

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. LICENSEE/CERTIFICATE HOLDER
Columbiana Hi Tech, LLC
1802 Fairfax Road
Greensboro, NC 27407

2. NRC/REGIONAL OFFICE
Spent Fuel Project Office
M/S O13D13
Washington, DC 20555-0001

REPORT NUMBER(S) 71-0179/05-201

3. LICENSEE/CERTIFICATE NUMBER(S)
~~71-0249~~ 71-0179

4. INSPECTION LOCATION
Greensboro, NC

5. DATE(S) OF INSPECTION
April 25-29, 2005

The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license or Certificate of Compliance (CoC). 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 or nonconformances were identified.
- 2. Previous violation(s) or nonconformance(s) closed.
- 3. The violation(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, NUREG-1600, to exercise discretion, were satisfied.

_____ Non-Cited Violation(s) was/were discussed involving the following requirement(s) and Corrective Action(s):

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

(Violations, Nonconformances, and Corrective Actions)

SEE ATTACHED.

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; **OR**
- Written Response requested in 30 days YES NO

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE	<i>DONALD OLSON</i>	<i>[Signature]</i>	<i>4-29-05</i>
NRC INSPECTOR	Frank Jacobs	<i>[Signature]</i>	<i>4/29/05</i>

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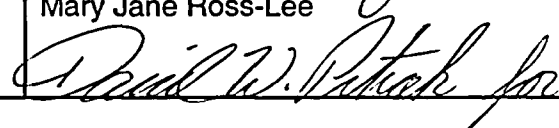
(Continued)

DURING INSPECTION OF FABRICATION ACTIVITIES FOR A RAJ-II OUTER BODY ASSEMBLY, THE NRC INSPECTOR FOUND THAT WELD JOINT 36 ON TRAVELER NO. 09471 WAS UNDERSIZED. COLUMBIANA HI TECH PERFORMED INSPECTIONS ON 30 OUTER BODY ASSEMBLIES AND IDENTIFIED 10 ASSEMBLIES HAVING UNDERSIZED WELDS ON WELD JOINT 36.

10 CFR 71.119 REQUIRES, IN PART, THAT THE LICENSEE SHALL EXECUTE A PROGRAM FOR INSPECTION OF ACTIVITIES AFFECTING QUALITY TO VERIFY CONFORMANCE WITH THE DOCUMENTED DRAWINGS FOR ACCOMPLISHING THE ACTIVITY.

CONTRARY TO THE ABOVE, COLUMBIANA HI TECH FAILED TO IDENTIFY THE NONCONFORMING WELDS. THIS IS CONSIDERED TO BE A SEVERITY LEVEL IV VIOLATION OF NRC REQUIREMENTS.

INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder (name and address)	Columbiana Hi Tech, LLC 1802 Fairfax Road Greensboro, NC 27407
Licensee/Certificate Holder contact and phone number	Bob Hypes 336-852-5679
Docket No.	71-0179
Inspection Report No.	71-0179/2005-201
Inspection Date(s)	April 25-29, 2005
Inspection Location(s)	Columbiana Hi Tech, Greensboro, NC
Inspectors	Frank Jacobs, James Pearson, Michael Karmis, Michelle Flanagan, Larry Campbell
Summary of Findings and Actions	<p>The team verified through review of documentation, personnel interviews, and observation of activities, that Columbiana Hi Tech's fabrication of the Traveller and RAJ-II transportation packages was, with the one exception noted below, being performed in accordance with CHT's NRC-approved QA program and the respective Certificate of Compliance.</p> <p>During observation of a RAJ-II Outer Main Body Assembly in the shop, the inspector noted that the 3mm fillet weld for Weld Joint 36 on Traveler 09471 was undersized. Visual inspection of the weld had been performed by CHT and the weld had been documented as acceptable. Ten of the 30 Outer Main Body Assembly boxes in process on the shop floor were subsequently found to have similar weld deficiencies. Seven of those ten boxes had been visually inspected and accepted.</p> <p>CHT's failure to identify the nonconforming welds is considered a violation of 10 CFR 71.119, which requires, in part, that the licensee shall execute a program for inspection of activities affecting quality to verify conformance with the documented drawings for accomplishing the activity.</p>
Lead Inspector Signature/Date	Frank Jacobs  5/24/05
Inspector Notes Approval Section Chief Signature/Date	Mary Jane Ross-Lee  5/24/05

INSPECTOR NOTES

IP 86001

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 quality assurance (QA) Program (reference Regulatory Guide 7.10), and that implementing procedures are in place and effective.

