



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

May 25, 2004

Global Nuclear Fuels - 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. 70-1113/2004-004

Dear Mr. Fuller:

This report refers to the inspection conducted from April 26-30, 2004, 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 enclosed 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.

Based on the results of the inspection, no violations or deviations were identified. Your conduct of activities at the Wilmington facility was generally characterized by safety-conscious operations.

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 (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 BY DOUGLAS M. COLLINS FOR/

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

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

Enclosure: (See Page 2)

Enclosure: NRC Inspection Report

cc w/encl:

Charles M. Vaughan, Manager
 Facility Licensing
 Global Nuclear Fuels - 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
 Electronic Mail Distribution

Distribution w/encl:

J. Henson, RII
 D. Seymour, RII
 K. Ramsey, NMSS
 R. Cesaro, NMSS
 PUBLIC

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI
SIGNATURE	/RA/	/RA BY OLopez for/	/RA/
NAME	DSeymour	RGibson	OLopez
DATE	05/24/04	05/24/04	05/24/04
E-MAIL COPY?	YES NO	YES NO	YES NO
PUBLIC DOCUMENT			

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1113

License No.: SNM-1097

Report No.: 70-1113/2004-004

Licensee: Global Nuclear Fuel - Americas, LLC

Facility: General Electric

Location: Wilmington, North Carolina

Dates: April 26 - 30, 2004

Inspectors: R. Gibson, Health Physicist
O. Lopez, Fuel Facility Inspector
D. Seymour, Senior Fuel Facility Inspector

Accompanying
Personal: J. Henson, Chief
Fuel Facility Inspection Branch 2 (FFIB2)
Division of Fuel Facility Inspection (DFFI)

Approved By: J. Henson, Chief, FFIB2, DFFI

Enclosure

EXECUTIVE SUMMARY

Global Nuclear Fuel - Americas NRC Inspection Report 70-1113/2004-004

This routine announced inspection included activities conducted by regional inspectors during normal and off normal shifts in the area of chemical operations, fire protection, environmental protection and waste management. 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:

Fire Safety

- The fuel processes, equipment, and material storage areas were operated in accordance with fire safety requirements. The fire protection program organization had not changed since the last inspection (Paragraph 2.a).
- Inspection, testing, and maintenance for selected fire protection systems were adequately implemented to ensure the availability and reliability of their intended safety functions (Paragraph 2.b).
- The emergency response team was trained to perform its emergency response functions. Offsite organizations were available to provide aid in the event of a major emergency or structural fire (Paragraph 2.c).

Chemical Safety

- Safety analyses appropriately identified process hazard information. Safety significance controls were adequately implemented and maintained (Paragraph 3.a).
- Chemical operations were conducted with appropriate operating procedures and operators were qualified to perform their work (Paragraph 3.b).
- The licensee's chemical safety training adequately covered safe work practices and chemical hazards. Plant personnel were adequately trained in emergency response procedures (Paragraph 3.c).

Waste Management

- The effluent air sampling equipment was in good material condition. In addition, ventilation equipment was operating within the limits specified in the license application. The calculated offsite doses were well below the as low as reasonably achievable (ALARA) constraint of 10 millirem per year specified in 10 CFR 20.1101(d) (Paragraph 4.a).
- The monitoring requirements and concentration limits specified in license SNM-1097 and 10 CFR Part 20 for liquid effluents were adequately met (Paragraph 4.b).
- The licensee continued to reduce the quantities of radioactive materials released in liquid effluent streams from the Fuel Manufacturing Operations facility (Paragraph 4.b).

- The licensee continued to excavate and remove calcium fluoride (CaF_2) and soil containing trace amounts of uranium from the shut down waste treatment lagoons. The soil is shipped offsite for proper disposal. The licensee plans to resurface the lagoons once the excavation is completed (Paragraph 4.c).
- The licensee adequately met the requirements for incinerating combustible waste containing low concentrations of uranium. There were negligible ash holdups in the incinerator ventilation system (Paragraph 4.d).

Environmental Protection

- The environmental monitoring program was implemented in accordance with license requirements. No new additional environmental contamination problems were noted (Paragraph 5).

Attachments:

Report Details

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed

List of Acronyms

REPORT DETAILS

1. Summary of Plant Status

This report covered the period of April 26-30, 2004. Powder, pellet, and fuel assembly production proceeded at normal rates.

2. Fire Safety (IP 88055)

a. Fire Protection Program Management/Organization (O4.01) Fire Safety of Process, Equipment, and Storage Areas (O4.04)

(1) Inspection Scope

The inspector reviewed the dry chemical process (DCP), hydrofluoric acid (HF) building, ceramic area, and material storage areas to verify that they were being operated in accordance with fire safety requirements. The inspector reviewed changes in personnel responsibilities and functions that have occurred for the past year.

(2) Observations and Findings

The inspector reviewed the licensee's procedure for control of combustible materials in process areas and interviewed operations personnel regarding the application and use of the procedure. The inspector verified that flammable liquids were properly stored in designated cabinets. The inspector observed that transient combustibles in the operating process areas were adequately controlled to levels below that which could result in a significant fire. The inspector walked down plant areas surrounding the fuel manufacturing operation building and noted that surroundings were kept free of significant amounts of transient combustibles large enough to be a fire exposure hazard.

