



July 10<sup>th</sup>, 2015

U.S. Nuclear Regulatory Commission

Attn: Document Control Desk  
Washington, DC  
20555-0001

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

Subject: Reply to notice of nonconformance cited in NRC Inspection Report  
99901415/2015-201, dated June 11, 2015

Kinectrics Inc. (Kinectrics) acknowledges the receipt of United States Nuclear Regulatory Commission (NRC) Inspection Report 99901415/2015-201 and associated Notices of Nonconformance 99901415/2015-201-01, -02, and -03. Kinectrics appreciates the time and effort expended by the NRC in conducting this inspection. Kinectrics, with a company philosophy of continual improvement, takes the identified nonconformances seriously, and also views them as opportunities to improve the processes already in place to facilitate better compliance to both regulatory and customer requirements.

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As requested, details of the corrective actions associated with each notice of nonconformance are described below.

**Nonconformance 99901415/2015-201-01**

*"...Kinectrics failed to establish adequate measures to ensure that testing requirements were satisfied in accordance with written test plan procedures, and failed to implement measures to control the issuance and use of technical documents, which prescribe activities affecting quality. Specifically, Kinectrics failed to ensure that the design basis accident (DBA) requirements (i.e. high humidity and containment temperature) for two Duke Nuclear LLC purchase orders (POs) were appropriately translated into test plan K-015963-PSWI-004 R01, qualification report K-015963-RP-004, and associated certificates of conformance (CoC). Furthermore, Kinectrics failed to ensure that all the tests were completed, reviewed, and approved by quality assurance personnel prior to the issuance of the CoCs, which referenced an unapproved qualification report."*

Reason for the Noncompliance

Upon review of test plan K-015963-PSWI-004 R01 after the conclusion of the NRC inspection it was confirmed that the high humidity and the containment temperature as specified by the customer were included in section 2.15 of the test plan. Qualification report K-015963-RP-004, however, did not report humidity and temperature requirements as Kinectrics had received a written request from the customer to not include these conditions in the test report because the customer's application for the items had changed.

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Kinectrics does acknowledge that a certificate of conformance (CoC) was issued against an unapproved qualification report. At present Kinectrics does not provide any guidance in its Quality Management System (QMS) for the requirements of a CoC. It is understood that any CoC is to be signed by the Quality Manager, but this is not captured in a procedure, nor are delegations of authority. Whether a CoC may be issued against a draft document, as in this case, is also ambiguous.

#### Corrective Steps Taken & Results Achieved

Kinectrics has raised nonconformance report (NCR) 3035 to document this issue and initiated corrective action report (CAR) 3035-1. Kinectrics has performed an extent of condition assessment by reviewing CoCs issued by Kinectrics since 2010 and determined that the CoC issued for project K-015693 was the only instance of a CoC being issued against a draft or incomplete product.

A corrective action implemented to prevent recurrence is a revision to Kinectrics procedure OP-12-1, *Project Status & Closeout*, to explicitly state the requirements for a CoC and to establish as Kinectrics policy that a CoC shall not be issued for draft documents. This revision was issued on July 10<sup>th</sup>, 2015.

#### Corrective Steps That Will Be Taken To Avoid Noncompliance

The outstanding report associated with this project will be completed and issued to the customer by August 31<sup>st</sup>, 2015. Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.

#### Date When Corrective Actions Will Be Completed

A 90-day follow-up to verify the effectiveness of the corrective actions taken is scheduled to be completed by November 30<sup>th</sup>, 2015.

#### **Nonconformance 99901415/2015-201-02**

*...Kinectrics failed to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation, and, in the case of significant conditions adverse to quality, failed to appropriately assure that the cause of the condition was determined and corrective actions were taken to preclude repetition.*

*"Specifically, the NRC inspection team found multiple examples where Kinectrics personnel did not initiate or inadequately completed a NCR; which initiates both the Kinectrics nonconformity and corrective action processes. In addition, the guidance available in Kinectrics' OP was not sufficiently clear to allow employees to recognize which issues should have been characterized as SCAQ and thus take necessary actions to preclude repetition. Examples of these deficiencies were:*