The inspector interviewed the Vice President of Quality regarding the Annual Review of the Columbiana Hi Tech (CHT) Quality Assurance Program (QAP). The assessment was based on reviews of CHT's internal audits, a Statistical Discrepancy Analysis described in procedure Q-05, "Control of Nonconforming Items & Services," the Supplier Quality History Record Evaluation Log, Requests for Corrective Action (CARs) issued, and customer audit reports. The process was manual and generally subjective, but appeared to be adequate. The inspector noted that CHT had implemented revision 1 to its "Quality Assurance Manual" dated April 4, 2005, without first obtaining NRC approval. The changes were considered by CHT to be editorial and nonsubstantive. When informed by the inspector that NRC approval was required for any changes, CHT took immediate action to submit the revision to NRC for approval.

The inspector reviewed procedure Q-22, "Audits," and the internal audit schedules for calendar years 2004 and 2005. All 18 criteria of Subpart H of 10 CFR Part 71 had been audited in 2004, and were scheduled for audit in 2005. For 2005, three scheduled audits had been completed, as well as one special audit of Organization performed 4/18/05 because of the closing of the facilities in Columbiana, Ohio. As a result of the special audit, CAR 05-001 was issued to identify the need to evaluate the potential impact of the closing on the CHT quality program. The due date for corrective action was 5/13/05. The inspector noted that the audit checklist and most of the objective evidence listed in the 2005 audit of Quality Assurance Program was identical to the checklist and objective evidence listed in the 2004 audit for the same area. As a result of the inspector's observation, CHT issued CAR 05-004. CHT located the auditor's original notes and determined that the information that was recorded by the auditor was not accurately transferred to the 2005 audit checklist. CHT's planned corrective action was to issue a corrected audit report to correct the entry errors and to reperform the audit by 5/26/05. The remaining internal audits reviewed were acceptable.

The inspector reviewed external audit reports for three selected vendors, including one Nuclear Industry Assessment Committee (NIAC) audit. The results of the review were acceptable.

The inspector reviewed procedure P-01, "Procurement of Materials, Items, or Services," and the Qualified Vendor List (QVL). The inspector noted that restriction information for one vendor on the QVL was incorrect. As a result of the inspector's observation, CHT issued CAR 05-003. CHT determined that the restriction code letters were mismatched during a recent revision to the QVL. As corrective action, CHT reviewed the QVL and corrected the errors, reviewed procurements and found no impact, conducted training, and issued a revised QVL on 4/25/05.

The team determined from interviewing the CHT Project Managers (PMs) for the fabrication of the RAJ-II and the Traveller transportation packages and from review of QCP-A-255, "Quality

Control Plan," that CHT was required to perform the fabrication of the RAJ-II and the Traveller packages for Global Nuclear Fuels - Americas (GNF) and Westinghouse Electric Company, respectively, under the CHT QAP. The team verified through review of various quality procedures and process travelers for fabrication, and through the witnessing of shop activities, that the fabrication was, with one exception for the RAJ-II package, being performed in accordance CHT's NRC-approved QAP and the respective CoC.

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 observed the required postings for 10 CFR Part 21 in multiple appropriate locations, including the text of Part 21, the CHT Part 21 reporting procedure, and the text of Section 206 of the Energy Reorganization Act of 1974. The inspector noted and brought to CHT's attention that Section 206 was not readily visible in that it was attached to the back of, and covered by, CHT's procedure. Since Part 21 requires that Section 206 be posted "in a conspicuous position," CHT promptly uncovered Section 206 at all of the posting locations.

The inspector reviewed CHT procedure Q-18, "Reporting Defects and Non-Compliance in Compliance with 10 CFR Part 21," as well as the CHT flow diagram for determining reportable events. CHT had not had a Part 21 notification in the last three years. The inspector reviewed selected procurement documents and verified the documents specified that the provisions of Part 21 applied. No concerns were identified.

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

The team interviewed the CHT PMs for the fabrication of the GNF RAJ-II and Westinghouse Traveller transportation packages. The PMs provided detailed descriptions of the control and review processes for the current fabrication activities being performed at Columbian Hi Tech. Included in the description was the role that procedure E-01, "Drawings, Specification, Procedure and Customer Contract Control," and procedure E-02, "Traveler Preparation, Verification and Control," played in the control of the preparation for and fabrication of both transportation packages. The PMs described the development, issuance, and control of the detailed fabrication drawings or the customer-supplied drawings developed for fabrication from SAR drawings. The review of procedures E-01, revision 2, and E-02, revision 0, by the team verified the details described during the interview process. From the interviews, document reviews, and shop observations, the team determined design control was acceptable.

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

The inspector reviewed GNF Purchase Order (PO) 182074215, revision 1, which described the procurement requirements from GNF to CHT to manufacture the RAJ-II transportation package. This PO invoked Quality Notice S-P-5004 "Quality Requirements for the RAJ-II Nuclear Container" and A-255, "Quality Control Plan," and required the use of SAR drawings, as well as specification, QRV-A00-001, "GNF-J RAJ-II Requirements Document." These documents were reviewed in part and found to include appropriate fabrication guidance.

