NRC FORM 591S PART 1 (01-2012) 10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. CERTIFICATE/QUALITY ASSURANCE PROGRAM (QAP) HOLDER:	2. NRC/REGIONAL OFFICE
Alpha-Omega Services, Inc. (AOS) 9156 Rose Street P.O. Box 789 Bellflower, CA 90706	Headquarters U. S. Nuclear Regulatory Commission Mail Stop EBB-3-D-02M Washington, DC 20555-0001
REPORT NUMBER(S) 71-0086/2012-202	

3. CERTIFICATE/QAP DOCKET NUMBER(S)	4. INSPECTION LOCATION	5. DATE(S) OF INSPECTION
71-9316 (CoC) / 71-0086 (QA)	RANOR Inc., Westminster, MA	April 2-4, 2012

CERTIFICATE/QUALITY ASSURANCE PROGRAM HOLDER:

The inspection was an examination of the activities conducted under your QAP as they relate to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your QAP Approval and/or Certificate(s) of Compliance. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

[ ] 1. Based on the inspection findings, no violations were identified.

[ ] 2. Previous violation(s) closed.

[ ] 3. The violations(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.

Non-cited violation(s) was/were discussed involving the following requirement(s) and Corrective Actions(s):

[✓] 4. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.

(Violations and Corrective Actions)

10 CFR 71.111, "Instructions, procedures, and drawings," states, in part, that the certificate holder shall prescribe activities affecting quality by documented procedures and that they must include appropriate quantitative and qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Contrary to this requirement, the Commercial Grade Dedication (CGD) checklist prepared for the dedication of helicoil fasteners (keenserts) for use as ITS Category A components did not provide adequate acceptance criteria. Specifically, the CGD checklist only called for the independent chemical analysis of quantity one helicoil at a minimum. Such a sample plan is only valid if all of the helicoils are fabricated from the same heat number; however, neither the purchase order nor the CGD checklist had requirements to ensure this was the case. This is a Severity Level IV violation (Supplement V).

Statement of Corrective Actions

I hereby state that, within 30 days, the actions described by me to the Inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
CERTIFICATE/QAP REPRESENTATIVE	Troy Hedger		5-1-2012
NRC INSPECTOR	Earl C. Love		5/1/2012
BRANCH CHIEF	Christian J. Araguas		5/3/2012

INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder (name and address)	Alpha-Omega Services, Inc. (AOS)
Licensee/Certificate Holder contact and phone number	Mr. Troy Hedger, CEO 562-804-0604 9156 Rose Street P.O. Box 789 Bellflower, CA 90706
Docket No.	71-9316 (CoC) / 71-0086 (QA)
Inspection Report No.	71-0086/2012-202
Inspection Dates(s)	April 2-4, 2012
Inspection Location(s)	RANOR Inc., Westminster, MA
Inspectors	Earl Love, Safety Inspection Engineer Rob Temps, Senior Transportation & Storage Safety Inspector Jessica Glenny, Project Manager (Inspection Team Member)
Summary of Findings and Actions	On February 14 and 15, 2012, the United States (U.S.) Nuclear Regulatory Commission (NRC) performed an inspection (reference NRC Inspection Report 71-0086/2012-201) of AOS at their facility in Bellflower, California. The scope of the inspection included AOS' readiness to fabricate new transportation packages designed to ship Type B quantities of radioactive materials, including by-products, sources, and special nuclear materials either as normal form or special form, at RANOR Inc., located in Westminster, MA. The inspection concluded that AOS has proper measures in place for the planned fabrication of the new packages. On February 28, 2012, the NRC issued, to AOS, certificate number USA/9316. This Safety Inspection report refers to the team inspection conducted by the NRC during the above dates to assess fabrication activities of (2) AOS-100A packages for compliance to 10 CFR Parts 21 and 71, CoC USA/9316, and AOS's NRC-approved quality assurance program. The results of the inspection concluded that RANOR's fabrication of the AOS-100A package was adequately being performed with the exception of the commercial grade dedication (CGD) process. This finding resulted in the issuance of a Severity Level IV violation. 10 CFR 71.111, "Instructions, procedures, and drawings," states, in part, that the certificate holder shall prescribe activities affecting quality by documented procedures and that they must include appropriate quantitative and qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to this requirement, the CGD checklist prepared for the dedication of helicoil fasteners (keenserts) for use as ITS Category A components did not provide adequate acceptance criteria. Specifically, the CGD checklist only called for the independent chemical analysis of quantity one helicoil at a minimum. Such a sample plan is only valid if all of the helicoils are fabricated from the same heat number; however, neither the purchase order nor the CGD checklist had requirements to ensure this was the case. This is a Severity Level IV violation (Supplement V).
Lead Inspector Signature/Date	Earl C. Love 5/1/2012
Inspector Notes Approval Section Chief Signature/Date	5/3/2012

