



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

September 7, 2001

Global Nuclear Fuel - Americas, L.L.C.  
ATTN: Mr. J. Fuller, Manager  
GNF-A Fuel Manufacturing  
P. O. Box 780  
Wilmington, NC 28402

SUBJECT: NRC INSPECTION REPORT NO. 70-1113/2001-04

Dear Mr. Fuller:

This refers to the inspections conducted on July 23-27, 2001 and August 6-10, 2001, at the Wilmington facility. The enclosed report presents the results of these inspections.

During these inspection periods, your conduct of activities at the Wilmington facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and careful radiological work controls.

Within the scope of the inspection, violations or deviations were not identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room 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/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

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

Sincerely,

**/RA/**

Edward J. McAlpine, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

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

Enclosure: NRC Inspection Report

cc w/encl: (See Page 2)

GNF-A

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cc w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1113

License No.: SNM-1097

Report No.: 70-1113/2001-04

Licensee: Global Nuclear Fuel - Americas, LLC

Facility: General Electric

Location: Wilmington, NC 28402

Dates: July 23 - 27, 2001  
August 6 - 10, 2001

Inspector: D. Ayres, Senior Fuel Facility Inspector, RII  
M. Crespo, Fuel Facility Inspector, RII  
W. Gloersen, Senior Fuel Facility Inspector, RII  
A. Gooden, Health Physicist, RII

Approved By: E. McAlpine, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

Enclosure

## EXECUTIVE SUMMARY

### Global Nuclear Fuel - Americas NRC Inspection Report 70-1113/2001-04

This routine unannounced inspection involved the observation and evaluation of the licensee's programs for emergency preparedness, waste management, transportation of radioactive materials, plant operations, and fire safety. The inspection results disclosed the following aspects of the programs:

#### Emergency Preparedness

- The independent audit of the Radiological Contingency and Emergency Plan (RC&EP) was adequate in determining the status of the RC&EP implementation and program maintenance (Paragraph 2.a).
- Procedures governing evacuation during hazardous materials release and severe weather had improved and continue to adequately implement key aspects of the RC&EP (Paragraph 2.b).
- Use of group pagers improved notification and activation timeliness of the emergency response organization (ERO) during back shifts (Paragraph 2.c).
- Offsite support groups were contacted in accordance with commitments in the RC&EP. However, approximately three years had elapsed since the last review and discussion of the site specific plan developed by county and licensee personnel (Paragraph 2.d).
- Drills and exercises were conducted in accordance with license commitment. Scenarios provided adequate challenges to both onsite and offsite organizations for demonstrating the level of preparedness and capability to handle various site incidents (Paragraph 2.e).
- Testing and surveillance was performed at the required intervals for randomly selected equipment, and the meteorological system (Paragraph 2.f).

#### Waste Management

- Although the total waste container population had increased from the previous 12 months, the licensee had made arrangements to reduce the quantity of waste stored onsite in the near future (Paragraph 3.a).
- The non-recoverable waste and recoverable scrap containers stored on the outside storage pads were in an acceptable condition to contain the licensed material (Paragraph 3.a).
- The former Northwest CaF<sub>2</sub> basin storage area had been successfully decommissioned (Paragraph 3.a).
- The Incinerator Criticality Accountability Management System provided incinerator operators with a reliable technology to process combustible waste (Paragraph 3.b).

### Transportation

- The preparation and delivery of completed packages was acceptable (Paragraph 4.a).
- The process to perform acceptance testing inspections of each New Powder Containers before the first use was thorough and detailed. The management of the records pertaining to package fabrication and certifications was well organized (Paragraph 4.b).
- Transportation audits were conducted in accordance with the requirements specified in 10 CFR 71.137 and did not find any non-conforming conditions nor safety-related issues (Paragraph 4.c).
- The licensing basis records pertaining to the New Powder Container (NRC CoC 9294) were well maintained and easily retrievable (Paragraph 4.d).
- The identification and correction of an incident that pertained to a failure to fully implement the revisions to a USDOT shipping container certificate was timely and acceptable (Paragraph 4.e).

### Plant Operations

- Operations were conducted to ensure safety and the corrective actions program was appropriately implemented. The control of contractors performing work under RWPs continued to warrant increased attention from the licensee (Paragraph 5.a).
- The licensee used the appropriate configuration controls required by their procedures to perform the radwaste system design changes and the UF<sub>6</sub> leak detector change. (Paragraph 5.b).
- The licensee used control methods and instruments that prevented a process control fault condition from resulting in multiple safety system failures (Paragraph 5.c).

