



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

August 12, 2005

Global Nuclear Fuel - Americas, L.L.C.
ATTN: Mr. J. D. Fuller, Chief Executive Officer
and Facility Manager
P. O. Box 780
Wilmington, NC 28402

SUBJECT: NRC INSPECTION REPORT NO. 70-1113/2005-03 AND NOTICE OF VIOLATION

Dear Mr. Fuller:

This report refers to the inspection conducted from June 13 - 17 and July 11 - 15, 2005, at your Wilmington facility. The purpose of the inspection was to determine whether activities authorized by your license were conducted safely and in accordance with United States Nuclear Regulatory Commission (NRC) requirements. At the conclusion of the inspection, the findings were discussed with the members of your staff who are identified in the enclosed report.

The areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress within the plant. Your conduct of activities at the Wilmington facility was generally characterized by safety-conscious operations.

Based on the results of this inspection, the NRC has determined that a violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation was the result of your staff's inattentive action to certificate of compliance requirements for NRC certified shipping packages. This violation was evaluated in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, which is included on the NRC's web site at <http://www.nrc.gov/what-we-do/regulatory/enforcement.html>.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> the Public Electronic Reading Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Jay L. Henson, Chief
 Fuel Facility Inspection Branch 2
 Division of Fuel Facility Inspection

Docket No. 70-1113
 License No. SNM-1097

Enclosures: 1. Notice of Violation
 2. NRC Inspection Report

cc w/encls:
 Charles M. Vaughan, Manager
 Facility Licensing
 Global Nuclear Fuel - Americas, L.L.C.
 P. O. Box 780, Mail Code J26
 Wilmington, NC 28402

Beverly Hall, Director
 Division of Radiation Protection
 N. C. Department of Environmental
 Health & Natural Resources
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Distribution w/encls:
 J. Henson, RII
 D. Seymour, RII
 W. Gloersen, RII
 M. Baker, NMSS
 PUBLIC

***see previous concurrence**

X SISP REVIEW COMPLETE: Initials: JLH _____ SISP REVIEW PENDING*: Initials: _____ *Non-Public until the review is complete
 X PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE X NON-SENSITIVE
 ADAMS: X Yes ACCESSION NUMBER: _____

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI				
SIGNATURE	RG 8/9/05	WG 8/10/05	DH 8/11/05				
NAME	RGibson	WGloersen	DSeymour				
DATE	8/ /2005	8/ /2005	8/ /2005	8/ /2005	8/ /2005	8/ /2005	8/ /2005
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

During an NRC inspection conducted July 11 - 15, 2005, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

10 CFR 71.17(a)(2) requires the licensee to comply with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of Subparts A, G, and H of 10 CFR 71.

Condition 9(c) of NRC Certificate of Compliance (CoC) 9196 requires the package to be prepared for shipment and operated in accordance with the operating procedures of Chapter 7 of the license application. Chapter 7, Section 7.1.5 of the license application, in the first note, requires that if a standard uranium hexafluoride (UF₆) 30-B cylinder is being transported, then ensure that the valve cover (or valve protector) is removed prior to shipment.

Contrary to the above,

1. On July 1, 2005, the licensee failed to comply with the terms and conditions of NRC CoC 9196 by not ensuring that a valve cover on a full UF₆ 30B cylinder was removed prior to shipment in a UX-30 overpack (USA/9196/AF-85) to the Westinghouse - Columbia facility.
2. On May 11, 2005, the licensee failed to comply with the terms and conditions of NRC CoC 9196 in that the contents of four UX-30 overpacks (received from the China Nuclear Energy Industry Corporation (CNEIC)) were not verified before shipping them to the Westinghouse - Columbia facility resulting in the shipment of three UX-30 overpacks, each containing a full UF₆ 30B cylinder with the valve protective cover over the valve.

This is a severity Level IV violation (Supplement V).

Pursuant to the provisions of 10 CFR 2.201, Global Nuclear Fuel-Americas, L.L.C. is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required

response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 12th day of August, 2005

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1113

License No.: SNM-1097

Report No.: 70-1113/2005-03

Licensee: Global Nuclear Fuel - Americas, L.L.C.