INSPECTOR NOTES: APPLICABLE PORTIONS OF 02.01 THROUGH 02.10 OF IP 86001 WERE PERFORMED DURING THE INSPECTION WITH RESULTS DOCUMENTED BELOW:

02.02 Verify that the Certificate of Compliance (CoC) holder's activities related to transportation packagings are being conducted in accordance with the CoC, as well as the NRC-approved QA program, and that implementing procedures are in place and effective.

The team reviewed AOS Standard Operating Procedure, PR9003.2, "Project Plan," Revision A, dated 12/14/10 that established measures to assure that all work performed in accordance with the QA program is done using documents that include pertinent information for activities affecting quality. The SOP applies to packaging design, procurement, fabrication, assembly, inspection, testing, handling, shipping, storing, cleaning, operation, maintenance, repair, modification and use. The team noted that the project plan described and referenced certain project requirements such as a summary of work, project schedule, design and licensing requirements, general fabrication requirements, and interfaces between groups and activities. Lastly, the team noted a requirement to update the project plan as necessary by engineering as the design and development evolves or when changes in the project scope affect work activities and deliverables directly or indirectly related to the project.

The team noted that the latest project plan on file was dated June 2008. The plan documented the project requirements for the Vallecitos Operations organization of GE Nuclear Energy (GENE) for all activities germane to design and licensing of a transport package and was written by GENE on behalf of AOS. The plan developed a total of 4 designs for the proposed packaging. The team noted within the plan that the GE Vallecitos Operations was responsible for the management of various activities. The team noted that the overall quality program for this project was the responsibility of GENE. While this may have been the case during design development the team noted that the responsibility is now AOS'.

During inspection of AOS (March 2012) the team noted the need for AOS to update its project plan to establish measures to assure that all work going forward is performed in accordance with AOS' QA program and AOS materials, fabrication, and quality assurance specification. The team noted that AOS had self identified this issue during their triennial audit of GE Vallecitos Operations, performed March 2011, and that AOS had initiated corrective and preventative action (CAPA) No. 042011-003. In that CAPA, AOS documented that the project plan was not current and required revision. AOS corrective action included revision of the project plan with current information including fabrication controls upon receipt of the NRC CoC for the new packaging design. The team noted that at the time of the RANOR inspection a revision to AOS's project plan (Revision A, dated 3/31/2012) to adequately reflect sole and functional responsibilities and authorities for all activities of the AOS Transport Packages. The team reviewed the revised plan found it adequate to address activities in accordance with the CoC, NRC-approved QA program, and associated AOS implementing procedures.

02.03 Verify that provisions are in place for reporting defects which could cause a substantial safety hazard, as required by 10 CFR Part 21.

The team determined that RANOR has appropriate procedures in place for the identification, evaluation and reporting of defects and non-compliances that could cause a substantial safety hazard, and that the Part 21 requirements were posted in the facility. Specifically, RANOR uses RQP-2.5, "Reporting of Defects and Noncompliances in Accordance with 10 CFR Part 21" to address Part 21 requirements. The team noted that non-conformance and corrective actions reports are screened for Part 21 reportability, and that purchase orders, when appropriate,

imposed Part 21 reportability requirements. No concerns were identified with regard to RANOR's compliance with 10 CFR Part 21 requirements.

