

April 11, 2005

Mr. Joseph Harverson, President
Alaron Corporation
2138 State Route 18
Wampum, Pennsylvania 16157

SUBJECT: NRC INSPECTION REPORT 99901354/2005-201

Dear Mr. Harverson:

On March 28-30, 2005, U.S. Nuclear Regulatory Commission (NRC) inspectors conducted an inspection at the Alaron Corporation (Alaron) facility in Wampum, Pennsylvania. The enclosed report presents the details of that inspection.

The NRC inspectors reviewed the implementation of selected portions of the Alaron quality assurance program, and evaluated the effectiveness and control of the salient portions of Alaron's 10 CFR Part 21 (Part 21) controls. During this inspection, the NRC inspectors focused on Alaron's control of 10 CFR Part 50, Appendix B safety-related activities as they relate to Alaron's support of the Electric Motor and Contracting Company, Inc. (EMC) repair and refurbishment of nuclear safety-related motors which are conducted, in part, on the Alaron facility premises.

The inspectors concluded that the control of Alaron's quality assurance program was generally acceptable regarding its safety-related activities for the selected portions that were reviewed. However, some exceptions were identified and discussed with your quality assurance (QA) manager, EMC management representatives and you during our exit meeting. The inspectors also identified some concerns with Alaron's Part 21 procedure that were discussed with you and your QA Manager during the inspection. Although your Part 21 procedure was found to be in violation of the requirements, the inspectors identified that the inconsistency with your Part 21 procedure did not cause any Part 21 violations to occur and was found to be minor. Therefore, the identified violation will not be cited and no response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC's Public Document Room (PDR).

Sincerely,

/RA/
Theodore R. Quay, Chief
Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

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1.0 INSPECTION SUMMARY

The purpose of this inspection was to evaluate selected portions of the quality assurance (QA) and 10 CFR Part 21 (Part 21) controls that Alaron Corporation (Alaron) has established and implemented for safety-related (S/R) materials and services provided to its customers. The inspectors focused on Alaron activities as they apply to the repair and refurbishment of S/R motors. Alaron primarily provides radiologically controlled transportation of contaminated motors from NRC licensee facilities, decontamination at Alaron facilities, use of facilities, use of measuring and test equipment, controlled storage and health physics controlled coverage for S/R technical work being performed at Alaron's facilities.

Alaron has a business agreement with the Electric Motor and Contracting Company, Incorporated (EMC). EMC provides the technical repair and refurbishment of large motors and Alaron provides its facility and supports the EMC S/R activities. The S/R repair and refurbishment activities are performed by EMC under EMC's quality assurance (QA) program and EMC contracts Alaron to provide S/R support labor as required by EMC.

Although Alaron's QA program controls addresses radioactive waste processing, packaging, shipping and related transportation, the NRC inspection team did not review any activities in these areas. Additionally, although Alaron also provides S/R coatings to the nuclear industry, none of Alaron's coating activities were reviewed by the inspectors during this inspection. Further, although the NRC inspectors conducted their inspection of Alaron's compliance with NRC regulations, some of the 10 CFR Part 50, Appendix B controls of EMC's S/R activities were also reviewed and noted as observations since this Inspection Report focuses on Alaron.

The inspection was conducted at Alaron's facility in Wampum, Pennsylvania. The inspection bases were:

- Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Part 50 of Title 10 of the Code of Federal Regulations (Appendix B), and
- 10 CFR Part 21, "Reporting of Defects and Noncompliance."

2.0 STATUS OF PREVIOUS INSPECTION FINDINGS

There were no previous Office of Nuclear Regulation (NRR) inspections performed at the Alaron facility prior to this inspection regarding Alaron's 10 CFR Part 50, Appendix B, S/R activities.