Location: Wilmington, NC 28402

Dates: June 13 - 17, 2005
July 11 - 15, 2005

Inspectors: R. Gibson, Health Physicist
W. Gloersen, Sr. Fuel Facility Inspector

Accompanying
Personnel: D. Collins, Director, Division of Fuel Facility Inspection (June 16 -17,
2005)

Approved By: J. Henson, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Enclosure 2

EXECUTIVE SUMMARY

Global Nuclear Fuel - Americas, L.L.C.
NRC Inspection Report 70-1113/2005-03

This routine, announced inspection involved observation and evaluation of the licensee's programs in the following areas: (1) management controls, (2) transportation, (3) operator training, (4) low-level radioactive waste storage, and (5) waste management and radioactive waste generator requirements. The inspection involved observation of work activities, a review of selected records, and interviews with plant personnel. The inspection identified the following aspects of the licensee programs as outlined below:

Management Controls

- The Global Supply Chain Organization was reorganized to allow for improved human performance and efficiencies. The newly appointed Environmental Health and Safety Manager exceeded the minimum educational, technical, and management experience requirements specified in Section 2.2.1.9 of the license application (Paragraph 2.a).
- The process for approving procedures complied with the license application requirements. Selected staff interviewed during the inspection were knowledgeable of the significant procedural changes (Paragraph 2.b).
- The Wilmington Safety Review Committee was formally appointed and chartered, committee membership met the terms and conditions stipulated in the license, and the meetings were held at the required frequency specified in the license application and procedures. Annual radiation protection reviews, preventative maintenance assessments, and safety audits were acceptable (Paragraph 2.c).
- The 2004 10 CFR 71 Subpart H audit was conducted by appropriately qualified personnel and in accordance with license requirements. Audit findings were tracked and corrective actions were either completed or in the process of being completed (Paragraph 2.d).
- Quality characteristics of components important to safety were properly identified, specified, and verified in accordance with the licensee's implementing procedure. The component purchase evaluation for new cluster separators was detailed and of good quality (Paragraph 2.e).

Transportation

- Records pertaining to shipments of special nuclear material were appropriately completed and maintained. Selected shipping personnel were appropriately trained in the handling and shipment of hazardous materials (Paragraph 3.a).
- The maintenance of NRC Certificates of Compliance for packages used to ship fissile material was adequate (Paragraph 3.b).

- The process of performing audits of the RAJ-II package vendor and inspections of the RAJ-II packages before package acceptance was thorough and detailed. The management of the records pertaining to package fabrication and certification was well organized and maintained.(Paragraph 3.c).
- The system for promptly reporting incidents and deficiencies to management and regulatory authorities was effective. Root cause determinations were performed in a prompt manner (Paragraph 3.d).
- Two examples of a violation for inattentive action to certificate of compliance requirements were identified (Paragraph 3.d).

Operator Training

- The training program for initial and refresher training in the nuclear criticality safety, radiation protection and general emergency areas was effective. Training material and examinations were adequate to measure the knowledge level of the workers, and were current. Lessons learned from past facility events were appropriately captured in the refresher training to improve worker safety (Paragraph 4.a).
- Operating procedure and facility change control training was effective. Operators were knowledgeable of their operating processes and pending changes. Changes to nuclear material processing requirements were readily identified to the operators who had to acknowledge their understanding before processing operations could continue (Paragraph 4.b).
- Each new operator's on-the-job training was tracked by his/her immediate supervisor or team leader on a quality training checklist (qual card). Qual cards were maintained by the supervisor and reviewed quarterly with the new operators until they were fully certified (Paragraph 4.c).

Low-level Radioactive Waste Storage

- The waste storage management program was adequately implemented and provided the information needed to ensure proper storage, safe shipment and disposal of waste. Low-level radioactive waste and non-recoverable and recoverable scrap containers stored on the outside storage pads were in an acceptable condition to contain the licensed material (Paragraph 5.b).

Waste Management and Radioactive Waste Generator Requirements

- The licensee adequately met effluent monitoring requirements and was well below the concentration limits specified in License SNM-1097 and 10 CFR Part 20 for liquid effluents. (Paragraph 6.a).
- The licensee removed the vegetational growth from the north and south lagoons, and dredged the aeration basin in an effort to reduce the amount of sludge and the accumulation of trace amounts of uranium from the bottom of the lagoons and the

aeration basin. The vegetation and dredged sludge from the lagoons and the basin was stored in Warehouse No. 3 for proper packaging and shipment to a disposal site (Paragraph 6.b).

- The licensee adequately met the requirements for incinerating combustible waste containing low concentrations of uranium. There was negligible ash holdup in the incinerator ventilation system (Paragraph 6.c).

Attachment:

Persons Contacted

Inspection Procedures

List of Items Opened, Closed, and Discussed

List of Acronyms

REPORT DETAILS

1. Summary of Plant Status

This report covered two five-day inspection periods. During the onsite inspections, equipment in the dry conversion process and other areas of the facility were operating normally. Normal operational activities were also noted in the ceramics and bundle assembly areas.

2. Management Controls (Inspection Procedures (IPs) 88005 and 86740)

a. Organizational Structure

(1) Scope and Observations

The inspector discussed with the licensee the organizational changes and changes in personnel responsibilities that occurred during the past 12 months. Basically, a human resource neutral re-organization in the Global Supply Chain Organization was implemented in July 2005. One of the changes involved the addition of Configuration Management and Manufacturing Technology groups as direct reports to the Global Supply Chain Manager. Other management and staff changes were made to better support daily operations and future growth. This reorganization was intended to improve human performance and inefficiencies in the previous organization.