- (a) *"Kinectrics' personnel failed to initiate a NCR relating to two departures from test requirements that occurred on April 13, 2015, during terminal block qualification testing for United Controls International PO 2360-4REV1, Revision 0, dated March 18, 2015: (1) Test temperature exceeded the 300 degrees Celsius calibrated range of the measuring thermocouples on multiple occasions, and (2) Test voltage dropped below the required 850 volt dc on multiple occasions.*
- (b) *"Kinectrics' personnel failed to initiate a NCR or CAR relating to the 2012 NRC inspection Notice of Nonconformance which identified two deficiencies related to the dedication of commercial molded case circuit breakers: (1) Nonconformance 99901415/2012-201-03 for failure to appropriately verify the adequacy of certain circuit breaker design features, and (2) Nonconformance 99901415/2012-201-04 for failure to take appropriate corrective and preventive measures in establishing the authenticity and traceability of the circuit breakers.*
- (c) *"Kinectrics preventive measures in response to NRC Nonconformance 99901415/2012-201-04, a finding relating to establishing the authenticity and traceability of commercial molded case circuit*

breakers, addressed the procurement from Tiger Controls. However it failed to show evidence that personnel made a determination of significance (e.g. if the issue was a SCAQ). Kinectrics failed to demonstrate if they should have addressed the generic case of establishing authenticity by verifying component traceability to the original equipment manufacturer (OEM) for other distributor orders when OEM tests were relied upon as a part of commercial-grade dedication.

- (d) "Kinectrics extent of condition failed to identify all customer projects affected by Kinectrics 10 CFR Part 21 report dated June 27, 2014, which related to a potential defect in irradiation services provided by Steris Isomedix. Kinectrics letter to Duke Energy Carolinas, dated June 27, 2014, identified three affected POs, but failed to identify PO 148575 for component qualification and PO 149027 for components."

#### Reason for the Noncompliance

- (a) (1) The test required a peak temperature of 295 °C; the temperature rose to 305 °C once during the test for approximately 40 seconds, and this excursion exceeded the calibrated range of the thermocouples. Because the test specified a minimum temperature of 295 °C, testing personnel did not view the excursion as a nonconformance as test requirements were still met. (2) Kinectrics identified the voltage drop and identified it to the customer shortly after its occurrence. The Kinectrics Project Manager recorded this issue in an action log with the intent to initiate the corresponding NCR; however, this was not completed in a timely fashion.
- (b) Kinectrics had failed to raise internal NCRs for notices of nonconformance 99901415/2012-201-03 and 99901415/2012-201-04 due to ambiguities in Kinectrics' program. At the time of the 2012 NRC inspection, Kinectrics' program did not explicitly require nonconformances to be raised for issues identified during external quality audits or inspections: Kinectrics was inconsistently initiating NCRs during these instances.
- (c) Kinectrics procedure OP-14-1, *Corrective Action*, does provide guidance to determine the significance of a nonconformance; this is, however, presented as non-mandatory guidance. In addition, Kinectrics form QF-13-1, *Nonconformance Report*, does not provide prompts to perform an evaluation of significance for a nonconforming situation to determine the need for corrective action.
- (d) Kinectrics had identified 43 purchase orders from 28 customers affected by this issue. Duke Energy Carolinas was one of those customers; however, two of the affected POs were not identified during the extent of condition assessment. This was caused by human error during the extent of condition review.

#### Corrective Steps Taken & Results Achieved

- (a) Kinectrics has raised NCRs 3090 to document that the calibrated range of the thermocouple was exceeded and NCR 3091 to document that the voltage drop. Kinectrics has also initiated NCR 3036 to document this issue as identified by the NRC and raised CAR 3036-1 to document the corresponding corrective actions. Kinectrics' program does provide guidance for when an NCR should be initiated; however, the first issue in question was ambiguous because testing requirements had been met, and the second issue related to the timeliness of initiating the nonconformance. Kinectrics nonconformance procedure, OP-13-1, *Control of Nonconformities*, provides a list of example nonconforming situations, although this list is not exhaustive. OP-13-1 has been revised to include a piece of measuring equipment exceeding its measurement tolerance as an example of a nonconforming situation. This revised procedure was issued on July 10<sup>th</sup>, 2015.