3.0 INSPECTION FINDINGS AND OTHER COMMENTS

3.1 10 CFR PART 21 PROGRAM

a. Inspection Scope

The NRC inspectors reviewed Alaron Procedure AR-QA-003, "NonConformance-Corrective Action," associated documents and records related to the implementation of

its program. The procedure scope stated, "The requirements of Title 10 Code of Federal regulations (CFR) Part 21 are addressed in this document."

b. Observations and Findings

The procedure which the inspectors reviewed was primarily developed to address the Alaron nonconformance reporting system. A nonconformance is identified as, "Any item, service, or activity that does not conform to established procedures, specifications, policies, standards, regulations, or instructions, and its quality or safety-related shall be identified as nonconforming." Furthermore, the procedure states "If there are any questions as to whether an item, service or activity is in nonconformance, contact the QA Manager for assistance." The inspectors determined the definition of a nonconformance is sufficient to encompass the definition of deviations as defined in Part 21.

Section 5.3 of Procedure AR-QA-003 states that all employees, customers, or vendors are responsible for identifying nonconformances and forwarding the nonconformance to the QA Manager or designee.

The NRC inspectors noted Section 5.1 of the procedure states that the QA department is responsible for reviewing nonconformances to determine if Part 21 is applicable and insuring that "10 CFR 21 notifications are made," if necessary.

However, contrary to the Part 21 requirements, Alaron did not include the required time limits in its procedure, i.e., evaluations of deviations to identify defects and failures to comply associated with substantial safety hazards are to be completed within 60 days of discovery. In Alaron's case, evaluations must be performed within 60 days of the identification of a nonconformance. Alaron's procedure also did not address the requirement for preparing an interim report to the NRC if an evaluation cannot be completed within 60 days, specifically, §21.21(a) of Part 21 states:

(a) Each individual, corporation, partnership, dedicating entity, or other entity subject to the regulations in this part shall adopt appropriate procedures to --

*(1) Evaluate deviations and failures to comply to identify defects and failures to comply associated with substantial safety hazards as soon as practicable, and, except as provided in paragraph (a)(2) of this section, in all cases **within 60 days of discovery** [emphasis added], in order to identify a reportable defect or failure to comply that could create a substantial safety hazard, were it to remain uncorrected, and*

(2) Ensure that if an evaluation of an identified deviation or failure to comply potentially associated with a substantial safety hazard cannot be completed within 60 days from discovery of the deviation or failure to comply, an interim report is prepared and submitted to the Commission through a director or responsible

officer or designated person as discussed in §21.21(d)(5). The interim report should describe the deviation or failure to comply that is being evaluated and should also state when the evaluation will be completed. This interim report must be submitted in writing within 60 days of discovery of the deviation or failure to comply.

Procedures must be in place to ensure that the director or responsible officer is informed within five working days following completion of a Part 21 evaluation which determines the existence of a defect or failure to comply. Alaron's personnel structure is such that the person performing the evaluation is the responsible officer. Therefore, this aspect would not be required. An optional method to comply with Part 21 requirements was discussed with Alaron management since most suppliers do not have the capability to perform the "evaluation," as defined in §21.3 of Part 21, to determine if a defect or failure to comply associated with substantial safety hazards exists. The supplier may choose to implement §21.21(b), which states:

If the deviation or failure to comply is discovered by a supplier of basic components, or services associated with basic components, and the supplier determines that it does not have the capability to perform the evaluation to determine if a defect exists, then the supplier must inform the purchasers or affected licensees within five working days of this determination so that the purchasers or affected [NRC] licensees may evaluate the deviation or failure to comply, pursuant to §21.21(a).

The inspectors reviewed a sample of nonconformance reports to determine if Alaron was properly implementing its procedure. The inspectors identified NCRs associated with the application of nuclear grade coatings. Although coating activities were not within the scope of this inspection, the inspectors identified that the NCR issues were discussed with applicable customers and the disposition of the issues were acceptable.

c. Conclusions

The NRC inspectors concluded that the Alaron Part 21 procedure did not contain the timeliness requirements for reporting as specified in 10 CFR Part 21. This constitutes a minor violation of 10 CFR Part 21. The inspectors did not identify any instances where NCRs were not properly reviewed and evaluated. During the exit meeting, Alaron agreed to revise their Part 21 procedure to include timeliness requirements within 30 days of receiving this inspection report. No response is required.