The inspector also noted that a new manager was appointed to head the Global Nuclear Fuel - Americas Environmental Health and Safety (EH & S) Organization. The inspector noted that the newly appointed manager exceeded the minimum educational, technical, and management experience requirements specified in Section 2.2.1.9 of the license application.

(2) Conclusions

The Global Supply Chain Organization was reorganized to allow for improved human performance and efficiencies. The newly appointed GNF - A EH&S Manager exceeded the minimum educational, technical, and management experience requirements specified in Section 2.2.1.9 of the license application.

b. Procedural Controls

(1) Scope and Observations

The inspector reviewed the licensee's process for approving procedures, including a review of selected procedures pertaining to transportation of hazardous materials.

The inspector reviewed selected packaging, package refurbishment, and shipping procedures. The inspector verified that these procedures complied with the licensee's process for approving procedures and with license application requirements. In

addition, the inspector verified that the procedure control process required review and approval by the appropriate organizational unit for significant changes made to the procedures. The inspector also verified that selected shipping and packaging personnel were trained on the changes made to the selected procedures.

(2) Conclusions

The process for approving procedures complied with the license application requirements. Selected staff interviewed during the inspection were knowledgeable of the significant procedural changes.

c. Safety Committees

(5) Scope and Observations

The inspector reviewed the organizational structure and membership of the Wilmington Safety Review Committee (WSRC) and verified that it was in accordance with the requirements of Section 2.3.1 of the license application. The inspector verified that the WSRC met at the frequency specified by the license and that the required number of committee members was present for each meeting. The inspector reviewed the meeting minutes for selected WSRC meetings conducted during the second quarter of 2004 through the first quarter 2005. The meeting minutes were well organized and documented. The WSRC reviews of unusual incident reports (UIRs), the 2004 annual WSRC As Low As Reasonably Achievable (ALARA) review, preventative maintenance assessments, and safety audits were acceptable.

(6) Conclusions

The WSRC was formally appointed and chartered, committee membership met the terms and conditions stipulated in the license, and the meetings were held at the required frequency specified in the license application and procedures. Annual ALARA reviews, preventative maintenance assessments, and safety audits were acceptable.

d. Audits and Assessments

(1) Scope and Observations

At the time of this inspection, the licensee was in the process of conducting an audit pertaining to the requirements specified in 10 CFR 71.137. Consequently, the inspector reviewed the last audit pertaining to 10 CFR 71 Subpart H requirements (Audit Report #2004-02, dated August 18, 2004). The audit was conducted in accordance with the requirements in Section 3.6 of the license application and appropriate procedures and checklists. The audit was limited to onsite activities only. The inspector verified that audit findings were tracked and corrective actions were appropriate. Specifically, the inspector reviewed selected corrective action requests (CARs) from Audit Report #2004-02. The inspector verified that for selected audit findings, the CARs were initiated and tracked, the corrective action analyses and responses were appropriate, and the closure documentation was acceptable.

(2) Conclusions

The 2004 10 CFR 71 Subpart H audit was conducted by appropriately qualified personnel and in accordance with license requirements. Audit findings were tracked and corrective actions were either completed or in the process of being completed.

e. Quality Assurance Programs(1) Scope and Observations

The quality assurance (QA) requirements used to identify, specify, and verify (receipt inspection) the quality characteristics of components important to safety for the facility were reviewed in order to assess the effectiveness of the program.

The inspector reviewed the quality requirements listed in implementing procedure, Procedure Responsibilities and Instructions (PRIs) 4-02, "Requests for Selected Commodities," used to identify, specify and verify the quality characteristics of components important to safety. The inspector noted that 10 CFR Part 21 requirements were properly invoked in selectively reviewed purchasing documents.

The inspector reviewed selected aspects of the process for ordering and purchasing selected commodities and components important to safety. As part of this review, the inspector examined a component purchase evaluation for new cluster separators used for fuel quality control during normal transportation of fuel assemblies in the RA-3D and RA-3 nuclear packages. The cluster separator density specification study (dated June 17, 2005), concluded that the proposed specification Drawing # 0078C95 (Generic Cluster Separator) needed to be revised on the purchase order to include the maximum allowable component density. The inspector noted that the study was detailed and of good quality in that it identified the density restrictions which were applied to the engineering design requirement on the generic cluster separator drawing.

(2) Conclusions

Quality characteristics of components important to safety were properly identified, specified, and verified in accordance with the licensee's implementing procedure. The component purchase evaluation for new cluster separators was detailed and of good quality.