Project team members have also received coaching regarding requirements for timely initiation of NCRs; this coaching was provided on July 7<sup>th</sup>, 2015. A general reminder of this requirement was also sent to the entire company on July 8<sup>th</sup>, 2015.

- (b) Kinectrics has raised NCRs 3033 and 3034 to document this issue and has initiated CAR 3034-1 to facilitate corrective action.

Kinectrics had previously identified the need for general improvements regarding conduct of quality audits; this was documented on NCRs 1798 and 1805 initiated in October of 2013. These improvements cover Kinectrics' response to external audit findings, and provide additional guidance for reporting of nonconformances identified during internal audits. These changes are described in a revision made to OP-17-2, *Performance of Quality Audits & Commercial Grade Surveys*, dated December 16, 2013. This procedure was also revised to include the requirement that external audit or inspection findings are to be reviewed during internal quality audits to ensure effective implementation as this was also done inconsistently. In addition, where corrective action is initiated, the requirements for collecting objective evidence of completion have also been improved and this includes the introduction of a 90-day follow-up to verify the effectiveness of corrective actions taken, as described in OP-14-1.

A review has been performed of all external quality audit findings issued to Kinectrics under the 10CFR50 Appendix B program since October, 2013: all nonconformances and requests for corrective action have a corresponding Kinectrics NCR entered into Kinectrics' nonconformance database.

(1) Regarding nonconformance 99901415/2012-201-03 issued during the 2012 NRC inspection of Kinectrics, the assignment of a responsible authority to evaluate the need for a standard template for the commercial grade dedication of molded case circuit breakers has now been documented. The need for a standard template for the dedication of molded case circuit breakers, as well as standard templates for other ongoing activities will be evaluated and documented.

(2) Nonconformance 99901415/2012-201-04 issued during the 2012 NRC inspection of Kinectrics pertained to taking appropriate corrective and preventative action in establishing authenticity of molded case circuit breakers. Although the immediate issue regarding the specific breaker in question was addressed, Kinectrics failed to apply general actions to prevent recurrence. The corrective actions initiated and documented in CAR 3034-1 strengthen Kinectrics' purchasing clause regarding traceability of items to the OEM and detection of counterfeit, fraudulent, and suspect items as indicated on form QF-6-10, *Purchase Order Standard Terms & Conditions*. Kinectrics has also revised OP-6-5, *Quality Approved Suppliers List*, to strengthen requirements and place additional restrictions on suppliers where a supplier has provided a suspected CFSI, regardless of the rigor of the Kinectrics testing or dedication program. This revised procedure was issued on July 10<sup>th</sup>, 2015.

Kinectrics continues to rely on engineering team involvement in the procurement process, aggressive CFSI inspection practices, and testing and dedication programs to prevent CFSIs from entering a customer's facility.

- (c) Kinectrics has raised NCR 3039 to document this issue internally and initiated CAR 3039-1. Kinectrics has reviewed NCRs from the past 12 months within the 10CFR50 Appendix B program and has evaluated them for significance based on the requirements currently presented in OP-14-1. This review has not resulted in additional corrective actions.
- (d) Kinectrics has raised NCR 3037 to document this issue internally and initiated CAR 3037-1. Kinectrics has made the notification to Duke regarding this issue; this was done on May 7<sup>th</sup>, 2015. In addition, Kinectrics' procedure QAOP-19-1, *10CFR Part 21 Evaluations*, has been revised to

require the extent of condition assessment during a Part 21 evaluation to be reviewed by an independent individual. This revised procedure was issued on July 10<sup>th</sup>, 2015.

#### Corrective Steps That Will Be Taken To Avoid Noncompliance

- (a) Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.
- (b) A determination of the need for standard templates for continuing work is being evaluated by the identified responsible authority. This evaluation will be completed by August 31<sup>st</sup>, and appropriately documented. Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.
- (c) Kinectrics uses a database system to initiate, log, and track nonconformances and a significant update to this database system has been initiated. This upgrade involves significantly redesigning the nonconformance reporting form. One such change is to include a specific field to identify the significance of a nonconformance. This will prompt users to perform a significance evaluation, and document the evaluation, on every NCR. Once this upgrade is complete Kinectrics will revise procedures OP-13-1, OP-14-1, and OP-14-2, *Preventive Action*, to align with the methodology and flow of the new database system; this will include revising OP-14-1 to include specific, and mandatory, guidance for evaluating the significance of a nonconformance. Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.
- (d) Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.