3.2 REVIEW OF CUSTOMER PURCHASE ORDERS

a. Inspection Scope

The NRC inspectors reviewed various purchase orders in order to examine the scope of S/R work Alaron provides in support of EMC's repair and refurbishment of nuclear S/R motors.

b. Observations

The inspectors reviewed EMC purchase orders (POs) associated with the repair of S/R motors. The inspectors also discussed the PO requirements with both Alaron and EMC personnel. For S/R motors, EMC prefers to repair the motor at the EMC facility in Chesapeake, Virginia. Therefore, POs to Alaron are typically issued for decontamination services. Alaron will decontaminate the motor for free release and ship the item to EMC-Chesapeake. However, if the decontamination effort is unsuccessful, would prove too costly, or is affected by schedule constraints, EMC, with the approval of their customer, may choose to repair the motor at the Alaron facility. EMC will modify the PO to reflect the change in scope and specify the S/R activities to be provided by Alaron. All S/R POs from EMC to Alaron invoke the requirements of Alaron's 10 CFR Part 50 Appendix B program, as well as its 10 CFR Part 21 program.

The inspectors selected several POs for review. A typical initial PO will note the decontamination to free release of the S/R motor, e.g., a charging pump motor. For the initial PO, neither Appendix B nor Part 21 are imposed. The inspectors noted that, according to the PO, Alaron was responsible for transportation of the S/R motor. The inspectors believe that EMC should have imposed Appendix B and Part 21 for the transportation services of a S/R component, since the motor would have been under Alaron's control. In addition, Alaron's review of the PO requirements should have identified the potential S/R activity and requested clarification from EMC.

The inspectors also reviewed a sample of S/R POs, i.e., those calling for additional Alaron services beyond transportation and decontamination. A typical example, imposing Appendix B and Part 21, called for decontamination, shop services, health physics and transportation. Discussions with the on-site EMC representative revealed that the shop services imposed include use of M&TE equipment and storage and control of materials, as necessary.

Alaron also provides services for the repair and refurbishment of reactor coolant pumps (RCP) and motors. The typical EMC PO will specify the Alaron S/R activities. For example, a PO for repair of a Byron RCP motor specified activities for the receipt inspection and no-load test. The PO required Alaron to provide: 1) motor receipt and no-load testing; 2) necessary decontamination services; 3) use of M&TE, material handling equipment and motor no-load test equipment, as needed; 4) parts inventory against an EMC supplied list; and 5) material identification and storage in a controlled area, including special identification marking of S/R parts. In addition, the PO identified a list of the S/R parts. The inspectors believe the PO imposed requirements are sufficient for Alaron to identify the scope of their S/R activities.

c. Conclusions

The inspectors did not identify any instances where Alaron was not in compliance with the requirements of their customer's POs. However, as noted above, the inspectors believe that EMC should have imposed Appendix B and Part 21 for Alaron's transportation services. Alaron acknowledged this and agreed to more closely review PO requirements in the future.

3.3 REVIEW OF ALARON QA PROGRAM IMPLEMENTATION

a. Inspection Scope

The NRC inspectors reviewed the implementation of Alaron's QA program as it relates to the control of S/R activities in support of EMC's repair and refurbishment of nuclear S/R motors.

b. Observations and Findings

The inspectors selected a sample of Alaron and EMC activities associated with the repair of a 600 horsepower S/R charging pump for the Surry Nuclear Power Station. Appendix B and Part 21 were imposed within the PO. The original purchase order (PO 0051634) from EMC was for Alaron to decontaminate the motor for free release to EMC's Chesapeake facility where the motor would undergo repair. The PO from EMC was based upon a Dominion (licensee) PO to EMC for the repair of the motor. The Dominion PO called for the service/repair of the subject motor. The PO noted that the motor would be sent to Alaron for decontamination.

Alaron personnel attempted to decontaminate the motor under EMC supervision. Discussions with Alaron and EMC personnel indicated that well water was used for the decontamination efforts but the stator could not be decontaminated to an acceptable level. As a result, Dominion supplied EMC with a replacement stator that was not contaminated. Alaron was also not able to decontaminate the rotor to an acceptable level with water. Rather than using additional decontamination methods, such as abrasive media air blasting, EMC revised its PO to Alaron to include repair and testing of the motor at the Alaron facility. The inspectors reviewed the "EMC Production Plan" (EMC-PP) and Alaron's air sampling records that accompany all media blasting operations and verified that media blasting was not used on the rotor.