3. Transportation (IP 86740)a. Records of Completed Packages for Shipment(1) Scope and Observations

The inspector reviewed the licensee's program for routine radioactive materials shipments to determine whether the licensee had established and was maintaining an effective program, to ensure radiological and nuclear safety in the packaging and

delivery to a carrier of licensed radioactive materials, and to determine whether transportation activities were in compliance with the applicable NRC and the Department of Transportation (DOT) transport regulations noted below. During the inspection, transportation activities associated with fissile material shipments, including procedural guidance, QA activities, and record completeness conducted in accordance with 10 CFR Part 71, and 49 CFR Parts 171-178 were reviewed.

Since the last inspection, the inspector noted that the licensee had implemented a new system referred to as Ship Link, which was designed to collect data from the licensee's fuel business system (FBS), applicable regulatory requirements specified in 49 CFR Parts 170 - 189, 10 CFR 71, the International Atomic Energy Agency (IAEA), and the licensee's radiological and radiation survey data. For routine shipments, these data were then used to electronically generate shipping paper work, packaging labels, driver instructions, transportation security information, check lists, and material release forms. The process was described in several 2000 series operating procedures.

The inspector reviewed the documentation used for selected routine special nuclear material (SNM) shipments of fuel assemblies, uranium dioxide (UO₂) powder and uranium hexafluoride (UF₆) including, the Bill of Lading, Radioactive Material Shipment Record, Vehicle Inspection Report, Receipt and Loading Verification Checklist, Fuel Shipment Information Form, Container Log Sheet, and Health Physics Survey Forms. The inspector noted that the shipping records were complete and the information supplied on the shipping papers was appropriate. The inspector also verified that the appropriate personnel in the traffic department had current copies of the applicable DOT regulations. In addition, the inspector verified that three shipping specialists had received the required hazardous material shipping training within the last two years.

(2) Conclusions

The licensee's records pertaining to shipments of SNM were appropriately completed and maintained. Selected shipping personnel were appropriately trained in the handling and shipment of hazardous materials.

b. Certificates of Compliance

(1) Scope and Observations

The inspector noted that GNF-A could use several radioactive material transport packages to make shipments under the general license in Subpart C of 10 CFR 71. The inspector verified that the licensee maintained current the following selected NRC Certificates of Compliance for packagings currently authorized for use at the facility:

- CoC 4986, RA-3 (fuel assembly shipping container)
- CoC 9309, RJ-II (fuel assembly shipping container)
- CoC 9294, NPC (UO₂ powder shipping container)
- CoC 9196, UX-30 (UF₆ cylinder overpack)

The inspector also verified that the licensee had registered with the NRC as a user of the NRC-certified packages that could be used to ship radioactive materials and had a quality assurance program approval issued by the NRC.

The inspector verified that the licensee had received and distributed the following NRC Information Notices (INs) to appropriate staff:

- IN 2004-13, Registration, Use, and Quality Assurance Requirements for NRC-Certified Transportation Packages, June 30, 2004
- IN 2005-10, Changes to 10 CFR Part 71 Packages, April 7, 2005

(2) Conclusions

The licensee's maintenance of NRC CoCs for packages used to ship fissile material was adequate.

c. Preliminary Determinations and Procurement of Packaging

(1) Scope and Observations

The inspector reviewed the licensee's procurement and acceptance testing process for selected Model No. RAJ-II fuel assembly shipping packages (USA/9309/B(U)F-96; NRC (CoC) number 9309) that had been purchased during the last 12 months.

The licensee was in the process of purchasing a fleet of approximately 900 RAJ-IIs to replace the existing fleet of RA-3s. The RA-3 certificate (CoC 4986) will expire on March 31, 2008. As of this inspection, the licensee had acquired approximately 120 RAJ-IIs. The licensee had selected two vendors to manufacture the RAJ-IIs. The inspector verified that the vendors were on the licensee's approved supplier list (ASL).

The inspector selected one RAJ-II that the licensee had purchased between May and June 2005. The inspector reviewed the licensee's process for the acceptance testing of the RAJ-II to assure that required QA measures before initial use of packages per 49 CFR 173.474 were followed. Condition 6(b) of NRC CoC 9309 specified that each packaging must meet the acceptance tests and maintenance program of Chapter 8 of the application. The inspector verified that the licensee had established a process to perform inspections for each of the RAJ-IIs before the first use as required by 10 CFR 71.85.

The inspector reviewed the GNF-A Quality Control (QC) Plan A-255, Quality Notice S-P-5004, and GNF-J-RAJ-II Requirements Document QRV A00-001, which consisted of a compilation of GNF-A approved QA/QC procedures for the RAJ-II, container specifications, purchase order and contract, contractor QA Plan, measuring and test equipment procedures, QC inspector qualifications, operator training records, welding procedure specifications, and acceptance testing. From discussions with quality

engineering personnel, it was evident that the licensee was closely involved with the manufacturing of the RAJ-II and provided direct oversight of the vendor by making frequent audits and inspections to ensure that the packages would be constructed in accordance with the container specifications.

