

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

August 13th, 2012

Subject: REPLY TO NOTICE OF NONCONFORMANCES CITED IN NRC INSPECTION
REPORT NO. 99901415/2012-201 DATED JULY 2, 2012

Kinectrics acknowledges receipt of NRC Inspection Report Number 99901415/2012-201 and associated Notices of Nonconformance 9990141/2012-201-01, -02, -03, and -04. Kinectrics Inc. appreciates the time and effort expended by the USNRC in conducting this inspection and takes very seriously the notices of nonconformance provided for our response and action.

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

Nonconformance 99901415/2012-201-01, Failure to Implement Measures to Ensure that Testing Performed by Subcontractors was in Conformance with Procurement Documents:

"Kinectrics did not properly dedicate the testing services provided by Global EMC, Inc., for the performance of electromagnetic compatibility testing, as necessary to ensure that the testing was performed in accordance with the requirements contained in Westinghouse Purchase Order (PO) #4500342823, dated 4/16/2010, and Kinectrics PO #280022400, dated 10/15/2010. For example, Kinectrics did not ensure that Global EMC had a program that properly controlled measuring and test equipment.

Kinectrics did not ensure that the test report produced by its subcontractor, Clark Testing Laboratories, for seismic testing of electrical penetration assemblies performed in accordance with PO 280022496, was in conformance with the procurement documents. Specifically the Clark test report did not contain records of calibration data for the test equipment used during the testing. These calibration data records were required per Section 7.0 of Test Procedure K403869-PSWI-0001 R07."

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Reason for the Noncompliance:

Kinectrics had performed a commercial grade survey (CGS) of Global EMC Inc. on February 11th, 2011 using a NIAC Commercial Grade Item/Service Checklist. Critical characteristics for a testing service were identified as: competent personnel, suitable accommodation & environmental conditions, calibration methods, equipment controlled, traceability, quality controls, and reporting. The issue identified during the NRC inspection regarding Westinghouse PO 4500342823 pertained to a transient interface generator, used for radiated susceptibility magnetic field testing. This equipment was rented by Global EMC; because they did not own the equipment Global EMC did not have the calibration records for it. As such, the records could not be forwarded to Kinectrics in a timely fashion.

Kinectrics procedure K-403869-PSWI-0001 R07 required that Clark Testing provide a list of all equipment as well as the corresponding calibration dates. Clark report, 'Medium Voltage Penetration Assembly', report number 9778, was issued to Kinectrics without this information. This was an oversight on Kinectrics staff members and stemmed from inadequate review of the reconciliation between the Clark Testing report and Kinectrics' specified requirements.

Corrective Steps that Have Been Taken and Results Achieved:

Regarding the rental equipment used by Global EMC, Kinectrics has since obtained the corresponding calibration records and performed a review of the documentation and found it to be acceptable. This is captured on Kinectrics NCR 1215.

Clark Testing has submitted a revised report to Kinectrics, which contains the calibration information for the test equipment used as defined in Kinectrics' procedure K-403869-PSWI-0001 R07. Kinectrics has reviewed this information and found it to be acceptable. This is captured on Kinectrics NCR 1222.

Corrective Steps to Avoid Noncompliances:

Kinectrics has raised CAR 1222-01 regarding Global EMC's use of rental equipment and Kinectrics' oversight to identify that Clark Testing was not following procedure K-403869-PWSI-001 R07 as issued. Root cause analysis was performed and corrective actions include the following:

- 1) Department Manager to review with the Project Managers the need to review reports from sub-vendors in detail including the instrument sheets at the next departmental meeting.
- 2) Department Manager to issue a memo to the project leads to ensure all Project Leads have been reminded of the requirement.

Date When Corrective Action Will Be Completed:

The corrective actions pertaining to CAR 1222-01, regarding Global EMC's use of rental equipment, was resolved by August 10, 2012.

Nonconformance 99901415/2012-201-02, Failure to Explicitly State the Proper Technical Standard and Revision to Be Used for Electromagnetic Compatibility Testing of Electrical Penetration Assemblies:

"Kinectrics PO #280022400, dated 10/15/10, to Global EMC Inc. did not explicitly state the proper technical standard and revision to be used for electromagnetic compatibility testing of electrical penetration assemblies. Consequently the incorrect revision of the MIL-STD-461 was used to perform the testing."

Reason for the Noncompliance:

This reason for this was a personnel error in generating the procurement documents for the service. The Project Manager responsible for the oversight is no longer employed with the Company.