The PO required a complete mechanical and electrical inspection on all parts to be replaced which were specified and documented on the EMC-PP. The PO's S/R activities and documentation of performance of the work were found to be documented and controlled using the EMC-PP for this specific S/R motor repair and refurbishment. The EMC-PP that was reviewed by the inspectors contained each S/R production step, and documented the craftsmen performing the work and the QA verification of the work steps. Final craftsmen and QA acceptance was also documented on the EMC-PP.

The PO also noted that a new (replacement) stator and bearings would be installed and were also subject to the required inspection and testing. The PO specified that EMC personnel were to provide all disassembly, refurbishment and re-assembly. The PO specified that EMC was to provide an additional work scope if the motor could not be decontaminated to free release levels. Following notification that the motor could not be decontaminated to free release levels, Dominion revised the PO through Change Order 1 to remove that requirement from the PO. Change Order 2 noted that, "EMC was unable to free release the rotor and housing" and that the repair would be performed in PA (i.e., the Alaron facility).

Further, it was identified that the contaminated rotor was bent and needed repair. In accordance with Dominion's "Specification for Motor Refurbishment," NAP-0094/SUP-0091, Revision 1, dated June 10, 2003, Section 2.6.5.1, EMC began to repair the bent rotor using localized heating. Two EMC-Chesapeake facility machinists performed the straightening activities. The machinist that started the activity requested assistance from a senior machinist from the Chesapeake facility. The first EMC machinist began the straightening activities during the evening shift on June 19, 2004, which continued into the next day with the assistance of the senior EMC machinist. The straightening activity was accomplished by heating the apex of the bend with a torch and quenching the heated area. Temperature of the heated area was monitored by EMC using a calibrated Raytek infrared pyrometer (provided by Alaron) to assure that maximum allowed temperatures were not exceeded. The maximum temperature was recorded on the EMC Production Plan. Discussions with EMC personnel noted that Alaron assistance was given during rotor movement but not during the straightening activity. Other inspection, cleaning and repair activities were ongoing during the shaft straightening activity. Following straightening, the rotor was balanced and the motor reassembled.

The inspectors identified a concern regarding EMC's delineation of its S/R activities on the EMC-PP regarding shaft straightening process controls. The inspectors asked to review EMC's measures that they employed to control and document the special process of shaft straightening. The inspectors were provided with the EMC-PP which documents the performance of the S/R activities and verification as discussed above and EMC's standard operating procedure (SOP)-25, "shaft repair," which provides shaft repair control parameters. The inspectors conducted discussions with EMC's manager of motor services regarding some observations noted during their review. Although the skill of the craftsmen involved in the shaft straightening activities appeared reasonable, the EMC SOP-25 procedure lacked specificity in Section 4.5.2, which appears to be the major guidance for EMC employees performing, identifying potential hold points, or inspecting shaft straightening attributes. Additionally, attribute #7 on the associated EMC-PP for the Surry facility 600 horsepower rotor shaft, EMC job #95493, contained a temperature recording requirement that may have been somewhat arbitrary regarding specific temperature parameter documentation. The recording block for attribute #7 requires recording the temperature if localized heating is used to straighten the shaft. The inspectors determined that the rotor shaft for Surry was heated about a dozen times before it was straightened but only one temperature was recorded, no indication of when the temperature was documented and no minimum or maximum expectation was noted on EMC's production plan.

The inspectors discussed the process and parameters that were invoked and controlled by the EMC machinists that actually performed the shaft straightening process. Although the special process was not specified in detail, one EMC machinist that was involved for the entire shaft straightening process for Surry's rotor explained the process that was actually employed. It was explained that the apex of the bend, "about the size of a nickel," is heated for short durations and then quenched using different methods. The quenching can be either water soaked rags or compressed air. However, the EMC machinists said that the temperature never gets hot enough to be glowing red. This fact was confirmed by observing that the EMC-PP recorded a 465E Fahrenheit shaft temperature that was obtained using an infrared pyrometer. Since the measures used

to control the special process did not appear to be in compliance with EMC's QA program, the inspectors identified this issue to the EMC Manager of Motor Services at the Wampum facility as a potential Part 21 concern. The EMC Manager committed to review the circumstances of this matter upon receipt of this inspection report.