### Fire Safety

- The manufacturing processes, equipment, and material storage areas reviewed were being operated in accordance with fire safety requirements (Paragraph 6.a).
- Fire extinguishers observed throughout the plant were being adequately maintained to ensure proper condition for their operation (Paragraph 6.b).

### 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 periods. Powder, pellet, and fuel assembly production proceeded at normal rates with a portion of the powder production area shutdown for maintenance activities. Relocation of the radwaste processing system was continuing. There were no unusual plant operational occurrences during the onsite inspections.

### **2. Emergency Preparedness (88050) (F3)**

#### a. Review of Program Changes (F3.01)

##### (1) Inspection Scope

Changes to the licensee's Radiological Contingency and Emergency Plan (RC&EP), procedures, organization, facilities, and equipment were reviewed to assess the impact on the effectiveness of the program. The adequacy of the emergency preparedness audit required by Section 7.5 of the RC&EP was also evaluated.

##### (2) Observations and Findings

No reduction in program effectiveness resulted from any of the changes to the RC&EP. The independent audit performed during July 2000 was a compliance based audit to verify the content and implementation of the RC&EP. Items identified for corrective actions during the independent audit were tracked via the site-wide regulatory tracking system.

##### (3) Conclusions

Based on documentation reviews and interviews with members of the licensee's staff, the changes to the RC&EP since the last inspection did not appear to reduce program effectiveness, and the audit was adequate in determining the status of the RC&EP implementation and program maintenance.

#### b. Implementing Procedures (F3.02)

##### (1) Inspection Scope

Select RC&EP implementing procedures were reviewed to determine if procedures were revised since the last inspection. The inspector also reviewed the adequacy of procedures in the implementation of the RC&EP.

##### (2) Observations and Findings

Since the last inspection improvements were noted in the licensee's procedures for evacuation during hazardous materials release and severe weather. An appendix was added to the RC&EP listing several potential locations for staging personnel due to an evacuation. Emergency procedures adequately implemented key aspects of the RC&EP.

(3) Conclusions

Procedures governing evacuation during hazardous materials release and severe weather had improved and continue to adequately implement key aspects of the RC&EP.

c. Training and Staffing of Emergency Organization (F3.03)

(1) Inspection Scope

Determine if emergency response training was provided to key emergency response organization (ERO) personnel in accordance with Section 7.2 of the RC&EP. Review the adequacy of the licensee's notification system for activation and staffing of the Emergency Control Center (ECC) during off-hours.

(2) Observations and Findings

The inspector reviewed training documentation for several individuals assigned as primary or alternate to key positions in the ERO. The individuals specified that the licensee considered training as current and up to date if the ERO personnel acknowledged having reviewed the RC&EP and the current changes to the RC&EP. The inspector noted that this approach was informal with no mechanism to verify if personnel actually read and comprehended the changes. In addition to records review, walkthroughs were conducted with two individuals assigned as alternate Emergency Directors, and security personnel assigned responsibility for notification and activation of the ERO were also interviewed. No significant problems were identified. Alternate Emergency Directors were familiar with roles and responsibilities during an incident, and scenarios were correctly classified and appropriate protective actions recommended.

Based on interviews and walkthroughs, the inspector noted and discussed with the licensee as a program improvement, the incorporation of performance based training to augment RC&EP required training; and the provision of periodic site tours to security personnel as an asset to personnel's site familiarity during emergency communications.

Documentation of periodic tests of the administrative and physical system for notifying and activating the ERO disclosed improvements in timeliness since the last inspection.

(3) Conclusions

The annual emergency response retraining did not require an exam or demonstration of practical knowledge to indicate that the material was read and understood. The current practice for retraining was very informal. The alpha-numeric group pager resulted in improvements to the timely activation and notification of the ERO during back shifts.

d. Offsite Support (F3.04)

(1) Inspection Scope

Licensee activities in the areas of training, agreements, and exercises were reviewed to determine if the licensee was periodically involving offsite support groups.

(2) Observations and Findings

Documentation and interviews disclosed that the licensee was periodically contacting the offsite support groups for training, agreement updates, and participation in exercises. An area for improvement noted was the licensee's coordination with New Hanover County Emergency Management Agency in the review and updating of a jointly developed site specific Plan. According to documentation and an interview with the offsite support contact, approximately three years (1998) had elapsed since the last review and update was done.