The inspector noted that the licensee's audit of one of the vendors (Audit #2804519, dated March 30, 2005) was thorough and identified several findings that were resolved before the vendor was placed on the licensee's ASL. The inspector verified, with regard to reporting defects and noncompliances, that the RAJ-II procurement documents included the statement that the provisions of 10 CFR Part 21 applied as required by 10 CFR 21.31. The licensee also conspicuously and durably marked the packaging with its model number, serial number, gross weight, and a package identification number assigned by the NRC in accordance with 10 CFR 71.85.

The inspector also reviewed the Certificates of Conformance from the vendor for RAJ-II serial numbers RA-1072 (outer) and RA-1072 (inner). The certificates specified that the fabrication, inspection, and acceptance of both the outer and inner containment assemblies had been manufactured in strict accordance with the GNF-A specification, purchase order, and drawing requirements. The inspector observed that the licensee was maintaining a file for each RAJ-II that included the acceptance test results and certificates of conformance from the package vendor. The shipping package files were well organized and maintained.

The inspector noted that CAR # 05-005 for Part No. F-GNF-RAJ-II-400, Outer Main Body Assembly, described weld joint #36 as undersized after the visual inspection operation had been completed and accepted by the vendor. Ten out of 30 outer main body assemblies revealed similar deficiencies. After an investigation, human error was identified as the root cause. The vendor resolved the weld seam deviations. The inspector discussed the weld deviations with the licensee's quality engineering representative who indicated that the majority of the welding on the units needed to be kept to a minimum to minimize distortions in the sheet metal due to over welding the seams. The inspector noted that the corrective actions implemented by the vendor due to the weld deficiencies were acceptable.

The inspector observed a selected portion of an on-site quality component receipt inspection for one of the newly purchased RAJ-II shipping packages. All required characteristics were properly verified and no discrepancies were noted in the receipt inspection process.

(2) Conclusions

The licensee's process of performing audits of the RAJ-II package vendor and inspections of the RAJ-II packages before package acceptance was thorough and detailed. The management of the records pertaining to package fabrication and certification was well organized and maintained.

d. Review of Transportation Incidents

(1) Scope and Observations

The inspector discussed with licensee representatives transportation events, reviewed UIRs, as applicable to 10 CFR 71.95, and discussed the appropriate immediate corrective actions taken.

On July 12, 2005, the licensee was notified by the Westinghouse - Columbia facility that one of three full 30B UF₆ cylinders (GEW059) shipped in a UX-30 overpack on July 1, 2005 was received with its valve protective cover still attached. The shipment of UF₆ cylinder GEW059 with the valve cover attached while being shipped in a UX-30 overpack was not in conformance with condition 9(c) of NRC CoC 9196, Revision 21. There was no exposure of radiation or radioactive materials to individuals. In addition, there was no obvious adverse affect to the cylinder as a result of the valve cover being attached to the cylinder during shipment. After the licensee obtained more information from Westinghouse, interviewed UF₆ cylinder operations personnel, and reviewed the standard operating procedure pertaining to UF₆ cylinder operations, a root cause investigation was initiated on July 14, 2005.

The inspector reviewed Operating Procedure (OP) 1080.70, UF₆ Cylinder Dock, Revision 23, discussed the event with staff associated with UF₆ cylinder operations, and performed a walk-down of UX-30 overpack cylinder loading operations. The inspector noted that Exhibit 6, Inspection Criteria for Outgoing UF₆ Cylinders and Protective Overpacks, in OP 1080.70, was recently revised to include the requirement to not install valve covers on the cylinders when using UX-30 overpacks. Exhibit 7 of OP 1080.70 provided a checkoff for when a valve protector was in an acceptable condition.

Discussions with the Area Supervisor indicated that the various checks and inspections required by Exhibit 7, including the cylinder valve protector inspection, were performed while the cylinders were staged in the loading bay dock and not in the UX-30 overpack. Thus, when the operator checked the "valve protector" column in Exhibit 7 as being in an acceptable condition, it indicated that the valve cover was covering the UF₆ cylinder valve so it could be moved and loaded into the UX-30 overpack in accordance with USEC-651, The UF₆ Manual: Good Handling Practices for Uranium Hexafluoride. Although GNF-A cylinder handling operations personnel were trained to remove the valve covers from the 30B UF₆ cylinders when transporting them in the UX-30 overpacks in accordance with OP 1080.70, there were no provisions in OP 1080.70 to document that this activity was performed after the cylinders were loaded into the UX-30.