The inspector reviewed Westinghouse PO 4500137191, which described the procurement requirements from Westinghouse to CHT to manufacture the Traveller transportation package. This PO invoked specification MD1-04-110, "Traveller Standard Shipping Package Safety Related Part Classification," revision 3, PDSHIP-04, "Traveller Specification for Neutron Poison," revision 0, and PDSHIP02, "Traveller Polyurethane Foam Specification," revision 3. These documents were reviewed, in part, and found to include appropriate fabrication guidance.

The inspector reviewed Drawing Nos. F-GNF-RAJII-400 and -1000, eight process travelers for Traveller packages Serial Numbers TS43 through TS50, and Nonconformance Reports (NCRs) 1681, 1682, and 1683 which were referenced in the travelers. The travelers included QC sign-offs and hold/witness points for the customer's sign-off. Many of these sign-off points were for testing/special process applications. No concerns were identified.

The inspector reviewed two data packages each, for both the RAJ-II and Traveller contracts. An individual data package for each unit provided specific documentation such as completed traveler documents and tests and inspections. A General Data Package contained documents such as the Revision Control Log, purchase orders, Quality Notice from the CoC holder, supplier QA manual, and welding procedures. These documents were found to be complete and in order.

The inspector reviewed documentation of the installation of foam in the Traveller Outerpack Assembly. General Plastics Manufacturing Company installed the foam in assembled Traveller units in Tacoma, Washington. Documentation included the recording of batch numbers, skin temperature, pour weights, and inspection steps. Tests included compressive strength, density, and flammability. Two purchase orders for material testing and sampling certifications were reviewed to verify the requirements in the CoC were met. The records reviewed in two data packages and in the associated General Data Package TS 5-35 were found to be detailed and well documented.

The inspector reviewed the acceptance of the Boral neutron poison plate in two data packages and in the associated General Data Package TS 5-35 for the Traveller package. Material certifications and sample measurements from each sheet were well documented.

The team reviewed fabrication activities associated with selected travelers at both the Fairfax Road shop and the High Point shop to verify the work was being accomplished to the latest revision of the drawings, to the correct process and test specifications, and by trained and qualified personnel. During observation of a RAJ-II Outer Main Body Assembly in the shop, the inspector noted that the 3mm fillet weld for weld joint 36 on traveler 09471 was undersized. Visual inspection of the weld had been performed by CHT and the weld had been documented as acceptable. After being informed of the undersized weld, CHT performed visual inspection of the 30 Outer Main Body Assembly boxes in process on the shop floor. Ten boxes revealed similar deficiencies. Seven of those ten boxes had been visually inspected and accepted. CHT issued NCR 1699, on April 27, 2005, with the disposition to rework affected welds. Based on discussions with CHT personnel, the inspector determined that 20 RAJ-II assemblies had been shipped to GNF, but had not been placed in service. CHT informed the team that GNF had been made aware of the undersized fillet weld nonconformance. CHT issued CAR 05-005, revision 1, on April 28, 2005, and identified the cause of the deficiency as difficulty in inspecting the weld due to distortion of the thin base material resulting from the welding process. CHT's

corrective action was to train all affected manufacturing and Quality Control personnel to ensure awareness of the peculiarities of Weld Joint 36. Subsequent to the conclusion of the inspection, CHT issued CAR 05-008 on May 12, 2005, to evaluate the 20 RAJ-II containers that had previously been shipped to GNF.

The inspector performed a visual examination of the lifting lug welds on the RAJ-II Inner Box Assembly on traveler TS-09454, weld joint 9. The results were found to be acceptable. The inspector observed several welders performing Gas Tungsten Arc Welding (GTAW) on numerous RAJ-II Inner Box Assemblies. The results were found to be acceptable.

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 Manufacturing Plan and Quality Record (MPQR), or traveler, was CHT's basic document for assuring the accomplishment of all manufacturing and quality activities. CHT procedure E-02 governed the preparation of travelers. The traveler contained the details, tests, and references to procedures, specifications, and standards, which were necessary to complete the products. A Job Book in each building provided controlled drawings and test procedures for accomplishing the fabrication and assembly. The inspector selected travelers for the Traveller and RAJ-II systems, and observed fabrication activities, welder stamps, materials, tools, and shelf life items at work stations.

