactured by Gulf & Western Fluid Systems Division formerly of 25 Graystone Avenue, Warwick, RI 02886.

Subsequent to the bearing failure a static load test was conducted on an identical bearing installed in the EFCO Series 600 Actuator to determine the actual static load on the bearing. These static load tests were conducted at the Crosby Valve & Gage Company, Wrentham, Massachusetts, under contract to Stone & Webster. These tests showed that the static loads imposed on the bearing exceeded the bearing manufacturer's maximum published load for that bearing. (Torrington Bearing Design Number 28NBL4855YJ.)

Since failure of the bearing in service would render the main steam isolation valve inoperative, Crosby Valve & Gage Company and Gulf & Western Manufacturing Company have determined that, in their opinion, a probable cause for reporting under 10CFR21 exists.

8502200257

To the best of Crosby's knowledge the following is a complete list of EFCO-600 Actuators that have been manufactured and delivered:

Gulf & Western Shop Order	Size	Type	Owner/Location	Quantity
1732	28"	MSIV	Consumer Power Corporation Midland Units 1 & 2	4
1798	24"	MSIV	Duquesne Power Company Beaver Valley - Unit 2	3
2471	20"	FWIV	BBC Leibstadt	2
2473	24"	MSIV	BBC Leibstadt	4
2538	24"	MSIV	Niagara Mohwak Power Corp. Nine Mile Point 2	4
2540	24"	MSIV	Niagara Mohawk Power Corp. Nine Mile Point 2	4

Gulf & Western Manufacturing Company of 26261 Evergreen Road, Southfield, Michigan 48076, has notified the Consumer Power Corporation, Duquesne Power Company and BBC Leibstadt of the test results and the possibility that the latch roller bearings in their actuators may be subject to failure under similar test conditions. Niagara Mohawk Power Corporation has been advised of the bearing problem by Stone & Webster.

Work has begun on the design of a new bearing and retrofit package for this application in anticipation of specific direction from Gulf & Western Manufacturing Company and Stone & Webster.

Very truly yours,

W. D. Greenlaw

W. D. Greenlaw
Vice President - Engineering

WDG/da

Distribution List Attached

Distribution List

cc: M. Bauer
Gulf & Western Manufacturing Company
26261 Evergreen Road
Southfield, Michigan 48076

cc: E. Doppelt
Gulf & Western Manufacturing Company
1 Gulf & Western Plaza
New York, New York 10023

cc: Mr. V. A. Anderson
Director of Purchasing
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

cc: Mr. H. A. Van Wassen
Project Manager
Duquesne Light Company
435 Sixth Avenue
Pittsburgh, Pennsylvania 15219

cc: Kernkraftwerk Leibstadt AH
CH 4353
Leibstadt, SWITZERLAND

cc: Mr. J. T. Niezabytowski
Manager Contract Administration
Niagara Mohawk Power Corporation
300 Erie Blvd. West
Syracuse, New York 13202

cc: R. G. Friend - Crosby
J. J. Greene - Crosby
R. T. Levis - Crosby
J. F. Walter - Crosby

A-7

Received. 3/26/85

cc D. Rohm
Chandra M.

Discuss with Mc Entyre ND action on MSIV, EFCO Actuator for 3 Valves - Advise M/a of decision

Quote SDR 85-02 re ND

Duquesne Light
Nuclear Construction Division
Robinson Plaza, Building 2, Suite 110
Pittsburgh, PA 15205
(412) 787-5141
(412) 923-1960
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