



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 16, 2017

Mr. Joseph Carter
Quality Assurance Manager
Flowserve Corporation
1900 S. Saunders St.
Raleigh, NC 27603

SUBJECT: FLOWSERVE CORPORATION'S RESPONSE TO THE U.S. NUCLEAR
REGULATORY COMMISSION INSPECTION REPORT
NO. 99901356/2017-201, AND NOTICE OF NONCONFORMANCE

Dear Mr. Carter:

Thank you for your September 21, 2017, letter in response to the Notice of Nonconformance (NONs) that was discussed in the subject U.S. Nuclear Regulatory Commission (NRC) inspection report (IR).

We have reviewed your letter and found that it is not fully responsive to NON 99901356/2017-201-01, 99901356/2017-201-02, 99901356/2017-201-03, and 99901356/2017-201-04. Specifically:

1. Your response to NON 99901356/2017-201-01 failed to address several areas of concern to the NRC staff. Clarify your response as follows:
 - a. The response states, in part, that Flowserve requested additional information to satisfy the audit reports on file and that you will review the objective evidence to determine if a re-audit is necessary. For the suppliers that were inadequately qualified by Flowserve, in addition to the casting and forging suppliers, clarify if Flowserve plans on performing the requalification of these suppliers during the next audit cycle or the plans are to immediately requalify these suppliers within the next few months.
 - b. If your response to question 1a above is that Flowserve will requalify the suppliers during the next audit cycle, describe in detail which actions Flowserve has taken to assure that the material or services, as applicable, provided by these suppliers will perform their intended safety function.
 - c. The response states, in part, that the issue had been determined that Flowserve did not reference in the audit reports that the suppliers were qualified as material organizations under the rules of NCA 3842.2, and that the suppliers were in fact audited to meet these requirements. In addition, the response states, in part, that the AVL and the audit reports for the casting and forging suppliers will be corrected to show what they were audited against and qualified to supply under the NCA-3850 rules. The nonconformance was issued due to Flowserve not providing sufficient objective evidence to support the conclusion that the suppliers had met the controls and applicable requirements of

NCA-3850, not just because there was no reference in the audit reports that the suppliers were qualified as material organizations. Describe in detail how Flowserve plans on showing that the suppliers were audited against and qualified to supply under the requirements of NCA-3850.

2. Your response to NON 99901356/2017-201-02 failed to address several areas of concern to the NRC staff. Clarify your response as follows:
 - a. The response states, in part, that Flowserve requested additional information to satisfy the audit reports on file and that you will review the objective evidence to determine if a re-audit is necessary. For the suppliers that were inadequately qualified by Flowserve, in addition to the casting and forging suppliers, clarify if Flowserve plans on performing the requalification of these suppliers during the next audit cycle or the plans are to immediately requalify these suppliers within the next few months.
 - b. If your response to question 1a above is that Flowserve will requalify the suppliers during the next audit cycle, describe in detail which actions Flowserve has taken to assure that the material or services, as applicable, provided by these suppliers will perform their intended safety function.
 - c. The response states, in part, that the programs were audited to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 Appendix B and 10 CFR Part 21 but the audit checklists were not fully disclosing enough objective evidence. For the suppliers identified in example 1 of the nonconformance, the NRC inspection team had identified that these suppliers had quality assurance (QA) programs based on ISO 17025 and ISO 9001, as applicable. Suppliers with this type of programs need to have additional controls and processes in place to ensure that they have a QA program that meets the requirements in Appendix B to 10 CFR Part 50. In addition, these suppliers must have an adequate program that meets the requirements of 10 CFR Part 21 for the supply of basic components. Describe in detail what actions Flowserve is planning on taking to ensure that these suppliers do in fact have the adequate controls and processes built into their QA programs to assure that they meet the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21.
3. Your response to NON 99901356/2017-201-03 failed to address several areas of concern to the NRC staff. Clarify your response as follows:
 - a. The response states that the immediate action was to lock the cages and only the supervisor and designees will have access to the weld material storage area. Confirm that this action is also the corrective action that will be implemented going forward.
 - b. The response states that the procedures and quality program will be reviewed for potential process changes to provide clearer directions for better process and weld controls. Specify the proposed completion date for these actions.
4. Your response to NON 99901356/2017-201-04 failed to address several areas of concern to the NRC staff. Clarify your response as follows:
 - a. The response states, in part, that “the welding procedures P8-123NW and P8-323NW all list the requirements to only use stainless steel materials during processing.” However, there are two requirements in WEC Technical Specification No. APP-GW-X0-602,

"Cleaning and Cleanliness Requirements for Equipment for Use in Nuclear Supply and Associated Systems," Revision 3, dated February 18, 2013, for cleaning of stainless steels. The first requirement is that stainless steel wire brushes shall be use. The second requirement is that these wire brushes that are used for stainless steel shall not be used on carbon steel material in order to prevent cross-contamination. Both of these requirements should be specified in the weld procedures that are used in production and are qualified in accordance with Section IX, "Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators," of the ASME B&PV Code. However, not all of Flowserve's weld procedures include both of these requirements. For example, weld procedure P8-121N only has requirements for cross contamination. There is no requirement in weld procedure P8-121N to use stainless steel wire brushes, while weld procedure P8-323NW requires the use of stainless steel wire brushes but does not require steps to prevent cross-contamination. In addition, paragraph QW-200.1(b), "Contents of the WPS" in Section IX, of the ASME B&PV Code, states that "The completed WPS shall describe all of the essential, nonessential, and, when required, supplementary essential variables for each welding process used in the WPS. These variables are listed for each process in QW-250 and are defined in Article IV, Welding Data." QW-250 in Section IX of the ASME B&PV Code lists cleaning as a variable that shall be specified in the WPS.

Describe what actions will be taken to ensure Flowserve's weld procedures will meet the requirements of the WEC technical specifications and of the ASME B&PV Code. In addition, specify the proposed completion dates for these actions. It is noted that cleaning of stainless steel welds is critical for ensuring the integrity of stainless steel welds (including the issue discussed above) and is documented in a paper titled "Selecting the Best Wire Brushes for Weld Cleaning," in the American Welding Society (AWS) Welding Journal, August 2017 Edition.

5. The responses to the NONs did not address the extent of condition for items that had already been delivered. Your response should include an appropriate extent of condition for components that had already been delivered to the U.S. nuclear power plants.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material is withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21 "Protection of Safeguards Information: Performance Requirements."

Please contact Mr. Yamir Diaz-Castillo at 301-415-2228, or via electronic mail at Yamir.Diaz-Castillo@nrc.gov, if you have any questions or need assistance regarding this matter.

Sincerely,

/RA/

John P. Burke, Chief
Quality Assurance Vendor Inspection Branch-2
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901356

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