02.04 Interview selected personnel and review selected design documentation to determine that adequate design controls are implemented.

The team focused on the process that RANOR uses to control the translation of vendor supplied design information into controlled procedures and drawings for fabrication activities. The team noted that the design development process occurs at AOS, Bellflower, CA. The team verified the translation of the intended design at the fabrication level and from the AOS design drawings. In addition, the team identified components and materials used on the shop floor for fabrication and traced them back to their associated purchase orders and applicable design drawings. In each case, RANOR and AOS staff was able to show that the material samples conformed to the requirements of the associated design drawings. Overall, no concerns were identified in the translation of design information into procurement documents and use of materials in the fabrication process.

02.05 Review selected drawings, procedures, and records, and observe selected activities being performed to determine that maintenance activities meet SARP design requirements documented in the CoC.

Overall, the team verified AOS and RANOR implementing instructions, procedures, and drawings during the inspection and determined adequate controls were in place for RANOR fabrication activities. The team inspected AOS's management, design and RANOR's fabrication activities and controls as there were no maintenance activities.

02.06 Observe activities affecting safety aspects of the packaging (such as fabrication, assembly, and testing) to verify that they are performed in accordance with approved methods, procedures, and specifications.

The team observed manufacturing processes of a short cavity shell (s/n: 090288-03-6-3, unit no. 2) and noted machining of 3 lifting holes ½-13UNC x 1.00 deep. According to AOS the holes are re-machined (as part of the 14 lid mounting holes) at final assembly to 1.250-12UNF-2B to a depth of 1.50. This process was not prescribed in the within a routers or RANOR'S Sketch no. 3, Revision B "Short Cavity Wall." The team noted for clarity, that router Assembly 6, sketch 3 was revised to clarify that the holes in question will be removed at final machining (Assembly 0) by the 1.250-12UNF holes for the cask lid.

The team noted an inconsistency in the geometric tolerance between a Dimensional Inspection Reports (DIR), fabrication sketch, and AOS fabrication drawing. RANOR processed a Document Change Request (DCR 12-002) to streamline the information between the DIR, the sketch, and the AOS fabrication drawing. In addition, AOS committed to perform a comprehensive review of fabrication drawings to assure drawing features are adequately transcribed and to assure compliance to licensing drawings.

The team noted an inspection feature that required verification of the installation of (8) helicoil fasteners (keenserts) used to mount trunnions and observed that the inserts were not installed even though the router sequence for verification of installation was signed indicating completion of that sequence. AOS stated the inserts had not been received and that the installation was not to occur until later in the assembly process. Accordingly, RANOR revised the cask assembly router to appropriately sequence inspection of the installation of inserts.

The team determined that the observations noted above constituted a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy.

The team observed dimensional inspection on the short cavity shell (assembly 6), specifically, surface finish measurements and noted the shell exceeded a 63 surface finish requirement. As a result, re-polishing and re-inspection was required.

The team reviewed records associated with RANOR's radiograph examinations of forgings, Cask Outer Shell, Assembly No. 1, p/n's: 2-3-1 and 2, Heat No. 50044, 28.50"O.D.x15.50"I.D.x36.50"Long of material SA182F Type 304. The team verified by review of reports, shooting sketches, and film review that the radiographs were performed according to ASME section III, Division I NG2541(a), "Examination and repair of Forgings and Bars," Section V, Article 2, and the acceptance standards of NG-5320 "Radiographic Acceptance Standards." The team noted radiographs were performed by a approved subcontractor (Mistras Group, Inc.) and reviewed Mistras's certificate of compliance to RANOR's purchase order, reference drawings, and material specifications. Lastly, the team noted all examination reports were reviewed and approved by AOS quality manager and RANOR's Level III examiner. No concerns were noted.

