Exelon Generation®

October 14, 2016

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Subject: Follow-up to Interim Report Submitted under 10 CFR 21.21(a)(2)

Reference: W. Carsky, REGNPP, to NRC Document Control Desk, "Interim 10 CFR Part 21 Report Regarding Internal Pump Tolerances between the Impeller Hub and a Wear Ring", August 15, 2016 (ADAMS Accession Number ML16229A445)

This letter serves as the follow-up report to the referenced interim report (ML16229A445) which was submitted pursuant to 10 CFR 21.21(a)(2).

The vendor has completed the attached evaluation associated with a Flowserve pump model 6L-SVC back pull out assembly (p/n 11952230) that was supplied to the RE Ginna Nuclear Power Plant (REGNPP). The Flowserve determination is that this condition was an isolated event, and is considered a deviation and not to be classified as a reportable defect as defined in 10 CFR 21.

If you have any questions or need any other clarifying information, please contact me at (315) 791-5219.

Respectfully,

Thomas Harding
Regulatory Assurance Manager

Attachment: Flowserve Formal Evaluation of Deviation for Impact to Safety

cc: NRC Regional Administrator, Region 1
NRC Project Manager, Ginna
NRC Resident Inspector, Ginna

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NRR

FLOWSERVE	NUCLEAR PRODUCTS OPERATIONS	NPO-NNF-07 Rev. 00 Page: 1 OF 2 Date: 23 Nov 2011

FORMAL EVALUATION OF DEVIATION FOR IMPACT TO SAFETY

1. **COMPONENT:** Impeller		2. **CUSTOMER PO:** 00529568	
3. **REPORTED DEVIATION** Impeller ring has loose fit to impeller hub			
4. **COMPONENT CURRENT STATUS:** The impeller was lost during return to Charlotte – not recovered			
5. **SITE LOCATION:** Constellation – GINNA Nuclear Plant	6. **DATE OF DISCOVERY:** 7/11/2016	7. **DATE OF NOTIFICATION OF DISCOVERY:** 8/11/2016	
8. **METHOD OF NOTIFICATION**: Customer Complaint – Email – Customer requesting OE evaluation / guidance (8-15-16)			
9. **CUSTOMER CONDITION REPORT NUMBER:** Click here to enter text.			
10. **CUSTOMER REQUEST FOR EVALUATION:** YES X ~~NO~~		**DATE OF FORMAL EVALUATION :** 9/28/2016	
11. **INTERNAL WARRANTY / NCR NUMBER:** N/A			
12. **CORRECTIVE ACTION NUMBER:** 309092			
13. **IS DATE OF THIS EVALUATION WITHIN 60 DAYS OF (Customer) DISCOVERY?** ~~YES~~ NO X **If response is NO – complete 14, 15, 16 below / If response is YES – Enter N/A at 14, 15, 16**			
14. **IS EXTENSION APPROVAL REQUIRED BY NRC TO COMPLETE FORMAL EVALUATION AND REPORT? YES X**			
15. **REQUEST FOR EXTENSION BY:** GINNA Nuclear Plant / Mr. Thomas Harding		**DATE: 8/15/2016**	
16. **CONFIRMATION OF EXTENSION RECEIVED FROM**: N/A		**DATE**: N/A	

17. **ENTER FORMAL EVALUATION REPORT - EVALUATION PURPOSE: DETERMINE DEVIATION POTENTIAL IMPACT TO SAFETY (COMPONENT/SYSTEM/ENVIRONMENT; (CONCLUDE: "DEVIATION" OR "DEFECT" AS DEFINED IN 10CFR21)**

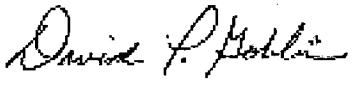
History: Replacement of RHR Back Pull-Out unit – Purchase Order identified to leave Impeller Ring OD oversize (confirmed)
Source of Discovery: Customer Notification
Method of Discovery: Email – Customer installation prohibited by oversize impeller ring (as delivered)
Process of OEM intervention: In response to customer – FLS Field Service was sent on-site
Customer Reported Results : Impeller ring lacked interference fit to impeller hub
Evaluation Process: Analysis performed to determine pressure acting on the impeller wear ring and the resulting load on the set screws
Flowserve Action: Conduct analysis to determine suitability of set screws to maintain radial and axial ring stability under maximum / shut-off design operational loads
Results of Flowserve Action: Analysis concluded that the suction-side impeller wear ring, devoid of the interference fit, would remain intact and operational with no movement (adverse) in either the radial or axial planes during operation. The assumptions used in the calculations were extremely conservative aimed to create worst case operational scenarios. It was determined that the set screws, (3 – ¼-20 x 3/8) would prohibit the ring from becoming dislodged and causing contact with the mating casing wear ring, thus avoiding a possibility of creating a significant safety hazard.
Flowserve determination of Extent: The root cause of this condition has been reviewed in depth through document reviews and personnel interviews. In summary, the root cause identified an anomaly whereas this impeller (post balance status) became 'stuck' on the balancing arbor during removal and required 'excessive heat' to assist in its removal. This first – time event resulted in heat input throughout the impeller inlet surfaces (including those areas that are not typically subject to the same) to free the impeller from the arbor. It is believed that this led to the base material beneath the (previously) installed impeller ring to be "pulled-in" or "contracted", resulting in a reduction of the dimensional interference which had been inspected and recorded prior to ring installation and balance. Accordingly, FLS reports this condition as an isolated event based on the anomaly described and the lack of historical relevant customer feedback / complaints.

Flowserve continued communication with Customer: This OEM evaluation was conducted at the request of Mr Thomas Harding, GINNA. This report will be provided to Mr. Harding on 29 September 2016.

Conclusion: The reported condition has been determined to be a deviation and not to be classified as a reportable defect as defined in 10CFR21. This determination has been concluded through a Formal Quality and Engineering Evaluation which included design and operational analysis provided by FLS Nuclear Analytical Engineering.

18. ENTER REPORT ATTACHMENT REFERENCES: None from OEM to Enter				
19. FORMAL EVALUATION RESULTS COMPLETE: **YES X** ~~**NO**~~				
20. RESULTS/COMMENTS Condition ~~did~~ / did not present a significant safety hazard –	**Check One:**	**REMAINS A DEVIATION X**	~~**REPORTABLE DEFECT ☐**~~	**OTHER – EXPLAIN**
21. NOTIFICATION REQUIRED – Yes X ~~**No ☐**~~	**If Yes Check One :**	**TO CUSTOMER X**	~~**TO NRC ☐**~~	**OTHER-EXPLAI N**
22. IF NOTIFICATION IS REQUIRED – Complete 23	**23. BY WHOM: David P. Gobbi**		**DATE: September 29, 2016**	
24. ADDITIONAL ACTIONS REQUIRED: None				

EVALUATION REPORT BY:



25.	**EVALUATION PARTICIPANTS – COMPLETED BY MRB CHAIR**			
DGobbi, Mgr NPO QA – Nuclear Program	MEftychiou, Mgr Nuclear Engineering	RUpadhyaya, Mgr Nuclear Analytical Engineering		Click here to enter text.
MRB CHAIR Click here to enter text.	**ENG'R'G REPRESENTATIVE(S):**Click here to enter text.	**TECHNICAL EXPERT(S) BBusse, Analytical Engineer**	Click here to enter text.	**EVALUATION DATE: Formal - 28 September 2016** **REPORT DATE: 29 September 2016**

CONTINUATION SHEET FOR ADDITIONAL INFORMATION –(not used this evaluation)