(3) Conclusions

Based on documentation and interviews, the licensee was periodically contacting the offsite support groups in accordance with commitments in the RC&EP. However, approximately three years had elapsed since the last review and discussion of the site specific plan developed by county and licensee personnel.

e. Drills and Exercises (F3.05)

(1) Inspection Scope

Section 7.3 of the RC&EP required a biennial exercise be performed involving the onsite ERO and offsite support agencies. This area was reviewed for adequacy in testing both onsite and offsite emergency response capability.

(2) Observations and Findings

The last biennial exercise was conducted on November 16, 1999. The next scheduled exercise to fulfill the biennial requirements in Section 7.3.1 of the Plan was scheduled for November 2001. Exercise scenarios are submitted to NRC in advance of the exercise date for review and determination as to the adequacy of the scenario details in testing the capability of emergency response personnel. An offsite contact informed the inspectors that during a minor fire incident, with no radiological consequences, the onsite and offsite fire brigade worked very well in responding to the fire.

(3) Conclusions

The licensee was conducting drills and exercises in accordance with license commitment. Scenarios provided adequate challenges to both onsite and offsite organizations for demonstrating the level of preparedness and capability to handle various site incidents.

f. Emergency Equipment and Facilities (F3.06)

(1) Inspection Scope

The Emergency Control Center (ECC) and equipment were inspected to determine whether the licensee's facilities, emergency response equipment, instrumentation, and supplies were maintained in a state of operational readiness.

(2) Observations and Findings

An inventory and operability check was performed of survey instruments, dosimeters, accountability card readers, staging area phones, and the meteorological system. Survey instruments had current calibration stickers, and selected instruments responded properly to a radioactive source check. The meteorological system was operational and provided the licensee with necessary data for assessing areas of impact following an airborne release of material. Regarding staging area equipment and supplies, at each staging location, the Staging Supervisor's position book was outdated and required immediate updating, which was later performed. In addition to operability checks, documentation was reviewed which showed that periodic testing and surveillance of ECC equipment was performed at the required intervals.

(3) Conclusions

Equipment testing and surveillance was performed at the required intervals for randomly selected equipment, and the meteorological system.

g. Follow up On Previously Identified Issues (F3.07)

(1) Inspection Scope

The inspector reviewed the actions taken by the licensee to correct a previous issue to verify that the corrective actions were adequate and had been completed.

(2) Observations and Findings

Item IFI 70-1113/99-06-01 was reviewed. The item was to verify the corrective actions to the items identified during the biennial exercise.

(3) Conclusion

This item remains open for further review during the biennial exercise scheduled for November 2001.

**3. Waste Management (84850 and 84900) (R3)**a. On Site Waste Storage (R3.05)(1) Inspection Scope

The licensee's storage of low-level radioactive waste (LLRW) was reviewed, including management controls, adequacy of the storage area, waste container integrity, waste reduction, and the status of the calcium fluoride relocation project.

(2) Observations and Findings

The inspectors discussed with the licensee the progress in reducing quantities of solid waste stored in the outside waste storage areas or "pads". The inspectors observed that the waste was stored outside in three types of containers: (1) five gallon canisters; (2) wooden incinerator boxes; and (3) lift liners (or "super sacks"). The five gallon canisters contained various forms of scrap (ash, recoverable scrap, and residue waste). The inspectors compared the number of waste containers on the storage pads in August 2001 to the previous year to assess performance in reducing the quantities of onsite waste storage.

## Number of Cans Stored on the Outside Pads

<u>Scrap Product</u>	<u>08/14/00</u>	<u>08/08/01</u>	<u>Change</u>
Ash	5,504	12,842	+ 133%
Residue	1,411	2,594	+ 84%
Recoverable	10,336	5,082	- 51%
Total	17,251	20,518	+ 19%

## Number of Boxes Stored on the Outside Pads

<u>Wooden Box Product</u>	<u>09/11/00</u>	<u>08/06/01</u>	<u>Change</u>
Non-Combustible	935	1,025	+ 10%
Combustible	824	919	+ 12%
Total	1,759	1,944	+ 11%

It should be noted that the percent increase takes into account the additional waste generated by the licensee's fuel manufacturing process. It should also be noted that the licensee's incinerator was out of service from approximately April - May 2001 to upgrade the accountability management system. The licensee had plans in place to ship the ash

(generated from incinerator operations) and recoverable scrap containers to a foreign facility for uranium recovery and ship the containers of residue and non-combustible waste to Envirocare for burial.