Corrective Steps that Have Been Taken and Results Achieved:

A review comparing MIL-STD-461E (required) to MIL-STD-461F (version used by subcontractor) has been performed by a Kinectrics technical expert who verified that salient portions of the standard applied for the electrical penetration assemblies were either equivalent or conservative. The specific MIL-STD-461 tests involved were RE101, RE102, and RS103.

Changes to RE101 added guidance on how to address over-limit emissions. If over-limit emissions are detected at the 7-cm antenna location, MIL-STD-461F requires determination of the distance from the EUT where the emissions meet the limit.

Changes to RE102 involved a change to the configuration of the low frequency rod antenna. MIL-STD-461F removed the requirement to connect the counterpoise to the ground plane via an elevated plate sized larger than the counterpoise. The standard now allows the connection of the rod antenna cable to the enclosure floor as soon as the cable allows in addition to placing a ferrite on the cable. For the electrical penetration assembly testing applied to a single specimen, this change does not affect the results.

Changes to RS103 included clarification for positioning the sensor at the EUT location, vertically at the point of the EUT illumination and added a test to verify that the sensor is responding to the

fundamental frequency, as opposed to the harmonics of the test amplifier. In addition, positioning of the radiating antenna at 1 meter or more from the EUT was incorporated eliminating the capability of moving the antenna closer to achieve specified field strengths at all test frequencies. These requirements are more restrictive.

Kinectrics has raised NCR 1216 to identify this issue and communicate it to the customer.

Corrective Steps to Avoid Noncompliances:

Kinectrics has raised CAR 1216-01 regarding the discrepancy between specification MIL-STD-461 revisions E and F. Root cause analysis was performed and corrective actions include the following:

- 1) Have a subject matter expert review the two revisions to determine if the client's requirement was met.
- 2) If further testing required, PM to advise client, if not, file objective evidence in project file.
- 3) Department Manager review the issue at the next departmental meeting.

Date When Corrective Action Will Be Completed:

The corrective actions pertaining to CAR 1216-01, regarding not identifying the appropriate revision of a test standard, were resolved by August 10, 2012.

Nonconformance 99901415/2012-201-03, Failure to Verify the Adequacy of Certain Design Features Associated with Molded Case Circuit Breakers that were Procured from Commercial Suppliers:

"For molded case circuit breakers supplied to South Carolina Electric and Gas under PO #NU-02SR744190, dated 5/16/2011, and to Duke Energy under PO #149028, dated 7/31/2011, Kinectrics did not perform inspections, tests, or analyses sufficient to verify the interrupting rating, which is a critical characteristic of the subject breakers. Kinectrics also did not perform any actions that would have verified that the breakers were manufactured in accordance with a commercial program sufficient to verify the interrupting ratings.

For molded case circuit breakers supplied to South Carolina Electric and Gas under PO #NU-02SR744190, dated 5/16/2011, and to Duke Energy under PO #149028, dated 7/31/2011, Kinectrics did not perform testing or analyses sufficient to establish the seismic qualification of the subject breakers. Seismic qualification was based upon an assumption of similarity to breakers previously tested by Kinectrics; however, Kinectrics did not perform inspections, tests, or analyses sufficient to verify that the subsequent breakers were identical in form, fit, and function to those that were previously tested."

Reason for the Noncompliance:

Regarding verification of the interrupting rating, Kinectrics relied in large part on the JUTG guidelines for dedication of molded case circuit breakers. The verification methods do not require independent testing of the interrupt rating; the rationale being that certification of the breaker by the manufacturer to obtain the UL489 certification is deemed sufficient to verify this characteristic. This is consistent with the rationale described in USNRC Bulletin 88-10. The point is well taken, however, that this justification should have been documented in the dedication plan.

Regarding establishing seismic qualification of the dedicated breakers, this finding stems from less than clear wording in the Kinectrics Inspection and Test Plan (ITP). The inspection report states that "similarity was established only through a comparison of mass and dimensions which is not a sufficient basis by itself to establish similarity for the purposes of seismic qualification." Kinectrics agrees that comparison of mass and dimensions alone does not establish similarity. In actuality and practice, Kinectrics understands that verification of all critical characteristics for design (CCD) is, by definition, required to establish similarity for qualification. Thus, while the wording of the ITP might have been interpreted as only requiring comparison of weight and dimensions, verification of all the CCD's was required in this case (and all cases) to establish qualification. For example, the breakers in question were subjected to a comprehensive dedication plan (to establish similarity to qualification) which included a rigorous receipt inspection process (including specific checks for suspect/potentially fraudulent hardware), and explicit verification of markings, identification, configuration, dimensions, weight, trip/reset operation, dielectric strength, thermal-overload trip function, instantaneous over-current trip function, and rated current hold-in. All of these verifications had to be satisfied for the breaker to be dedicated. This is described in dedication plans K-403425-CGD-0031 R02 and K-115012-CGD-0001 R01 for South Carolina Gas & Electric and Duke Energy, respectively. Thus, while the ITP was interpreted by the reviewers as only requiring mass and dimensions to establish similarity, much more was required by our dedication process.

