

SULZER

Sulzer Pumps
Sulzer Pumps (US) Inc.
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Date 21 March 2006

ATTN: Brendan Moroney

Subject: 10 CFR Part 21 Notification

Ref: FP&L TPN supplied Ingersall Rand Auxiliary Feed Pump #0601001 FP&L PO# 67845

Dear Sir or Madam,

Per the requirements of 10CFR Part 21, this letter has been written to inform you of a reportable condition in regards to a pump repaired for Florida Power & Light in use at the Turkey Point Nuclear Facility.

While repairing a pump at the Sulzer Pumps (US) Inc. Shreveport Service Center, the drive end bearing assembly was installed incorrectly which resulted in an internal oil passage blockage and the possibility of premature bearing failure.

An internal investigation committee was convened 20 March, 2006 per the requirements of 10CFR Part 21 and the evaluation and results of the investigation as well as corrective action are attached.

This notification is also being sent to Florida Power & Light.

Sincerely,



Karl Strand
Quality & Environmental Manager
Sulzer Pumps (US) Inc.

IE19

10 CFR, PART 21 INTERNAL EVALUATION FORM**PURPOSE:**

The purpose of this form is to support the requirements of 10CFR, Part 21 and SPUSA's Evaluation Procedure A14.2. The documentation should be via this form with all necessary backup documentation attached and maintained in the 10CFR, Part 21 file under the direction of the Corporate Quality & Environmental Manager.

SCOPE:

This form shall be used in all conditions which have been brought to the attention of the 10CFR, Part 21 Committee.

RESPONSIBILITY:

The responsibility for assurance of completion of this form and the subsequent actions and filing will be that of the Corporate Quality & Environmental Manager.

PUMP SERIAL NUMBER(S)

FP&L IPN supplied I-R CNTA Aux. Feed Pump #0601001

PARTS ORDER NUMBER(S)

Sulzer Order No. 08701898, FP&L PO # 67845,

REPORTABLE YES ☒ NO ☐ IO: NRC ☒ LICENSEES ☒
IPN Only

(A) IDENTIFICATION OF ITEM OR PROCESS AFFECTED:

The Turkey Point Nuclear Plant Aux. Feed Pump drive end journal bearing was installed incor-
rectly (radial orientation) which resulted in internal oil passage blockage and the possibility of
premature bearing failure due to lack of lubrication.

(B) DESCRIPTION OF THE CONDITION:

The plant reported to Sulzer on 11/8/05 that the DE journal bearing in one of the repaired pumps had been installed incorrectly so that the oil passage between the housing and journal obstructed the free flow of lube oil to the bearing journal. It was postulated the premature bearing failure was due to the lack of lubrication as a direct result of improper assembly of the DE journal bearing. Sulzer had generated an assembly procedure based on input from an FP&L supplied procedure, and enhanced the assembly procedure; however, neither the FP&L nor Sulzer procedure included a verification of bearing radial orientation. Regardless, the installation of the journal bearing should have been performed properly. The improper installation of the bearing (radial orientation) was due to human error. Sulzer had repaired two other identical TPN Aux Feed pumps using the same procedure, and subsequent inspections confirmed the DE journal bearing had been correctly installed in the other pumps Sulzer had repaired. This was an isolated case of human error coupled with a procedure that, viewed in hindsight, can be updated to include a verification of bearing orientation (barrier). Given the obvious oil passage design configuration coupled with the proper assembly of the other two pumps, we do not believe this is a generic issue.

(C) WHO REPORTED THE CONDITION:

NAME: A. Washburn TITLE: Engineering Manager DATE: 11/9/05

(D) EVALUATED BY 10 CFR, PART 21 COMMITTEE:

Chairperson:

NAME: K. Strand TITLE: Manager, Corp Quality & Environmental DATE: 3/20/06

Members:

| | | |
|--------------------------|-------------------------------------|----------------------|
| NAME: <u>A. Washburn</u> | TITLE: <u>Engineering Manager</u> | DATE: <u>3/20/06</u> |
| NAME: <u>J. Bohlman</u> | TITLE: <u>Sr. Project Engineer</u> | DATE: <u>3/20/06</u> |
| NAME: <u>J. Wood</u> | TITLE: <u>Project Mgr, Quality</u> | DATE: <u>3/20/06</u> |
| NAME: <u>D. Spencer</u> | TITLE: <u>Mgr, Nuclear Services</u> | DATE: <u>3/20/06</u> |
| NAME: <u></u> | TITLE: <u></u> | DATE: <u></u> |
| NAME: <u></u> | TITLE: <u></u> | DATE: <u></u> |