In addition, the inspectors toured the waste storage pads. As noted in previous inspections, the pads consisted of several graveled surfaces each surrounded by a fence. Although the fences were not locked, all of the waste was located within the controlled area of the facility. The waste containers were placed directly on the graveled surface. The inspectors observed that the waste containers were in an acceptable condition to temporarily contain the licensed material.

In addition, the inspector observed the calcium fluoride ( $\text{CaF}_2$ ) relocation activities for the East and West fluoride lagoons. At the time of this inspection, the licensee had completed the relocation of the  $\text{CaF}_2$ . Due to limited space in the  $\text{CaF}_2$  warehouse, the licensee stored the remainder of the excavated  $\text{CaF}_2$  into 650 super sacks (or lift liners). The volume of each lift liner was approximately 10 cubic yards and each lift liner was filled to approximately 70% of its capacity. The licensee had established an agreement with Envirocare to begin shipping the lift liners containing the  $\text{CaF}_2$  in the Fall of 2001.

The inspectors also toured the former Northwest  $\text{CaF}_2$  basin storage area. It was noted that the licensee had successfully removed the source term from the ground, performed a final status survey, received a release letter from the NRC on April 10, 2000, backfilled the excavated pit, and planted long-leaf pine trees in the Fall of 2000.

(3) Conclusion

Although the total population of waste containers had increased from the previous 12 months due to normal operations and modifications to the incinerator's accountability management system, the licensee had made arrangements to ship the recoverable scrap to an offsite uranium recovery facility and ship the non-recoverable waste to Envirocare. The non-recoverable waste and recoverable scrap containers stored on the outside storage pads were in an acceptable condition to contain the licensed material. The former Northwest  $\text{CaF}_2$  basin storage area had been successfully decommissioned.

b. Process Changes

(1) Inspection Scope

The inspectors reviewed the changes made to the onsite incinerator's accountability management system.

(2) Observations and Findings

The inspectors noted that the licensee had designed, developed, tested, and installed a personal computer (PC) based Incinerator Criticality Accountability Management System (ICAMS) during 2001. The inspector observed and walked down the ICAMS with licensee representatives. At the time of the walk-down, the system performed as designed. It was noted that the ICAMS provided incinerator operators with a modern,

safer, and reliable technology to in-process combustible waste materials contained in wooden incinerator boxes, that basically prohibited the introduction of a waste box that contained quantities of uranium that exceeded the incinerator's administrative limit. Designing, developing, testing and installing the ICAMS required several months to complete. The inspector noted a strong commitment from the licensee's management team that provided the necessary resources, including shutting down the incinerator for several weeks to complete the installation and testing of the ICAMS.

(3) Conclusion

The ICAMS provided incinerator operators with a reliable and safer technology to in-process combustible waste materials before incineration. The licensee's management team provided a strong commitment to provide the necessary resources, including shutting down the incinerator for several weeks to complete the installation and testing of the ICAMS.

c. Waste Shipping

(1) Inspection Scope

The inspectors reviewed the licensee's program for preparing waste shipping manifests as it pertained to the requirements of 10 CFR 20.2006 and Appendix G to 10 CFR Part 20.

(2) Observations and Findings

From a review of selected records for solid waste disposals, the inspectors noted that the licensee had not shipped noncombustible residues, soil mixture waste and debris items or  $\text{CaF}_2$  to a licensed waste burial facility (Envirocare of Utah) during the period of January to August 2001. The inspectors did discuss with the licensee the requirements of 10 CFR Part 20, Appendix G, Subsection III.A.3, which requires the conduct of a quality assurance program to assure compliance with §61.55 and §61.56, including management evaluation of the audits.

(3) Conclusion

The licensee had not shipped waste items to a disposal facility from January to August 10, 2001.

**4. Transportation (86740) (R4)**

The inspectors 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, quality control (QC) activities, and record completeness conducted in accordance with 10 CFR Part 71, and 49 CFR Parts 171-178 were reviewed.

10 CFR 71.5(a) requires that licensees who transport licensed material outside the confines of its plant or other place of use, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations appropriate to the mode of transport of the DOT in 49 CFR Parts 170 through 189.

a. Shipping Procedures and Records of Completed Packages for Shipment

(1) Inspection Scope

The inspectors examined the licensee's written procedures and shipment records related to the preparation and delivery of completed packages for shipment of fissile material.

(2) Observations and Findings

The inspectors verified that the licensee had acceptable procedures for the preparation of shipping packages and delivery of the packages to the carrier for shipment. The inspectors noted that there were no significant changes to the procedures since the last inspection of this program area.