The inspector reviewed the operation of sintering furnaces. The inspector observed that the fire safety systems in the furnaces were properly operating and flame detectors were properly positioned. The inspector discussed and reviewed with licensee personnel the control system conversion of one of the sintering furnace from analog to digital which allow the licensee to operate the furnace and monitor safety parameters from a control panel. No safety concerns were noted.

The inspector discussed the organization of the fire protection program with the Chief of the Emergency Response Team. The Chief stated that no organizational changes had occurred in the past year.

(3) Conclusions

The fuel processes, equipment, and material storage areas were operated in accordance with fire safety requirements. The fire protection program organization had not changed since the last inspection.

b. Building Design, Construction, and Ventilation System (O4.03)
Fire Protection Systems (O4.04)
Fire Hazard Analysis and Integrated Safety Analysis (ISA) (O4.06)

(1) Inspection Scope

The inspector reviewed the ISA for the DCP and the HF building, and walked down fire safety systems referenced in the ISA. The inspector examined selected fire safety systems to verify they were being maintained in proper condition for use.

(2) Observations and Findings

The inspector observed a selection of fire safety features that were described in the ISA including but not limited to: hydrogen detectors, fire dampers, smoke and heat detectors, and wall penetrations. The inspector also observed portable extinguishers through the plant site. Portable extinguishers were charged to the normal operating zones and no visible damage was noted. The inspector accompanied a licensee technician during a visual inspection of fire extinguishers and no problems were noted. The inspector also observed fire doors through the facility and found them clear of debris and in proper working condition.

The inspector reviewed selected fire protection inspection, testing, and maintenance records including but not limited to: fire doors and dampers, emergency lights, sprinkler systems, smoke detectors, fire hose stations, post indicator valve, diesel pumps, alarm system, fire truck, hydrogen detectors, and fire protection water system. No problems were identified.

(3) Conclusions

Inspection, testing, and maintenance for selected fire protection systems were adequately implemented to ensure the availability and reliability for performance of their intended safety functions.

c. Emergency Response Team Training (O4.08)

(1) Scope

The inspector discussed the emergency response team and training program with the emergency response team chief, and reviewed initial and continuing training records, including monthly training, for members of the emergency response team.

(2) Observations and Findings

The inspector verified that the members of the emergency response team were current on their required training and that a sufficient number of fire brigade members were qualified to perform their emergency response functions.

The inspector also reviewed the letters of agreement with offsite organizations such as the New Hanover County fire station.

(3) Conclusions

The licensee's emergency response team was trained to perform its emergency response functions. Offsite organizations were available to provide aid in the event of a major emergency or structural fire.

3. Chemical Safety (IPs 88057-61, 88064)

a. Hazard Identification and Assessment (IP 88057)
Detection and Monitoring (IP 88060)

(1) Inspection Scope

The inspector reviewed the ISA for the DCP and the HF building to ensure that they contained process hazard information and safety-related controls for the existing plant configuration. The inspector also examined calibration, preventive maintenance, and functional records for a selection of safety significance controls.

(2) Observations and Findings

The inspector noted that the ISA identified systems with potential chemical hazards that could impact operations involving special nuclear materials. The inspector walked down safety significance controls for the DCP and HF building with operations personnel. The inspector confirmed that active and passive engineered controls, and administrative controls that were referenced in the ISA were maintained and implemented adequately. The inspector also interviewed licensee personnel regarding the inspection, testing, and maintenance of safety controls. The inspector reviewed maintenance and inspection records for selected safety controls such as HF detection system, leak detection system, and collection systems. The inspector determined that maintenance for safety controls were current and that the procedures used to perform the tests were adequately detailed.

The inspector toured the DCP, HF building, and radioactive waste areas. During the plant tours the inspector noted that postings, and procedures were available to the operators. The inspector observed that plant personnel wore the proper personal protective equipment. The inspector also observed safety showers and eye wash stations throughout the facility and noted that they were in satisfactory condition. The inspector did not observe any areas where housekeeping could negatively affect the radiological safety or emergency egress of the facility.

(3) Conclusions

Safety analyses appropriately identified process hazard information. Safety significance controls were adequately implemented and maintained.

b. Standard Operating Procedures (IP 88058)
Site-Wide Safety Procedures (IP 88059)
Emergency Response Procedures (IP 88064)

(1) Inspection Scope

The inspector observed operations throughout the facility and reviewed selected operating procedures to verify that appropriate procedures were being used.

(2) Observations and Findings

The inspector observed and interviewed DCP and ceramics operators to verify that they were in compliance with operating procedures. The inspector noted that operators were knowledgeable of the operating procedures, as well of chemical hazards in their process areas. The inspector noted that reviewed procedures adequately identified safety significant controls, and addressed process parameters and steps to mitigate unusual events. In addition, the procedures were approved by the appropriate safety manager.