#### Date When Corrective Actions Will Be Completed

- (a) A 90-day follow-up to verify the effectiveness of the corrective actions taken is scheduled to be completed by October 10<sup>th</sup>, 2015.
- (b) A 90-day follow-up to verify the effectiveness of the corrective actions taken is scheduled to be completed by October 10<sup>th</sup>, 2015.
- (c) The upgrade to Kinectrics' nonconformance reporting database is slated to be completed by September 30<sup>th</sup>, 2015. This will be followed by revisions to procedures OP-13-1, OP-14-1, and OP-14-2 by October 31<sup>st</sup>, 2015. A 90-day follow-up to verify the effectiveness of the corrective actions taken would be scheduled to be completed by January 31<sup>st</sup>, 2016.
- (d) A 90-day follow-up to verify the effectiveness of the corrective actions taken is scheduled to be completed by October 10<sup>th</sup>, 2015.

#### **Nonconformance 99901415/2015-201-03**

*"...Kinectrics failed to establish adequate measures for the selection and review for suitability of application of materials that are essential to the safety-related functions of the structures, systems, and components. The NRC inspection team found that Cal-Matrix survey report QA-2014-15 dated July 5, 2014, and Navair survey report QA-2014-11 dated July 25, 2014, did not provide objective evidence of verification of all critical characteristics associated with commercial calibration services for a seismic accelerometer. Specifically, the surveys did not validate supplier controls of processing software used in*



*the calibration of accelerometer number 32286, which was used in AP1000 junction box panel number 1 and 3 qualification for Westinghouse Electric Company (Westinghouse) PO 4500631186."*

#### Reason for the Noncompliance

Kinectrics does not identify software controls as a specific critical characteristic on the commercial grade survey checklist used for the qualification of calibration service providers, all of whom are accredited by International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement signatories, as this is inferred through checklist sections B12 and B13, QC & Sampling Plans, and M&TE Controls, respectively. Kinectrics does acknowledge that this should be a specific critical characteristic to align with Kinectrics procedural requirements.

#### Corrective Steps Taken & Results Achieved

Kinectrics has raised NCR 3038 to document this issue internally and initiated CAR 3038-1 to facilitate corrective action. Kinectrics has performed a follow-up with the service provider that calibrates accelerometers used for the 10CFR50 Appendix B program and the service provider has confirmed that software is not used in the calibration of accelerometers: accelerometers undergoing calibration are manually compared with a reference accelerometer at a variety of frequencies.

Kinectrics has revised the checklist used for the commercial grade survey of calibration service providers to include verification of software controls as a critical characteristic.

#### Corrective Steps That Will Be Taken To Avoid Noncompliance

Kinectrics has performed an extent of condition review and has identified four calibration service providers that use software to calibrate instruments used on 10CFR50 Appendix B related work; these four service providers will be resurveyed by Kinectrics using the revised commercial grade survey checklist to cover the requirements for software. Kinectrics' QMS requires that a 90-day follow-up be performed to verify the effectiveness of corrective actions. This follow-up is pending.

#### Date When Corrective Actions Will Be Completed

The resurvey of the identified suppliers will be completed by August 10<sup>th</sup>, 2015. A 90-day follow-up to verify the effectiveness of the corrective actions taken is scheduled to be completed by November 10<sup>th</sup>, 2015.

#### **Conclusion**

Kinectrics proposes that this response provides sufficient information regarding the corrective actions to resolve the nonconformances identified. However, Kinectrics is pleased to provide additional information or clarifications necessary to address any NRC concerns. Kinectrics considers all feedback, observations, and findings as valuable opportunities to improve our service to the commercial nuclear industry.

Please direct any additional questions or comments you may have to Kinectrics' Quality Manager, Justin Hubbard, at 416-207-6000 x 6137, or [justin.hubbard@kinectrics.com](mailto:justin.hubbard@kinectrics.com).

Yours truly,

David Harris  
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