In addition, the inspector noted that the recent revision (discussed earlier) to Exhibit 6 of OP 1080.70 was a result of an event that occurred on May 11, 2005 and documented in 10 CFR 71.95 report, from C.M. Vaughan to NRC, dated June 21, 2005. In this event, GNF-A had trans-shipped (or forwarded) four out of 30 UF₆ cylinders packaged in UX-30 overpacks to the Westinghouse Columbia facility. These cylinders were received directly from the China Nuclear Energy Industry Corporation (CNEIC). Three out of the four UF₆ cylinders received by Westinghouse were apparently shipped with the valve protector covers in place, which, as noted above, was a violation of condition 9(c) of

NRC CoC 9196. Discussions with the licensee indicated that the forwarding of cylinders was an infrequent task. The licensee contacted the UX-30 certificate holder (Duratek) who indicated that forwarding the UX-30s without verifying the contents of the package was not appropriate. The licensee conducted an internal root cause investigation and identified several corrective actions in the 10 CFR 71.95 report noted above.

10 CFR 71.17(a)(2) required the licensee to comply with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of subparts A, G, and H of 10 CFR 71. Consequently, on two occasions, the licensee failed to comply with condition 9(c) of NRC CoC 9196 which required the package to be prepared for shipment and operated in accordance with the OPs of Chapter 7 of the application. Chapter 7, Section 7.1.5 of the application, in the first note, requires that if a standard 30-B cylinder is being transported, then ensure that the valve cover (or valve protector) is removed prior to shipment. The failure to remove the cylinder valve cover prior to shipment in the UX-30 overpack was identified as a violation of 10 CFR 71.17(a)(2) requirements ((VIO) 70-1113/2005-03-01: Failure to comply with the terms and conditions of NRC CoC No. 9196).

(2) Conclusions

The licensee's system for promptly reporting incidents and deficiencies to management and regulatory authorities was effective. Root cause determinations were performed in a prompt manner. Two examples of a violation were identified for inattentive action to certificate of compliance requirements.

4. Operator Training

a. Initial and Refresher Nuclear Criticality Safety (NCS), Radiological Safety and General Emergency

(1) Scope and Observations

Initial and refresher radiation worker training, NCS training, and general emergency training were reviewed by the inspector to assess the effectiveness of the licensee's training program. Training material, compared with the test content and test records, were reviewed to identify the level of worker knowledge. Several test examinations were reviewed to verify proper implementation of the training program and the knowledge level of the employees in the radiation safety area. The inspector discussed "lessons learned" information with the employees to determine if it was incorporated into their training program.

The inspector reviewed the general employee's fuel grounds nuclear safety "blue dot" training and the annual refresher "red bar" training to verify that they met the requirements listed in 10 CFR 19.12, "Instructions to Workers." The inspector determined that both the blue dot and red bar training were on computers and they were accessible to all new employees and radiation workers. The inspector reviewed the contents of the training and determined that the training was consistent with the potential radiation safety risk at the facility. In addition, the inspector reviewed the

examinations given to both new employees and radiation workers and determined that they were properly administered, and properly documented that the worker's knowledge level was consistent with the facility hazards. Annual nuclear safety refresher training for both criticality safety and radiation protection was implemented properly. The test indicated that worker safety knowledge was appropriate.

Lessons learned from events that occurred at the facility since the last inspection was added to the radiation worker training to improve worker safety. The lessons learned included information on process operational problems and any other changes at the facility. The inspector noted that the lessons learned appropriately and effectively communicated necessary improvements in worker safety.

(2) Conclusions

The licensee's training program for initial and refresher training in NCS, radiation protection and general emergency areas was effective. Training material and examinations were adequate to measure the knowledge level of the workers, and were current. Lessons learned from past facility events were appropriately captured in the refresher training to improve worker safety.

b. Operating Procedure and Facility Change Control Training

(1) Scope and Observations

Operating procedure training and facility change control training were reviewed to assess the licensee's training effectiveness of workers during normal operations and following process or facility changes.

The inspector reviewed several procedural changes associated with operations in the dry conversion process (DCP), ceramic and fuel bundle assembly areas of the fuel manufacturing operation (FMO) facility and discussed the changes with the process operators. The changes included both process and NCS changes. The operators were current with the existing operation and could identify the most recent changes to the operating procedure and nuclear safety requirements. The inspector discussed the training program with several operators and supervisors. The operators indicated that they were content with the training methods used and knowledgeable of their process operating requirements.

(2) Conclusions

Operating procedure and facility change control training was effective. Operators were knowledgeable of their operating processes and pending changes. Changes to nuclear material processing requirements were readily identified to the operators who had to acknowledge their understanding before processing operations could continue.

c. On-The-Job Training (F2.06)

(1) Scope and Observations

Quality training checklists (qual cards) were reviewed by the inspector to assess the effectiveness of the on-the-job training for new operators.