(E) REVIEW OF LIKE CONDITIONS:

Sulzer is not aware of the existence of a like condition. The TE bearing assembly is not subject to a similar assembly error due to its configuration difference. As previously mentioned Sulzer and other manufacturer's pump designs incorporate features and instructions to preclude incorrect assembly. The only other pump component where similar improper assembly is possible is ball bearing installation. In designs that incorporate duplex pairs of ball bearings the assembly instructions specify proper orientation (i.e. face-to-face or back-to-back).

(NOTE: IF NO LIKE CONDITION OR POTENTIAL FOR A SIMILAR CONDITION IS NOTED, MAKE SURE ALL ASPECTS OF THE CONDITION IS REVIEWED AND NOT LIMIT THE EVALUATION TO A SPECIFIC PUMP OR APPLICATION.)

(F) RESULTS OF THE EVALUATION

The improper assembly of the subject pump resulted in the potential for premature bearing failure. However, Sulzer believes this was an isolated case involving human error for failing to detect the oil passage would be obstructed. An inspection verification (barrier) to confirm correct bearing assembly orientation would prevent future occurrences.
It is our opinion the issue meets the criteria for defect reporting per the requirements of 10CFR Part 21. Since the incident was isolated and non-generic only the NRC and the utility will be notified.

SULZER PUMPS (US) INC.
NON-CONFORMANCE REPORT (NCR)

NCR No. **150051**

Form S0561-0

Ref Procedure QNS-01

Note: All notations/documentation to be in black or blue ink. Sheet **1** of **-**

| | | | | | | | | | |
|---|-----|---|--|------------------------------------|--|--|--|---|--|
| Part Description Bearing, Inboard | | Assembly (Item) No. 306 | | Serial No. 06091001 | | Sales Order No. (Highest) 09701898 | | Work Order No. 09701898-10 | |
| Drawing Number N/A | | Rev N/A | | Product Material Steel | | Pattern No. N/A | | Customer FPL Turkey Point | |
| Supplier Name N/A | | P. O. No. 00067845 | | Qty on Order 1 | | Qty Rejected 1 | | Part Status Compl. <input checked="" type="checkbox"/> Incompl. <input type="checkbox"/> | |
| Q.C. Order <input checked="" type="checkbox"/> | | Non Q.C. Order <input type="checkbox"/> | | Component No. CNTAM Pump | | Last Oper. Compl. N/A | | Sulzer Material Code (Q/QS) No. N/A | |
| REPORT THE REQUIRED CONDITION AND THE ACTUAL CONDITION OF THE NON-CONFORMANCE | | | | | | | | | |
| LINE | QTY | | | | | | | | |
| 1 | 1 | See Attached | | | | | | | |
| 2 | | | | | | | | | |
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SAFETY RELATED ORDERReported By: (Print Name) **Mr. Washburn** Dept.: **CSS** Date: **12/4/05** Quality Dept.: **CS****ROOT CAUSE STATEMENT BY RESPONSIBLE DEPT. - PERSON ASSIGNED TO:**

MECHANIC INCORRECTLY INSTALLED BEARING, 90 degrees.
SULZER HAS BEARING WITH ANTI ROTATION INSTALLED 90 degrees from top
AT SPILT LINE. MECHANIC DID NOT QUESTION. PROCEDURE DID NOT REQUIRE RC CHECK.

| | | | |
|-------------------------------------|---------------------------|---------------------------------|--|
| Responsibility Code: 0677 | Error Code: 909 | Root Cause Code: RC01 | Work Center (if applicable): SSC |
|-------------------------------------|---------------------------|---------------------------------|--|

Approved By: (Quality Dept. Only)

