



**SOLIDSTATE CONTROLS**

**Quality Assurance**

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U.S. Nuclear Regulatory Commission  
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Subject: Ametek Solidstate Controls Response to NRC Inspection  
Nonconformances 99901427/2017-201-01 and 99901427/2017-201-02

Reference: NRC Vendor Inspection Report 99901427/2017-201

Ametek Solidstate Controls Inc. (SCI) is providing the enclosed responses to the subject Notices of Nonconformances issued during Nuclear Regulatory Commission Vendor Inspection 9901427/2017-201. Ametek SCI takes these nonconformances seriously and aims to resolve them with effective and timely corrective actions. Details regarding the corrective actions and their targeted completion dates are provided in the attachment to this letter.

Sincerely,

Ethan Salsbury

Enclosure

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## **Response to Nonconformance 99901427/2017-201-01**

### ***Reason for Noncompliance***

Significant time and energy has been invested in developing tests and supporting technical justifications for establishing reasonable assurance that a component will perform its intended safety function. This is being completed in response to finding SR-2013-36-03 from the 2013 NUPIC Audit of Ametek Solidstate Controls. Due to the complexity and effort required for this corrective action, it has currently only been applied to replacement component dedication.

While components used in manufactured UPS systems have historically been considered dedicated with the final testing of the equipment, it is understood that not all critical characteristics can be verified with this method. This has not been addressed as an extent of condition to the 2013 NUPIC finding due to time constraints.

### ***Corrective Steps Taken and Results Achieved***

A corrective action has been entered into the corrective action system (SCI-CAR-109). A process is being developed to test components prior to installation in production equipment to verify the seismic critical characteristics that cannot be verified during final test.

### ***Extent of Condition Review***

Aside from relays, as cited during the inspection, Ametek SCI has evaluated other potentially seismically sensitive components used by Ametek SCI. Based on guidance from EPRI TR-112579, Critical Characteristics for Acceptance of Seismically Sensitive Items and EPRI TR-105849, Plant Support Engineering: Generic Seismic Technical Evaluations of Replacement Items for Nuclear Power Plants Item Specific Evaluations, seismically sensitive components used by Ametek SCI include relays, timer relays, and fans. These components will have the seismic critical characteristics verified prior to installation during manufacturing and as replacement components.

### ***Corrective Steps to Avoid Noncompliances***

A system is under development and will be implemented to verify seismic critical characteristics of safety-related, seismically sensitive components that cannot be tested in equipment prior to installation. This will require sampling plans and testing for seismically sensitive, safety-related components. It will also require provisions to component segregation and traceability, part identification, material handling procedures, and training.

### ***Corrective Action Completion Date***

Technical justifications and enhanced testing procedures have been created for several commonly used components. The process for incorporating these tests into components used in production is targeted to be completed in December, 2017.



## **Response to Nonconformance 99901427/2017-201-02**

### **Part 1: Failure to Implement Corrective Actions from NRC Inspection, 99901427/2013-201**

#### ***Reason for Noncompliance***

In all of the instances cited in the previous NRC Inspection, the noncompliance occurred as a result of a lack of knowledge regarding the efforts and actions taken by the personnel previously responsible for addressing these issues. Therefore, any justifications or evidence to demonstrate the completion of corrective actions was unobtainable during the inspection. Specific responses to each of the instances are provided below.

#### ***Corrective Steps Taken and Results Achieved***

The corrective actions described in the response to Inspection Report 99901427/2013-201 have been completed. A checklist has been added to the Substantial Safety Hazard Assessment form, number 02-190145, revision B. The purpose of this checklist is to facilitate compliance to 10CFR21 reporting by assigning deadlines for interim reports and evaluations based on the date of discovery. These dates are aligned with the requirements of 10CFR21. The form also includes the cognizant personnel responsible for the evaluation and completion of the Part 21 report. This form has been modified and included in procedures.

In response to the corrective actions regarding surge withstand testing and synchronization testing, Ametek SCI engineering has completed justifications for the acceptance of the equipment which were involved in this oversight. These justifications provide a similarity analysis for equipment which was not subject to surge withstand capability testing and an explanation of the circuitry for equipment that was outside of the specification limits during synchronization testing. These justifications have been added to the corresponding job files and the quality directory for future review.

#### ***Extent of Condition Review***

Since the 2013 NRC inspection, the Ametek SCI corrective action system has been improved and more closely monitored to avoid instances similar to those described in the NRC Inspection report. The corrective actions entered into the system have been deemed acceptable on numerous occasions as they are evaluated routinely by internal and external audits for effectiveness and timeliness. Therefore, Ametek SCI does not have reason to believe this condition applies to any other corrective actions in the system.

#### ***Corrective Steps to Avoid Noncompliances***

To assure compliance on future corrective actions, periodic meetings will be held to follow up on corrective actions and the tasks required for closure. These meetings will occur monthly and include managers from each department with open corrective action requests to promote prompt closure and escalation of open corrective actions.

#### ***Corrective Action Completion Date***

Objective evidence for the 2013 NRC Inspection responses have been created as described above. Monthly corrective action review meetings will be initiated in August, 2017.

**Part 2: Inadequate Corrective Action to Address NUPIC Finding SR-2013-26-03*****Reason for Noncompliance***

The original NUPIC finding pertains to insufficient testing considerations rather than the acceptance criteria that provides a similarity analysis. The finding states:

“Outside of functional testing, Ametek does not perform any testing on subsequent production batches/Lots that would satisfy acceptance of seismic critical characteristics. CGI Dedication Specification /Test Sheets specify seismic required but do not specify any specific seismic critical characteristics that verify the components seismic safety function”

This indicates that the testing performed did not verify the seismic safety function by confirming the design had not changed. There were no discrepancies noted regarding the establishment of acceptance criteria based on manufacturer part data.

***Corrective Steps Taken and Results Achieved***

A corrective action has been entered into the corrective action system (SCI-CAR-109). To address NUPIC finding SR-2013-36-03, additional tests have been created to verify all replacement part seismic safety functions are implemented. These tests do provide reasonable assurance the component will perform its intended safety functions by confirming changes have not been made to the design. Ametek SCI has evaluated the seismic critical characteristics on a sample of tested specimens and will continue to do so to align acceptance criteria with limits obtained from tested specimens.

***Extent of Condition Review***

Aside from relays, as cited during the inspection, Ametek SCI has evaluated other components subject to this requirement. An evaluation was performed for potentially seismically sensitive components used by Ametek SCI. Based on guidance from EPRI TR-112579, Critical Characteristics for Acceptance of Seismically Sensitive Items and EPRI TR-105849, Plant Support Engineering: Generic Seismic Technical Evaluations of Replacement Items for Nuclear Power Plants Item Specific Evaluations, seismically sensitive components used by Ametek SCI include relays, timer relays, and fans. These components will have acceptance criteria of the seismic critical characteristics derived from actual performance data.

***Corrective Steps to Avoid Noncompliances***

The general corrective action tasks to be completed are listed below.

- a. Identify all seismically-sensitive components
- b. Ensure all seismic critical characteristics are identified and documented
- c. Determine the necessary sample size for baseline testing
- d. Test seismic critical characteristics for each sample and record values
- e. Perform seismic testing on the samples from the baseline testing
- f. Establish and document acceptance criteria for each seismic critical characteristic

***Corrective Action Completion Date***

The targeted completion date for this effort is December, 2017.