FLOWSERVE

NUCLEAR PRODUCTS OPERATIONS
Vernon Nuclear Pump Operations, Vernon, CA 90058

2 June 2014

FORMAL EVALUATION OF DEVIATIONS REPORTED – NOTIFICATION OF DEFECT

To: Document Control Desk, Nuclear Regulatory Commission
From: David P. Gobbi, Nuclear Quality Program Manager, Flowserve Nuclear Products Operations

Reference: IINTERIM REPORT dated 2 April 2014

Date of Discovery by Owner / Customer: 14 January 2014; recognized / re-evaluated as a trend 17 March 2014
Original Date of Notification to Flowserve: 14 January 2014
Internal Reference: Flowserve Internal Corrective Action: 199892,dated 14Jan. thru– 205953 (most recent) dated 15 March

Subject: Final Evaluation of Deviations – Notification of Defect – Watts Bar II

Purpose: To provide the Commission with a Notification of a Defect as Pursuant to 10 CFR 21.21(d) (1)

This is to advise that a Final Formal Evaluation of the deviations involving equipment supplied to TVA Watts Bar by Flowserve Vernon during 2010 and 2011 has been conducted on May 30, 2014. This Final evaluation was conducted to determine whether the deviations reported by the Licensee on (2) Centrifugal Charging Pumps and (2) Safety Injection Pumps during the Licensee installation phase presented a potential to impact safety.

Descriptions of Reported Conditions: (Each of the 8 Conditions / Deviations were reported through established processes and entered into Flowserve's Internal Corrective Action System) The reported conditions were concerning the bearing housing(s)

1. Bearing Housing – including internal components – were supplied with dimensional, geometric and workmanship (assembly) deviations that affected: bearing housing machining; bearing anti-rotation and housing alignment dowels; and deviations in assembly/installation of the bearing housing baffle locking features.

Immediate Action: Hardware - Related

1. Flowserve reacted to the Licensee reported conditions through on-site and off-site services by Management, Field Service, Engineering and Quality Assurance
2. Flowserve conducted a Root Cause Analysis to identify anomalies and factors that would have contributed to these deviations

Status of Delivered Equipment:

1. All equipment has been rectified for use. Future recommended actions include on-site inspection and possible replacement of alignment dowels.
2. Deviations concerning Safety have been rectified. .

Long Term Action:

1. Each of the eight reported deviations have been evaluated for its respective impact to safety in accordance with the NPO Nuclear Quality Assurance Manual and its supporting procedures

Formal Evaluation Conclusion:

1. The dimensional and geometric deviations found within the bearing housing, if operable through the commissioning phase, would have resulted in either a reduced operating life, or would not be operable. Either situation has been determined to present a potential substantial safety hazard.

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Received @ OCO on 12/30/14

FORMAL EVALUATION OF DEVIATIONS REPORTED – NOTIFICATION OF DEFECT (continued)

Extent of Condition Execution:

1. A thorough review of historical data representing performance indicators from a timeline of 2010 and 2011 had been completed.
2. The data was obtained from customer complaint logs, internal CARs and similar job histories that shared common factors, including personnel

Extent of Condition Conclusion:

1. While the RCA exposed certain areas for improvement, there was no evidence that the reported conditions were systemic, thus supporting the conclusion that these deviations were of an isolated case
2. As this evaluation and its subject deviations are of an isolated, job-specific nature, there is no immediate recommended action to be conducted by other Licensee locations

Corrective Measures:

1. Flowserve has since engaged in programs instituting Operational Excellence which incurs the Human Performance Tools
2. Areas that have been addressed through the Root Cause Analysis have been and continue to be incorporated within the Vernon Operation to reinforce a culture of continuous improvement and emphasizes the use of human performance tools

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Sincerely,

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