The inspectors reviewed the calibration records for the Raytek infrared pyrometer (instrument ID: AR-TH-0207) which was used to record the temperature for the shaft straightening activities and the Entek Model 290 dynamic balancer (serial number: 9804134), used to straighten and balance the rotor. The calibration for this test equipment was found to be within acceptable tolerances.

Alaron staff provided assistance to EMC, primarily in disassembly and movement of the parts. Specifically, Alaron moved the rotor to the lathe, where the EMC technicians performed the straightening activity, and back to the low bay for the rotor balancing. Within the low bay, EMC technicians used the overhead crane to move the rotor and reassemble the motor. Since the rotor movement and re-assembly included the potential for motor damage, the inspectors reviewed the qualifications of the technicians to operate the crane. As discussed in Section 3.4, the inspectors noted the EMC technicians were qualified by EMC.

The inspectors reviewed Alaron's nonconformance report (NCR) log to determine if any discrepancies were identified during the Surry motor repair activities. No NCRs were found to be issued that were associated with the reviewed activities.

c. Conclusions

The inspectors noted that the primary repair activities, i.e., safety-related, were accomplished by EMC personnel in accordance with Dominion's PO. Nontechnical assistance was provided by Alaron. In addition, Alaron provided calibrated measuring and test equipment used by EMC to perform required tests, as well as HP coverage, decontamination services and work space. The inspectors found that the S/R activities were generally acceptable except for the issue that was discussed with the EMC Manager of Motor Services at the Wampum facility which will be evaluated by EMC upon receipt of this inspection report.

3.4 CRANE QUALIFICATIONS

a. Inspection Scope

The inspectors reviewed crane qualification procedures and records of Alaron and EMC employees at Alaron's facility.

b. Observations

Crane operations on S/R parts are subject to Part 21 reporting requirements. Alaron maintains controlled procedures, RSF-OP-224, for crane operation. These procedures include a crane qualification form, 224.1, that is required for all crane operators. Crane operation is not limited to Alaron employees. Alaron procedures require that all crane operators have a valid 224.1 form in their personnel records. This form documents that

the operator has extensive experience and/or has successfully completed an operational test. Inspectors reviewed RSF-OP-224, and a sample of personnel records to verify proper crane qualification documentation.

c. Conclusions

The inspectors did not identify any instances where Alaron's cranes were run by unqualified operators. However, the inspectors found that Alaron's control of its qualification records were not consistent. The inspectors found that Form 224.1 was missing from many operators' records, and in one case, was completed after the operator used the crane. Instead of the proper form, Alaron qualification records consisted of graded training exams, or attendance sheets from crane training sessions. It was determined by the inspectors that the EMC operators were qualified prior to the use of EMC overhead cranes, even though Alaron had not ensured that its records were consistent.

3.5 ENTRANCE AND EXIT MEETINGS

In the entrance meeting on March 28, 2005, the NRC Inspectors discussed the scope of the inspection, outlined the areas to be inspected, and established interfaces with Alaron and EMC personnel. In the exit meeting on March 30, 2005, the NRC Inspectors discussed their concerns and findings with the Alaron President, Alaron staff and EMC representatives.

4.0 **PERSONNEL CONTACTED**

Joseph Harverson	President	Alaron
Sherry L. Vassilaros	Human Resources Director	Alaron
Peter W. Blattner III	Quality Assurance Manager	Alaron
Thomas VanKirk	Controller	Alaron
Corey Crepp	Technician	Alaron
Chuck Connors	Manager of Motor Services	EMC
Steve Miller	Manager, Nuclear Services Manager	EMC
Paul Dusenberry	Motor Technician	EMC
Donald Wilson	Shop Foreman	EMC
Gene Maffei	Machine Shop Shift Foreman	EMC
Shaun Norris	Machinist	EMC
Steve Miller	Nuclear Services Mgr	EMC
Nicola Willey	QA Manager	EMC