During the onsite inspection, licensee transportation activities regarding shipments of unirradiated fuel, uranium dioxide ( $\text{UO}_2$ ) pellets, and uranium hexafluoride ( $\text{UF}_6$ ) heels were reviewed. Selected records covering the period January 2001 to August 2001 for those consignments were reviewed in detail. The inspector reviewed the documentation used, and subsequently maintained in the licensee's records for each radioactive material shipment, including, the Bill of Lading, Radioactive Material Shipment Record, Vehicle Inspection Report, Receipt and Loading Verification Checklist, Packing List (Fuel Assemblies/Component Assemblies), Fuel Shipment Information Form, and Container Log Sheet. The inspectors noted that the shipping records were complete and the information supplied on the shipping papers was appropriate. The inspector noted that for a shipment of  $\text{UF}_6$  cylinders containing "heels" to US Ecology (USEC) on July 31, 2001, the shipping papers did not indicate the activity units of the package. The inspectors verified that all of the other required descriptions on the shipping papers were correct. This error had minimal safety significance and appeared to be isolated.

(3) Conclusions

The licensee's performance in the preparation and delivery of completed radioactive material packages was acceptable.

b. Procurement and Selection of Packagings

(1) Inspection Scope

The inspectors reviewed the licensee's procurement and acceptance testing process for the New Powder Container (NPC) which was recently approved by the NRC (Certificate of Compliance (CoC) number 9294).

(2) Observations and Findings

The inspector observed that the licensee had received the first four NPCs from the vendor (PacTec) in July 2001. The licensee had planned to order a fleet of approximately 350 NPCs. The inspector reviewed the licensee's process for the acceptance testing of the NPC. Condition 6(b) of NRC CoC 9294 specified that each packaging must be acceptance tested and maintained in accordance with the Acceptance Tests and Maintenance Program in Chapter 8 of the Application. The inspector verified that the licensee had established a process to perform inspections of each NPC before the first use as required by 10 CFR 71.85. At the time of this inspection, the licensee was in the process of performing the required acceptance tests on the four NPCs. The inspector reviewed the GNF-A NPC Quality Plan (non-dated) which consisted of a compilation of GNF-A approved QA/QC procedures for the NPC, 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 NPC 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 inspectors verified, with regard to reporting defects and noncompliances, that the NPC procurement documents included the statement that the provisions of 10 CFR 21 apply 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 inspectors also reviewed the Certificates of Conformance from the vendor (PacTec) for NPC serial numbers 001 and 002. The certificates specified that the fabrication, inspection, and acceptance of both the outer confinement assembly (OCA) and inner containment cannister assembly (ICCA) of the NPC had been manufactured in strict accordance with the GNF-A purchase order, except for four equipment configuration deviations. The inspector discussed the four equipment deviations with the licensee's quality engineering representatives who indicated that the deviations were administrative and not safety-related. The inspector observed that the licensee was maintaining a file for each NPC that included the acceptance test results and certificates of conformance. The inspector noted that the licensee's procurement documents did not contain a written statement from the vendor certifying that the NPC package was fabricated in accordance with an NRC-approved QA program. At the time of this inspection, the licensee contacted the vendor to request that the certification statement be added to the Certificates of Conformance.

(3) Conclusions

The licensee's process to perform inspections of each NPC before the first use was thorough and detailed. The management of the records pertaining to package fabrication and certifications was well organized.

c. Program Audits

(1) Inspection Scope

The inspectors reviewed the most recent audits of the licensee's transport activities performed since the last inspection.

(2) Observations and Findings

10 CFR 71.137 requires that the licensee carry out a comprehensive system of planned and periodic audits, to verify compliance with all aspects of the quality assurance program, and to determine the effectiveness of the program. The audits must be performed in accordance with written procedures or checklists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audited results must be documented and reviewed by management having responsibility in the area audited. Follow-up action, including re-audit of deficient areas, must be taken where indicated.

The inspectors observed that two audits in the area of shipping and transportation had been performed since the last inspection. A third audit covering certain aspects of the shipping program was still in progress at the time of this inspection. The inspectors observed that the licensee did not necessarily perform a separate audit in the area of shipping and transportation, but included certain aspects of the shipping program over several audits performed during the year. Specifically, the inspector reviewed Audit Nos. 2000-04 (November 30, 2000) and 2001-01 (dated April 6, 2001). The inspectors verified that the licensee's identified audit findings were being tracked and resolved by establishing corrective action commitment dates. The inspectors noted that the audit findings in the reports noted above were administrative and did not pertain to any non-conforming conditions or safety-related issues of a shipping package. The inspectors verified that the audits were performed in accordance with written procedures or checklists by appropriately trained personnel not having direct responsibilities in the areas being audited.