Date: **12-5-05**

| | | | | | | | |
|--|-------------------------------|------------------------------------|---------------------------------|---------------------------------|---|---|--------------------------------|
| LINE | ACTION TO CORRECT (Check one) | <input type="checkbox"/> USE AS IS | <input type="checkbox"/> REPAIR | <input type="checkbox"/> REWORK | <input type="checkbox"/> RETURN TO SUPPLIER | <input checked="" type="checkbox"/> OTHER | <input type="checkbox"/> SCRAP |
| DISPOSITION AUTHORIZATION, SEE PROCEDURE QNS-01, DISPOSITION AND APPROVAL REQUIREMENTS TABLE | | | | | | | |

1 **See Attached**

Estimated Cost

Hrs.

Mat'l.

Disposition By: (Print Name) **Mr. Washburn**Date: **12/4/05****APPROVAL AND/OR CONCURRENCE, SEE PROCEDURE QNS-01, DISPOSITION AND APPROVAL REQUIREMENTS TABLE**

(Quality Department shall check the boxes below for required signatures)

| | | | |
|--|---------------------|---|--|
| Signature | | Date | |
| <input checked="" type="checkbox"/> Design Engineer | Mr. Washburn | 12/4/05 | |
| <input type="checkbox"/> Purchasing | | | |
| <input checked="" type="checkbox"/> Quality Dept. | Mr. Washburn | 12/5/05 | |
| <input type="checkbox"/> Check box if 10CFR Part 21 is reportable | | NonConformance Closed (By Quality Dept. Only) | |
| Reported By: | | Closed By: | |
| Date: | | Date: | |
| CORRECTIVE ACTION REQUIRED? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> (Quality Dept. Only) | | | |
| CORRECTIVE ACTION TO PREVENT ROOT CAUSE RECURRENCE: | | | |
| | | | |
| | | | |
| Responded By: | | Implementation Date: | |
| Corrective Action Closed By: (Quality Dept. Only) | | Date: | |

QUALITY DEPARTMENT/WHEN COMPLETED

SULZER

SULZER PUMPS (US) INC.
SULZER NUCLEAR SERVICE CENTER
CORRECTIVE ACTION REPORT (CAR)
 Reference SNSC Procedure QSS-03

Form No. S0199-0

| | | | | | |
|---|--------------------|--------------------------------|--------------------------|------------|----------|
| 05-033 | N/A | 150051 | Al Baggett | QA | 12/10/05 |
| CAR No. | AUDIT No. | NCR No | Issued By | Department | Date |
| Art Washburn | | SNSC Manager of Engineering | | 12/28/05 | |
| Issued To | Department/Company | REQUIRED RESPONSE | DUE DATE | | |
| NON-CONFORMING CONDITION OR PROBLEM: | | | | | |
| See attached NCR 150051 for detailed description of Nonconforming Condition | | | | | |
| IMMEDIATE ACTION TO CORRECT NONCONFORMING CONDITION OR PROBLEM: | | | | | |
| FPL Turkey Point NPS replaced inboard journal bearing on pump S/N 0601001. Sulzer Engineering responded to FPL initial questions and started evaluation of nonconformance. | | | | | |
| ROOT CAUSE OF NON-CONFORMANCE OR PROBLEM: | | | | | |
| Improper assembly was caused by human error. (Failure to detect journal bearing assembly was blocking oil feed passage.) The improper assembly resulted in the Journal Bearing Failure @ the D.E. | | | | | |
| PLANNED CORRECTIVE AND PREVENTIVE ACTION TO PREVENT RECURRENCE: | | | | | |
| <ul style="list-style-type: none"> -Revision to Sulzer Procedure "MSS-08 CNTA Assembly Procedure" to cover orientation. -Documented training to shop and engineering coworkers to ensure attention to detail is followed and potential consequences when it is not. | | | | | |
| D. Spencer | 3/20/06 | 4/28/06 | | | |
| Responders Name | Date | Date Action(s) to be Completed | Date Action(s) Completed | | |
| FOR SULZER PUMPS (US) INC. QUALITY DEPARTMENT ONLY | | | | | |
| Corrective and Preventive Action Follow-up Required? <u>Yes/No</u> | | | | | |
| Closed By | | Signature | | Date | |