The inspector interviewed supervisors, team leaders and new operators in ceramics, fuel bundle assembly, and the support shops to verify that new operators had received on-the-job training. Each new operator (trainee) was assigned with an experienced operator who taught the trainee the use of the equipment, and reviewed the associated procedures. The supervisor or team leader certified the new operator with a qual card that was initialed and signed off by the experienced operator and the supervisor. The inspector determined from a review of on-the-job training records and interviews with licensees' representatives that new operators were adequately trained.

(2) Conclusions

Each new operator's on-the-job training was tracked by his/her immediate supervisor or team leader on a quality training checklist (qual card). Qual cards were maintained by the supervisor and reviewed quarterly with the new operators until they were fully certified.

5. Low Level Radioactive Waste Storage (IP 84900)

a. Scope and Observations

The low level radioactive waste (LLRW) storage management program was reviewed for adequacy of proper storage area, waste container integrity, and the safe shipment, processing, and disposal of LLRW. The waste tracking system was also reviewed for completeness and adequacy.

The inspector toured the radioactive material and waste storage areas and observed that the licensee had stored material containing recoverable uranium in five gallon canisters on storage pads, non-combustible material in metal containers, and combustible material in wooden incinerator boxes (to be incinerated on the site). The recoverable uranium material was stored in a locked fenced area with security cameras and motion detectors. From discussions with licensee representatives, observations and review of records, the inspector determined that the volume of radioactive waste and recoverable uranium canisters had decreased substantially since the last inspection. The licensee had shipped 1096 boxes of non-combustible waste and 313 boxes of incinerator reject boxes through the first quarter of 2005. In addition, the licensee burned approximately 500 boxes of combustible waste in calendar year (CY) 2004.

b. Conclusions

The waste storage management program was adequately implemented and provided the information needed to ensure proper storage, safe shipment and disposal of waste. Low-level radioactive waste and non-recoverable and recoverable scrap containers stored on the outside storage pads were in an acceptable condition to contain the licensed material.

6. Waste Management and Waste Generator Requirements (IPs 88035 and 84850)

a. Liquid Effluent Monitoring Results

(1) Scope and Observation

The inspector reviewed the licensee's results for liquid effluent monitoring to verify that releases were within the limits specified in 10 CFR Part 20 and license requirements.

The inspector reviewed the liquid effluent sampling results and quantities of liquid radioactive materials released for CY 2004. The review included the semiannual effluent release reports to the NRC for the first and second half of 2004. The review of these data is summarized in Table 2 below.

The data show an increasing trend in radioactivity levels in liquid effluent in CY 2004 compared to CY 2003 and 2002. The results show that the trend has almost doubled over the previous year. According to the licensee, the increasing trend may be attributed to the dredging of the aeration basin and the removal of vegetation from the north and south lagoons. In addition, the licensee indicated that an increase in the incineration of combustible boxes in 2004, which resulted in increased incinerator scrubber system discharges directly to the liquid waste treatment system, may also have been a contributing factor. The inspector verified that the average concentrations of uranium released were well below the most conservative uranium concentration specified in 10 CFR Part 20, Appendix B, Table 2.

Table 2: Liquid Effluent Summary (millicuries)

Year	Total Uranium Released (Millicuries)
2002	37.5
2003	36
2004	63.1

(2) Conclusions

The licensee adequately met the monitoring requirements and was well below the concentration limits specified in License SNM-1097 and 10 CFR Part 20 for liquid effluents.

b. Cleaning of the North and South Lagoons

(1) Scope and Observations

The inspector toured the north and south lagoons to determine the status of the cleaning and dredging of the aeration basin and the lagoons.

The licensee had removed the vegetational growth from both active lagoons, and drained and dredged the sludge from the bottom of the aeration basin. The material was allowed to dry in large socks and then transferred to a controlled warehouse (No. 3) for proper packaging. The material was packed in nylon double poly bags (lift liners) and properly labeled as hazardous material for shipment to a disposal site. The licensee planned to dredge the sludge and the accumulation of trace amounts of uranium from the bottom of the lagoons within the next weeks. The inspector did not identify any concerns in this area.

(2) Conclusions

The licensee removed the vegetational growth from the north and south lagoons, and dredged the aeration basin in an effort to reduce the amount of sludge and the accumulation of trace amounts of uranium from the bottom of the lagoons and the aeration basin. The vegetation and dredged sludge from the lagoons and the basin was stored in Warehouse No. 3 for proper packaging and shipment to a disposal site.

c. Incinerator Controls

(1) Scope and Observations

The inspector toured the incinerator facility to review the controls for burning combustible radioactive waste and the processing of the ash to recover uranium.