The team reviewed ultrasonic thickness examination reports using the straight beam technique of Cask Cavity Shells, p/n's: 2-2-5-1 and 2, 17.11"O.D.x28.03"Long of material SA182F Type 304. The team verified by review of records that the ultrasonic examinations were performed according to ASME section III, Division I NG2542.1(a), ultrasonic examination and acceptance standard NG-2542.2(a), acceptance standards using the straight beam technique, as well as, RANOR procedure No.RQCP-9.5, Revision 4, "Ultrasonic Examination.". The team noted the examinations were performed by RANOR's qualified and certified Level III examiner.

As part of this inspection element, the team reviewed controls on the use of measurement and test equipment (M&TE). The team reviewed a sample of M&TE referenced within a router for the cask outer shell. The team determined that RANOR uses RQP-12.1, "Calibration of Measurement and Test Equipment" to control the use of M&TE. The procedure provides requirements for the identification and entry of M&TE into RANOR's system, including controls on use of employee owned tools. The procedure specifies calibration frequencies, and methods for calibrating various M&TE for calibrations. The procedure also provides controls on tracking the use of M&TE. The team noted equipment Serial No. HC-2, Toshiba Horizontal Machining Center, was two weeks past due for calibration noted procedural compliance in that, according to RQP-12.1, calibration of M&TE due in a particular month shall be performed no later than the last day of said month. Overall, based on a sampling of M&TE reviewed by the team, it was concluded that overall, RANOR was in compliance with the requirements of RQP-12.1. No concerns were identified.

02.07 Review selected drawings and records, and interview selected personnel, to verify that the procurement specifications for materials, equipment, and services received by the QA program holder meet the design requirements.

The team reviewed AOS Purchase Order (PO) 5216 issued to RANOR, dated 7/24/2009, for the procurement of long lead materials for the fabrication of two (2) AOS-100 packagings. Raw material items under the PO included the outer shell, cavity shell, lid, shielding material, lid plug, cover plate, trunnion, bottom plate lid attachment bolts, port plug and impact limiter. The team noted appropriate technical and quality requirements within the PO including reference to AOS fabrication specification SS9000, Revision A, and compliance to design drawing No. 105E9712.

The team noted appropriate quality requirements for the storage and marking of raw material, as well as applicability of RANOR's QAP and 10 CFR Part 21 requirements. The team also reviewed Revisions 1 through 4 made to the original PO.

The team reviewed RANOR's process for the qualification of suppliers of services and equipment. RANOR controls this activity under procedure RQP-7.1, "Procedure for the Evaluation of Qualified Suppliers." The procedure describes the process for auditing and qualifying suppliers of services and materials and maintenance of such suppliers on the Approved Suppliers List (ASL). The team reviewed the ASL and the audit files for several companies that provided services or material for the AOS packaging fabrication. The team also reviewed procedure RQAP-2.3, "Standard for the Qualification and Certification of Quality Assurance Personnel," and verified that the auditors conducting the supplier audits were initially qualified and maintaining their auditor qualifications in accordance with RQAP-2.3 requirements. Except for the issue discussed below, no major concerns were identified in the procurement process.

The team reviewed a purchase for the procurement of several different sizes of helicoil fasteners (keenserts) to be used in the AOS packaging. One group of helicoils was to be used as Category A important-to-safety (ITS) fasteners. The helicoils were ordered commercial grade so the team also reviewed the associated commercial grade dedication (CGD) checklist that had been prepared for the order. The team determined that the CGD checklist prepared for the order was inadequate. Specifically, while the purchase order required the supplier to provide certified material test reports with the shipment of helicoils, the CGD checklist only called for the independent chemical analysis of one helicoil at a minimum. Such a sample plan is only valid if all of the helicoils are fabricated from the same heat number; however, neither the purchase order nor the CGD checklist had requirements to ensure this was the case. This issue was discussed with AOS and RANOR personnel and it was determined that the need to ensure traceability to one heat number in order to have a valid CGD process for the helicoils had not been considered by either group. This is a Violation of NRC requirements. Specifically, 10 CFR 71.111, "Instructions, procedures, and drawings," states, in part, that the certificate holder shall prescribe activities affecting quality by documented procedures and that they must include appropriate quantitative and qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to this requirement, the CGD checklist prepared for the dedication of helicoils for use as ITS Category A components did not provide adequate acceptance criteria. When this violation was identified, AOS initiated Corrective and Preventative Action (CAPA) No. FM9016.1.