Corrective Steps that Have Been Taken and Results Achieved:

Kinectrics is evaluating the development of a standard template for the dedication for specific product types identifying critical characteristics as well as providing the rationale for the selection of those critical characteristics.

Corrective Steps to Avoid Noncompliances:

No further corrective actions required.

Date When Corrective Action Will Be Completed:

Not applicable.

Nonconformance 99901415/2012-201-04, Failure to Take Corrective Actions Sufficient to Ensure that Molded Case Circuit Breakers Were In Fact Authentic, New, and Not Refurbished:

“As of May 18, 2012, Kinectrics did not take corrective actions sufficient to ensure that molded case circuit breakers, procured by Kinectrics from Tiger Controls (a commercial distributor), dedicated by Kinectrics for use in safety related applications, and then supplied to Duke Energy under PO #149028, dated 7/31/2011, were in fact authentic, new, and not refurbished. Specifically, after receiving a large percentage of breakers from Tiger controls that appeared to be either used, refurbished, or otherwise tampered with, Kinectrics corrective actions were insufficient to ensure that the replacement breakers they received from Tiger controls and shipped to Duke Energy were in fact authentic and could be traced back to the actual OEM factory.”

Reason for the Noncompliance:

Kinectrics' standard practice for procuring items to be subject to commercial grade dedication is to source materials either directly from the manufacturer or from a source authorized by the manufacturer to resell/distribute the items. In this case, due to the expedited nature of the project, quantity of breakers required, and available stock throughout the manufacturer's distribution channels, the breakers were procured from three separate sources. One source, Tiger Controls, was recommended to Kinectrics by the customer and was asked to provide ten (10) breakers. Seven (7) of the originally supplied quantity were rejected during receipt inspection due to workmanship/appearance concerns; this was documented on Kinectrics NCR 783. Seven (7) replacement breakers were obtained via Tiger Controls and four (4) of these were rejected during receipt inspection; this was documented on Kinectrics NCR 805. Four (4) replacement breakers were then obtained which passed receipt inspection and finally filled the order quantity. None of the suspect breakers were subjected to dedication testing and therefore there was no objective evidence that they would not have met performance requirements. However, the concern expressed in this NON is appreciated especially considering the fact that the breakers were not shipped directly from the OEM but rather were shipped to an Eaton distribution center near Tiger Controls, Tiger Controls physically took possession of the breakers at that distribution center and shipped directly to Kinectrics' laboratories in Toronto. This was due to the fact that Eaton would not ship these breakers internationally. Kinectrics has since confirmed through the OEM and Tiger Controls that the items were new, and unused from the factory.

Kinectrics believes that it is important to note that the rigorous inspection procedures employed rejected breakers which were potentially suspect. While some of the indications were purely cosmetic in nature, and subsequent testing by the OEM on returned units determined that they were acceptable, the more restrictive criteria applied by Kinectrics was conservative.

Corrective Steps that Have Been Taken and Results Achieved:

Irrespective of the foregoing, Kinectrics will exclude Tiger Controls from providing commercial hardware for dedication unless the items are shipped directly from the manufacturer to Kinectrics. This is now possible with the Kinectrics US Inc. facility in Cincinnati, Ohio which provides U.S. manufacturers with the option of avoiding international shipments.

Kinectrics contacted the customer and verified that the subject breakers were not installed and are in QC hold pending completion of associated qualification tests.

Corrective Steps to Avoid Noncompliances:

When customers specifically request sourcing material from suppliers not on the Kinectrics Quality Approved Suppliers List, Kinectrics will take steps to ensure that all relevant critical quality aspects of the supplier will be examined before accepting such supplier recommendations. Kinectrics Operating Procedure 6-5, *Quality Approved Suppliers List*, is to incorporate this requirement.

Date When Corrective Action Will Be Completed:

Operating Procedure 6-5 will be updated to include the above mentioned requirement by August 31, 2012.

Conclusion

Kinectrics believes this response provides sufficient information regarding corrective actions to resolve the nonconformances. However, Kinectrics stands ready to provide any additional information or clarifications necessary to satisfy the USNRC's 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 Justin Hubbard, 416-207-6000 ext. 6137, or justin.hubbard@kinectrics.com.

Very truly yours,



David Harris
President & CEO
Kinectrics Inc.

cc: Richard Rasmussen, Chief, Electrical Inspection Branch, Office of New Reactors