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United States Nuclear Regulatory Commission
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USA

LTR-NRC14002 Page 1 of 4

Subject: Reply to NRC Report Number 99900080/2013-201- (01, 02, and 03) and Notice of Nonconformance.

Dear Sir,

Enclosed are the SPX Corporation Copes-Vulcan Operation, (SPX) responses to the NRC Report Number 99900080/2013-201 and Notice of Nonconformance 99900080/2013-201-01, 99900080/2013-201-02 and 99900080/2013-201-03 as requested in the cover letter provided with the report. SPX has entered these nonconformance issues into the SPX Corrective Action Report, (CAR) system. SPX values the input and results from the NRC inspection of the SPX quality system as it validates the overall implementation of the applicable industry guidelines and regulations to ensure the robustness of the squib valve production and design. In consideration of the NRC comments made during the inspection, SPX immediately initiated actions to resolve the specific issues raised by the inspection team.

Regards,


Richard Kuntz
Quality Assurance Manager

cc: Richard A. Rasmussen Chief, Electrical Vendor Inspection Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors



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Notice of Nonconformance 99900080/2013-201-01

- A. Criterion III, "Design Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states, in part, that "The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program."

Contrary to the above, as of September 27, 2013, SPX failed to sufficiently verify the adequacy of the design of the explosive system that provides the motive force for the squib valves. Specifically, the team determined that sufficient testing or analysis was not performed to ensure the squib valve initiator output would be sufficient to reliably ignite the explosive cartridge under all design basis conditions. The sizing of the initiator, its orientation, and other critical aspects of the design were chosen largely based upon engineering judgment and analytical basis was not developed for determining cartridge ignition input requirements or initiator output. Also, an insufficient number of cartridge firings were performed to statistically support reliable performance.

This issue has been identified as Nonconformance 99900080/2013-201-01.

The reason for the noncompliance:

The reason for the noncompliance is that is that SPX Corporation Copes-Vulcan Operation considered that the existing measures of assuring that proper ignition occurs were adequate. These measures included control of powder particle size, and acceptance criteria for development of cartridge pressure. The verification of the design adequacy focused on design characteristics of particle size and development of cartridge pressure as providing design verification.

The corrective steps that have been taken and results achieved:

Review and analysis of the cartridge assembly has been performed to develop additional testing and analysis plans to provide the data for cartridge assembly validation. The testing by varying the initiator loading will evaluate margin on initiator output. Current controls on mean particle size will be enhanced to control particle distribution for production lots of powder.

The date corrective actions will be completed:

The testing and analysis will be completed by March 31, 2015.



Notice of Nonconformance 99900080/2013-201-02

- B. Criterion III, "Design Control," of Appendix B to 10 CFR Part 50, states, in part, that "applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures and instructions." It also states that "measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems, and components."

Contrary to the above, as of September 27, 2013, SPX failed to establish sufficient measures for the selection and review for suitability of application of parts that are essential to the safety-related functions of the squib valves. Specifically, SPX failed to identify as a critical characteristic whether the explosive powder mix was free of contaminants that could potentially degrade performance under design basis conditions.

This issue has been identified as Nonconformance 99900080/2013-201-02

The reason for the noncompliance:

During the inspection, the inspection team noted it's concern that SPX failed to establish sufficient measures for the selection and review for suitability of application of parts that are essential to the safety-related functions of the squib valves. SPX Corporation Copes-Vulcan Operation considered that the existing measures of using commercially procured starting ingredients provided with commercial analysis of the ingredients to the ordering specifications was adequate to assure control of contaminates in the final powder mixture. The final powder mixtures were then checked to determine that the correct ratios of ingredients of the mixture were present in the final mixture after performance testing was completed.

The corrective steps that have been taken and results achieved:

To address the cited issues with commercial dedication of the ingredients, commercial dedication instructions have been developed to require analysis of the individual ingredients to the ordering specification requirements.

The date corrective actions will be completed:

The Commercial Dedication Instructions were developed and are undergoing approval process with completion of approvals to be completed by February 25, 2014.



Notice of Nonconformance 99900080/2013-201-03

- C. Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50 states, in part, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

Contrary to the above, as of September 27, 2013, in two instances SPX failed to promptly correct conditions adverse to quality. In the first example, SPX failed to correct issues associated with the loss of manufacturing traceability for a lot of carbon potassium nitrate (CPN), powder as described in Corrective Action Report (CAR) 881. SPX closed this CAR prior to verifying that the specified corrective actions were completed. The inspection team identified that as of September 27, 2013 the specified corrective actions had not been taken. In the second example, SPX failed to correct issues associated with improper mixing of CPN powder as described in CAR 850. According to CAR 850, SPX was to monitor the effectiveness of the specified corrective actions for three months. On April 12, 2013, SPX closed the CAR without verifying that the corrective actions had been accomplished. The inspection team identified that as of September 27, 2013, the specified corrective actions had not been taken.

This issue has been identified as Nonconformance 99900080/2013-201-03.

The reason for the noncompliance:

The reason for the noncompliance is that is that SPX Corporation Copes-Vulcan Operation had closed the CARs 850 and 881 based on receipt of vendor input in response to CAR 850 and 881 providing corrective actions to resolve the issues. On review of the corrective actions submitted by the vendor in the CAR responses it was determined that some corrective actions proposed were not completely implemented. Follow-up to the corrective actions should have been assigned to verify implementations of the proposed actions that were not completed. A review of CAR reports found no other CARs that contained this condition.

The corrective steps that have been taken and results achieved:

The CAR reports 850 and 881 were discussed with the vendor and objective evidence of the implementation of the corrective actions that were not completed were obtained. The CAR reports were updated with the additional objective evidence to complete proper closure in accordance with SPX corrective action procedures. The Quality Engineers were instructed on the corrective action process and procedures in the Quality Assurance manual and on internal work instructions for corrective action processing.

The date corrective actions will be completed:

The updating of the CAR reports and instruction of Quality Engineers was completed October 24, 2013.