(3) Conclusions

The licensee's audits were conducted in accordance with the requirements specified in 10 CFR 71.137. The audit findings were administrative and did not pertain to any non-conforming conditions nor safety-related issues of a shipping package.

d. Certificates of Compliance

(1) Inspection Scope

The inspectors reviewed the licensee's records pertaining to selected NRC Certificates of Compliance (CoC) and verified that the licensee was an authorized user of the applicable NRC certified packages.

(2) Observations and Findings

The inspectors verified that the licensee was a registered user of the NRC CoC 9294, USA/9294/AF, Model No. NPC, which was the New Powder Container, that was recently approved by the NRC on February 23, 2001. The inspectors verified that the licensee maintained the most recent revision of CoC No. 9294 (Revision 0) and the drawings and other documents relating to the use and maintenance of the packaging, and to the actions to be taken prior to shipment, in accordance with 10 CFR 71.12(c)(1) requirements.

(3) Conclusions

The licensee's records pertaining to NRC CoC 9294 were well maintained and easily retrievable.

e. Review of Transportation Unusual Incidents

(1) Inspection Scope

The inspectors reviewed unusual incident reports (UIRs) and 30 day reports pursuant to 10 CFR 71.95 and 73.71(a)(4) as they pertained to transportation of radioactive materials events. The inspectors reviewed the events since the last inspection of this program area with licensee representatives and discussed the appropriate corrective actions that were taken.

(2) Observations and Findings

The inspectors reviewed a 30 day report dated May 29, 2001, that was made in accordance with 10 CFR 71.95(c). The report pertained to a condition in a US Department of Transportation (USDOT) shipping container certificate that was not followed. On July 19, 2000, the USDOT revised the Competent Authority Certification for USA/0220/AF-85 for the BU-J Shipping package to assure conformity with a change to the validation issued by the French Competent Authority. The licensee identified the problem on April 30, 2001, and a new integrated shipping logistics program was initiated as a result of the increasing complexity of international shipments. The resolution and solution to prevent further failure to implement the requirements of a revised USDOT shipping container certificate was acceptable. The inspector found this incident to be of minimal safety significance. Therefore, no further NRC follow-up to this event from a shipping and transportation perspective was warranted.

(3) Conclusions

The licensee's identification and correction of an incident that pertained to a failure to fully implement revisions to a USDOT shipping container certificate was acceptable to prevent recurrence.

**5. Plant Operations (88020 & 2600/003) (O3)**

a. Conduct of Operations (O3.01)  
Housekeeping (O3.04)

(1) Inspection Scope

The conduct of operations throughout the facility was reviewed to verify that operations were being performed per approved procedures and posted instructions, and that the housekeeping of the facility was adequate to ensure safety.

(2) Observations and Findings

The inspectors toured the process areas of the facility and noticed no misplaced special nuclear material nor improperly labeled Radiation Work Permit (RWP) areas. The inspectors noted that the operations observed were properly conducted. The relocation of the radwaste process equipment from the Uranium Recovery area was also observed to be in progress.

The inspectors reviewed the Unusual Incident Reports (UIRs) over the past few months. One of the UIRs involved a Mundy contractor not complying with an RWP by not wearing the required respirator. This UIR was generated just 6 weeks after the licensee had been issued VIO 01-03-02 due to a similar incident (the incident was one of three issues cited for the violation). The inspectors observed that the licensee's discovery of the RWP non-compliance was a result of the implementation of the corrective actions for VIO 01-03-02. Those corrective actions included the radiation protection staff making more frequent observations of the work area to ensure compliance with all RWP requirements. The inspectors commended the licensee for detecting the non-compliance with the RWP, but explained that further occurrences would indicate a weakness in their corrective actions for training contractors on the importance of following RWP requirements.

To evaluate the licensee's corrective actions program, the inspectors followed up on the UIR of the powder spill in the MRA area that occurred in May 2001. The UIR referred to a Higher Level Critique (HLC) for an in-depth analysis of the incident. The HLC contained a detailed description of the incident and an extensive list of corrective actions. The inspectors verified the corrective actions that were complete by reviewing the detailed investigation report and the postings audit of the area. One corrective action, the review of the ISA of the area, had still yet to be done but was on the licensee's agenda. The inspectors found that the licensee was addressing their corrective actions appropriately.