The inspector reviewed CHT procedure Q-04, "Control of Special Processes." The procedure addressed the processes including welding and Nondestructive Examination (NDE). Four Weld Procedure Specifications (WPSs) in the Job Book were selected and reviewed and found to be adequately specified and in use in travelers on the shop floor. Associated Welding Procedure Qualification Records (PQRs) were selected and reviewed and found to be well documented. The inspector reviewed the implementation of procedure section 4.1.6, "Weld Filler Material Control Procedure." Weld filler material was issued from a controlled, locked area, on a daily basis. A Weld Wire Control Log was maintained by the inspectors. Weld rod was issued to the either a workstation or welder. Four issuance records were selected from the log and verified to be issued correctly to the shop floor and documented, when used, on the applicable traveler. Labeled tubes contained the weld rod and included information on type, size, welder or station, date and job. The inspector reviewed the Random Surveillance of Welding Activities Log. The log documented the use of correctly issued weld wire to qualified personnel and had daily and weekly surveillance entries. Issuance and control of weld wire was determined to be adequate.

The inspector reviewed nondestructive examination activities. Liquid penetrant (PT) procedure QIP-PT, revision 3, and the associated acceptance procedure 04-019PT, were found to be adequate. The inspector observed the performance of a PT examination on the lifting lugs of Traveller T-509454 following a load test. The PT examination was adequate and in accordance with procedure QIP-PT.

The inspector reviewed CHT procedure Q-01, "Control of Measuring and Testing Equipment," revision 3, which included calibration procedures for equipment, an example calibration frequency chart, and examples of gage maintenance records and employee-owned gage calibration records. No concerns were identified.

The inspector interviewed the cognizant CHT inspector regarding maintenance of calibration records, performing in-house calibration, sending equipment out for calibration, recall of equipment due for calibration, and calibration practices for employee-owned tools. No concerns were identified.

The inspector reviewed records for thread ring gage CHT-502 and digital pyrometer CHT-465 to verify that the calibration interval listed on Calibration Frequency Chart was followed, that Part 21 applicability was specified on the calibration service purchase order, and that the vendor was listed on CHT's QVL. Calibration records for a sample of equipment observed on the shop floor were reviewed. The results were acceptable.

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 and discussed with CHT staff the following POs utilized for the manufacture of the RAJ-II and the Traveller transportation packages:

- PO 20040286, for honeycomb shock absorber paper
- PO 20040329-2, for part #26, hemlock Y-bottom assembly
- PO 20050049, for TIG weld wire, 1/16" diameter, ER-308L
- PO 20050017, for TIG weld wire, 3/32" diameter, ER 308L
- PO 20050052, for Loctite Thread Locker b (non-"q")
- PO 20040270, for TIG weld wire, 3/32" diameter, ER308 L
- PO 20040245, for Boral sheets; 0.125" thick

All POs identified the required materials and were found to be acceptable. The suppliers for these items were listed on the CHT QVL.

During the inspection, CHT made an enhancement to procedure Q-02, "Receipt Inspection of Materials, Items, and Services," to clarify the receipt of customer-supplied material. Step 4.1.13 was added to more clearly state how the material will be received by CHT and recognized as supplied by the customer on the customer-supplied certification.

The team determined that procurement specifications for materials, equipment, and services received by CHT met design requirements.

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 inspector reviewed procedure Q-05, "Control of Nonconforming Items & Services," and selected NCRs. The corrective actions for the reviewed NCRs were technically sound and completed in a timely manner.

The inspector reviewed procedure Q-11, "Corrective Action Procedure," and selected CARs. The inspector noted and discussed with the QA Engineer that documentation of actions taken

prior to closure of some CARs would have been improved with more clarity and detail. The corrective actions for the reviewed CARs appeared to be adequate.

02.09 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 inspector reviewed NDE and Visual Weld Inspection qualification records for two CHT inspectors. The inspector reviewed welder qualification records for five CHT welders. The records were found to be acceptable.

The inspector reviewed CHT's training records and stamp log to confirm CHT's required internal training had been completed per their procedures. The inspector reviewed the lesson outline for CHT's Quality Assurance Indoctrination for Shop Personnel and confirmed that 10 CFR Part 21 was addressed in the training.

The inspector reviewed the qualification records for CHT's three lead auditors and verified that they met the requirements of CHT procedure Q-08, "Qualification of Audit Personnel." The procedure did not specify the number of audits required to fulfill "regular and active participation in the audit process," but the records for all three auditors documented adequate activity for maintaining proficiency.

The team reviewed six RAJ-II Data Package Checklists performed by the GNF Program Manager. This checklist includes review of 36 specific items supporting the acceptable completion of the RAJ-II fabrication processes. A sample of some of the areas included in the checklist review are: verification that the Assembly, Outer Container and Inner Container indexes are available, five assembly travelers and 15 inner container travelers are available, any nonconformances have been approved by GNF, and all calibration records have been stamped by QA. The oversight process in general was determined to be acceptable.