During this inspection, the incinerator was shut down due to repairs on the adjustable ram. The licensee was testing the ram to prepare the incinerator for combustible waste burning. In the CY 2004, the licensee had burned approximately 500 boxes of combustible waste compared to 100 boxes that were burned in year 2002 and again in year 2003. The inspector reviewed the licensee's process and procedures for incinerating combustible waste. The inspector determined that the licensee's controls for incineration included mass and uranium concentration (hold up). From a review of records and interviews with cognizant licensee representatives, the inspector determined that very little fly ash was found in the upper chamber and crossover pipe during each clean out. After every shut down of the incinerator, the licensee visually inspected the internal chambers and the nuclear critical safety engineers performed annual surveys. There were no concerns in this area.

(2) Conclusions

The licensee adequately met the requirements for incinerating combustible waste containing low concentrations of uranium. There was negligible ash holdup in the incinerator ventilation system.

7. **Exit Meeting**

The inspection results were summarized on June 17 and July 15, 2005, with licensee representatives. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes has been deleted from this report. No dissenting comments were received from the licensee.

During a teleconference on August 12, 2005, the inspector discussed with the licensee the additional example of the violation that occurred on May 11, 2005, for failure to comply with the terms and conditions of NRC CoC No. 9196. No dissenting comments were received from the licensee.

ATTACHMENT

7. LIST OF PERSONS CONTACTED

Licensee

K. Clark, Manager, Ceramics Operation²
R. Crate, Manager, Fuel Manufacturing Operations^{1,2}
T. Crawford, Environment, Engineer¹
D. Curley, Acting Manager, GNF Logistics & Environmental Projects¹
J. DeGolyer, NSE - Engineer¹
G. Dickman, Nuclear Material Control & Accounting Engineer¹
M. Dodds, Senior Criticality Safety Engineer^{1,2}
K. Ellis, Manager, Logistics¹
R. Foleck, Program Manager, Facility Licensing^{1,2}
N. Holmes, Manager, Global Supply Chain²
H. Knight, Manager, FCO Building, Emergency Director²
G. Luft, Lead, Environmental Projects²
R. Martyn, Manager, Material Control, and Accounting²
P. Mathur, Environment, Engineer¹
C. Monetta, Manager, Environment, Health & Safety - GENE¹
S. Murray, Manager, Outage Services, EHS¹
P. Ollis, Manager, Emergency Preparedness and Site Security^{1,2}
G. Palmer, NFS Logistics Engineer^{1,2}
L. Paulson, Manager, Nuclear Safety^{1,2}
J. Reynolds, Manager, GNF-A Quality¹
J. Robinson, GNF-A Logistics Team Leader
E. Saito, Manager, Environment, Health & Safety - GNF
C. Savage, FMO Shop Support^{1,2}
W. Scott, QA Lead Auditor²
G. Smith, Team Leader, FMO Technical Resources^{1,2}
S. Smith, FMO Maintenance Team Leader²
S. Smith, Radiation Safety Monitor^{1,2}
D. Snell, Quality Project Manager, Nuclear Containers²
H. Strickler, Manager, Site Environment, Health & Safety¹
C. Vaughan, Manager, Facility Licensing¹

Other licensee employees contacted included engineers, technicians, and office personnel.

Nuclear Regulatory Commission

D. Collins, Director, Division of Fuel Facility Inspection¹

¹Attended exit meeting on June 17, 2005

²Attended exit meeting on July 15, 2005

2. INSPECTION PROCEDURES (IP) USED

IP 84850	Waste Generator Requirements
IP 84900	Low Level Rad Waste Storage
IP 86740	Transportation
IP 88005	Management and Organization Controls
IP 88035	Waste Management

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item</u>	<u>Status</u>	<u>Description</u>
70-1113/2005-03-01	Open	VIO: Failure to comply with the terms and conditions of NRC CoC No. 9196

4. LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
ASL	Approved Supplier List
CAR	Corrective Action Report (or Request)
CFR	Code of Federal Regulations
CNEIC	China Nuclear Energy Industry Corporation
CoC	Certificate of Compliance (or Conformance)
CY	calendar year
DCP	Dry Conversion Process
DOT	Department of Transportation
EH&S	Environmental Health and Safety
FBS	Fuel Business System
FMO	Fuel Manufacturing Operations
GNF-A	Global Nuclear Fuel - Americas
IAEA	International Atomic Energy Agency
IN	Information Notice
IP	Inspection Procedures
LLRW	Low Level Radioactive Waste
NCS	Nuclear Criticality Safety
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
PRI	Procedure Responsibilities and Instructions
QA	Quality Assurance
QC	Quality Control
SNM	Special Nuclear Material
UF ₆	Uranium Hexafluoride
UIR	Unusual Incident Report
UO ₂	Uranium Dioxide
USEC	United States Enrichment Corporation
VIO	Violation
WSRC	Wilmington Safety Review Committee