(3) Conclusions

The licensee was conducting operations properly to ensure safety and had appropriately implemented their corrective actions program. The control of contractors performing work under RWPs continued to warrant increased attention from the licensee.

b. Facility Modifications and Configuration Controls (O3.02)

(1) Inspection Scope

The licensee's configuration control system for recent facility modifications was reviewed to verify that any safety significant modifications were properly reviewed, approved, and documented.

(2) Observations and Findings

The inspectors were briefed by the licensee on changes to the radwaste processing system that will be relocated from the Uranium Recovery area. The inspectors reviewed the work order approvals for the designs of this system and verified that the appropriate configuration controls for new or modified processes were being followed. The inspectors also obtained the current drawing for the kilns and the vaporizers located in the DCP area to verify that the drawing accurately depicted the safety significant components present in the plant. The inspectors noticed discrepancies between with the UF<sub>6</sub> leak detectors at the vaporizers in the process and those illustrated in the drawings. The inspectors reviewed work orders and interviewed the lead engineer for the project, and found that the project was still open. The inspectors then verified that the discrepancies were due to ongoing modifications to the UF<sub>6</sub> leak detectors that were properly authorized. The inspectors also observed that the licensee's Configuration Management program ensured projects that run into large delays were kept active until finished. The inspectors observed that the project manager was contacted every 90 days to update the project's status or close the project out. The inspectors also noted that once a project was approved, "redlined" drawings were created to indicate the process changes to be performed. Once the changes were completed, the "redline" drawings were converted into permanent drawings based on the final as-built configuration. The "redlined" drawings were controlled so that any subsequent projects for that process area would be based on the "redlined" drawings. Thus, each project manager wanting to make a change to a process area would know what changes to that area had been previously approved, but not yet installed. This kept the project manager informed on previously approved changes that could affect his/her project.

(3) Conclusions

The licensee used the appropriate configuration controls required by their procedures to perform the radwaste system design changes and the UF<sub>6</sub> leak detector change. The system for updating the project status every 90 days and control of the "redlined" drawings helped ensure configuration control when multiple simultaneous projects were being performed on an area.

c. Implementation of Process Safety Controls (O3.03)

(1) Inspection Scope

The licensee's use of Programmable Logic Controllers (PLC) was reviewed to verify that a fault condition would not result in the loss of multiple safety controls.

(2) Observations and Findings

The inspectors conducted interviews with licensee concerning the effect of a PLC fault condition on process safety controls. The inspectors found that a common mode failure of safety controls due to a PLC fault was unlikely due to several controls inherent in the control system. First, the licensee used a Digital Control System (DCS) instead of a PLC for its process control system. Secondly, the DCS had a "watchdog" program that ensured the default condition output was zero every few seconds. This program ensured that any control system upsets resulted in the proper "fail-safe" process conditions.

(3) Conclusions

The licensee used control methods and instruments that prevented a process control fault condition from resulting in multiple safety system failures.

d. Follow up on Previously Identified Issues (O3.05)

(1) Inspection Scope

The inspectors followed up on open item number IFI 2001-01-01, which concerned the licensee's review of the computer logic governing the release of dry scrap recycle material into the moderation restricted area (MRA).

(2) Observations and Findings

Open item number IFI 2001-01-01 was generated due to a computer logic error that occurred in the gad shop that allowed unanalyzed material to enter an MRA. The inspectors questioned the licensee as to whether this incident could occur in the Gadolinium Shop. The licensee reported that software tests were conducted to verify that no such errors could occur. Also, the moisture limit for the transfer of material for the area was made more restrictive by reducing the allowable concentration of the samples from 5,000 ppm to 4,000 ppm, which were required before transfers. The inspectors noted that with these controls in place, accidental transfers of unanalyzed uranium powder were unlikely in the dry scrap recycle area. This item was closed.

(3) Conclusions

Open item number IFI 2001-01-01 was appropriately addressed by verifying with the licensee that the logic error could not occur in the dry scrap recycle process that would allow the transfer of unanalyzed material into the MRA.

**6. Fire Safety (88055) (O4)****a. Fire Safety of Processes, Equipment, and Storage Areas (O4.04)****(1) Inspection Scope**

The manufacturing processes, equipment, and material storage areas were reviewed to verify they were being operated in accordance with fire safety requirements.