02.08 Review selected records and interview selected personnel to verify that a nonconformance control program is effectively implemented, and that corrective actions for identified deficiencies are technically sound and completed in a timely manner.

The team reviewed the procedures controlling the problem identification and corrective action program used by RANOR and applied to the fabrication performed for AOS. These procedures included:

RQP - 7.5, "Procedure for Receipt Inspection"
RQP -15.1, "Procedure for Nonconforming Items"
RQP -16.1, "Procedure for Corrective and Preventive Action"
RQP -18.1, "Procedure for the Performance of Audits"

These procedures address the documentation and resolution of various types of material nonconformances or program issues through, respective to the above order, the use of Supplier

Rejection Reports (SSR), Nonconformance Reports (NCR), Corrective/Preventive Action Reports (CAR), and Audit Finding Reports (AFR). Discussions were held with the Quality Manager and Director of Quality (responsible for these programs) and the team also reviewed a sample of SSRs, NCRs, CARs, and AFRs. RANOR's resolution of the issues documented in the various reports was assessed to be appropriate and the reports were closed in a timeframe commensurate to their importance. The team noted that the various reports are periodically reviewed for trending purposes as required by procedure.

2.09 Review selected records and procedures, interview selected personnel, and observe selected activities affecting the safety aspects of the packaging to verify that individuals performing activities affecting quality are properly trained and qualified, and to verify that management and QA staff are cognizant and provide appropriate oversight.

The team reviewed welding operator performance qualification (WPQ) of welder Hung Huynh (Stamp HH / Welder ID 682) for welding processes GTAW, GMAW and FCAW. Further, the team reviewed welding and NDE procedures to determine if the RANOR QA Program requirements for the training and certification of personnel performing fabrication activities including quality control inspections were being implemented. The team verified that the quality control inspector performing UT examinations was qualified in accordance with SNT-TC-1A Level III as required by RANOR procedure RQP-2.4, "Standard for Qualification and Certification of Nondestructive Personnel." No concerns were identified.

The team reviewed inspection training, qualification and certification records and reviewed samples of four (4) QC Level II and III qualification records of those that performed in-process, final and receipt inspections, as well as, leak testing, penetrant, magnetic particle, visual, radiograph and ultrasonic examinations. The team noted that the records of qualification were satisfactorily documented consistent with ASNT-TC-1A guidelines and complied with RQAP 2.2, Revision 7, "Standard for Qualification of Inspection and Test Personnel." No concerns were identified.

The team reviewed an AOS's oversight of an ultrasonic test (UT) as well as commercial grade dedication of certain tungsten components. AOS's surveillance was performed at the tungsten heavy alloy products supplier facility and concluded that the processes and procedures utilized by RANOR and their personnel were adequate. The team noted that the records in the surveillance report contained sufficient objective evidence of the activities and the materials, processes and procedures utilized by RANOR.

2.10 Verify that audits of the QA Program and activities affecting the safety aspects of the packaging are scheduled have been performed as scheduled, and that identified deficiencies have been satisfactorily resolved in a timely manner.

The team reviewed an AOS audit of RANOR, Inc. performed October 2009. The audit was performed to verify compliance to RANOR's QA Manual and for compliance to 10 CFR Part 71 subpart H QA requirements as contained in AOS' NRC-approved QA program approval. The audit identified 23 observations, which included 3 audit findings. The team noted that RANOR had satisfactorily completed and responded to all the observations and audit findings and was being maintained on the AOS approved supplier list for fabrication activities.