**(2) Observations and Findings**

The inspector viewed the operation of the sintering furnaces using hydrogen gas. The inspector observed that the fire safety systems on each furnace was properly operating and flame sensors were properly positioned in each hydrogen burn-off stack. The inspector observed that natural gas usage through the process areas was being adequately controlled. The inspector observed that combustible liquids were being adequately stored throughout the plant site. The inspector observed that bulk chemical storage areas and other fire-sensitive areas had no significant accumulations of combustible materials.

**(3) Conclusion**

The manufacturing processes, equipment, and material storage areas reviewed were being operated in accordance with fire safety requirements.

**b. Fire Protection Systems (O4.05)****(1) Inspection Scope**

Certain fire protection systems were examined to verify they were being maintained in proper condition for use.

**(2) Observations and Findings**

The inspector observed numerous portable fire extinguishers throughout the plant site. The inspector found that all fire extinguishers observed had been tested within the proper frequency. The inspector also observed the storage of fire extinguishers with regard to NRC Information Notice (IN) 2001-04 concerning the explosion of a fire extinguisher in the Netherlands that resulted in a fatality. The inspector observed no fire extinguishers being stored such that corrosion would develop to cause a failure of the extinguisher integrity.

**(3) Conclusions**

Fire extinguishers observed throughout the plant were being adequately maintained to ensure proper condition for their operation.

**7. Exit Meetings**

The inspection scope and results were summarized on July 27, 2001 and August 10, 2001, with those persons indicated in the Attachment. 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.

## ATTACHMENT

### LIST OF PERSONS CONTACTED

#### Licensee

- \* D. Barbour, Team Leader, Radiation Protection
- \* # D. Brown, Team Leader, Environmental Programs
- \* # P. Godwin, Emergency Response Coordinator and Site Fire Chief
- # H. Knight, Manager, Emergency Preparedness and Training
- \* # A. Mabry, Program Manager, Radiation Safety
- # C. Monetta, Manager, GNF-A, Environmental Health and Safety
- # L. Paulson, Manager, Nuclear Safety
- # R. Pace, Manager, Environmental Programs
- \* H. Strickler, Manager, Site Environmental Health and Safety
- \* # C. Vaughan, Manager, Facility Licensing

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

\*Denotes those present at the exit meeting on July 27, 2001.

#Denotes those present at the exit meeting on August 10, 2001.

#### Other Organizations

- B. Bisset, Director, Emergency Response, New Hanover Regional Medical Center
- D. Summers, Director, Emergency Management New Hanover County

### INSPECTION PROCEDURES USED

- IP 88050      Emergency Preparedness
- IP 84850      Radioactive Waste Management (10 CFR Parts 20 and 61)
- IP 84900      Low-Level Radioactive Waste Storage
- IP 86740      Inspection of Transportation Activities
- IP 88020      Plant Operations
- IP 88055      Fire Safety
- TI 2600/003   Operational Safety Review

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

70-1113/01-01-01	IFI	Verify that logic error could not occur in the Gadolinium shop that would allow the transfer of high moisture material into the MRA (Paragraph 5.e).
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Discussed

70-1113/99-06-07	IFI	Verify the corrective actions to the items identified during the biennial exercise (Paragraph 2.g).
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List Of Acronyms Used

CaF <sub>2</sub>	Calcium Fluoride
CFR	Code of Federal Regulation
CoC	Certificate of Compliance
DCP	Dry Conversion Process
DOT	Department of Transportation
ECC	Emergency Control Center
EP	Emergency Procedures
ERO	Emergency Response Organization
FMO	Fuel Manufacturing Operations
GNF-A	Global Nuclear Fuels-Americas
HLC	High Level Critique
ICAMS	Incinerator Criticality Accountability Management System
ICCA	Inner Containment Cannister Assembly
IFI	Inspector Follow up Item
IP	Inspection Procedure
IR	Inspection Report
LLRW	Low Level Radioactive Waste
MRA	Moderation Restricted Area
NPC	New Powder Container
NRC	Nuclear Regulatory Commission
OCA	Outer Confinement Assembly
OP	Operating Procedure
PacTec	Packaging Technologies
PC	Personal Computer
QA	Quality Assurance
QATS	Quality at the Source
QC	Quality Control
RC&EP	Radiological Contingency and Emergency Plan
RQ	Reportable Quantity
SNM	Special Nuclear Material
SRPs	Solid Residue Packs
UIR	Unusual Incident Report
UF <sub>6</sub>	Uranium Hexafluoride
UO <sub>2</sub>	Uranium Dioxide
USEC	United States Ecology
VIO	Violation