The inspector reviewed temporary operating procedures (TOPs) related to the rebuilding of one of the sintering furnaces. The inspector verified that the TOPs were approved by the appropriate managers and the operators had been trained in their use. The inspector also toured the sintering furnace that was being rebuilt and noted appropriate use of lock out/tag out on important valves and switches. No problems were identified.

(3) Conclusions

Chemical operations were conducted with appropriate operating procedures and operators were qualified to perform their work.

c. Chemical Safety Training (IP 88061)
Emergency Response Procedures (IP 88064)

(1) Scope

The inspector discussed the chemical safety training program with cognizant licensee managers and reviewed training material to verify if the training program adequately covers safe work practices and chemical hazards. The inspector also reviewed selected training records to verify if plant personnel were adequately trained in emergency response procedures.

(2) Observations and Findings

The inspector's review verified that the training program adequately addressed process safety information such as material safety data sheets, personal protective equipment, confined space entry, safe work practices, job hazard analyses, chemical job hazard analyses, and hazard communication. Discussions with operators on safety and health hazards indicated an adequate understanding of specific job hazards. A review of training records indicated that plant personnel were adequately trained in emergency response procedures.

(3) Conclusions

The licensee's chemical safety training adequately covered safe work practices and chemical hazards. Plant personnel were adequately trained in emergency response procedures.

4. Waste Management (IP 88035)(R3)

a. Airborne Effluent Program Controls, Instrumentation, Ventilation, and Airborne Effluent Monitoring Results

(1) Inspection Scope

The inspector examined selected stack effluent sampling stations (Fuel Manufacturing Operations and Expansion buildings (FMO/FMOX), the incinerator, DCP and HF) to ensure that equipment was maintained and representative samples were being collected. In addition, the inspector reviewed ventilation system checks as required by the license application. The inspector also reviewed the facility's airborne effluent monitoring results to verify that releases were within the limits specified in 10 CFR Part 20 and license requirements.

(2) Observations and Findings

The inspector observed a technician collect air particulate filter sample from the five stacks mentioned above, designated to be collected on a daily basis due to their operational performance and/or quantity of material released. The technician used Environmental Protection Instruction (EPI) No. O-6.0, Stack Sampling Program, Revision 48, March 17, 2004. The inspector observed no significant changes to the procedure or the program since the last inspection. The technician was observed to properly collect, document and prepare the samples for gross alpha analysis. The sampling equipment was in good working order.

The licensee used stainless steel enclosures to protect the sampling equipment from environmental conditions. The inspector noted the use of stainless steel sample delivery lines which was in good condition and showed no signs of corrosion. The licensee continues to use heat tracing on the sample delivery line systems that had experienced condensation problems. No obvious problems were noted with the sampling equipment.

The inspector reviewed ventilation system checks of the facilities mentioned above, as required by Section 5.3.3 of the license application. Specifically, the inspector reviewed the ventilation and air conditioning (HVAC) units monthly pressure differential checks for CY 2003. During the plant tours, the inspector verified that selected HVAC units' flow and differential pressures were within the specifications of the license application.

The inspector reviewed the stack sampling results and quantities of airborne radioactive materials released for the second six months of 2002 to the second six months of 2003. The review also included the semiannual effluent release reports to the NRC for the

second half of 2002 and for both reporting periods of 2003. The review of these data is summarized in Table 1 below:

Table 1: Airborne Effluent Summary (microcuries)

Year	Total Uranium Released (microcuries)	Stack Air Dose Calculations (millirem)
2002	17.3	<0.1
2003	15.8	<0.1

The data continued to show a decrease in the trend of radioactivity levels in airborne effluents since the last inspection. The decreasing trend continued to be attributable to the dry conversion process. The average concentrations of uranium released were well below the most conservative uranium concentration limit specified in 10 CFR Part 20, Appendix B, Table 2. In addition, the calculated offsite doses were well below the ALARA constraint of 10 millirem per year (mrem/yr) specified in 10 CFR 20.1101 (d).

(3) Conclusions

The licensee's effluent air sampling equipment, including the sample delivery lines was in good material condition. Ventilation equipment was operating within the limits specified in the license application. The inspector noticed that there continued to be a decreasing trend in radioactivity levels in airborne effluents since the last inspection. Calculated offsite doses were well below ALARA constraint of 10 mrem/yr specified in 10 CFR 20.1101(d).

b. Liquid Effluent Monitoring Results

(1) Inspection Scope

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.

(2) Observations and Findings

The inspector reviewed the liquid effluent sampling results and quantities of liquid radioactive materials released for the second six months of 2002 to the second six months of 2003. The review included the semiannual effluent release reports to the NRC for the second half of 2002 and CY 2003. The review of these data is summarized in Table 2 below.

The data show a decreasing trend in radioactivity levels in liquid effluent from CY 2002 to CY 2003. The decreasing trend was attributable to the operation of a new liquid waste treatment system. 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)
2 nd Half of 2002	37.5
2 nd Half of 2003	36

(3) 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.

c. Excavation of Calcium Fluoride Soil(1) Inspection Scope

The inspector toured the shut down calcium fluoride waste treatment facility to determine the status of the excavation and removal of calcium fluoride (CaF_2) and soil from the lagoons.

(2) Inspection Scope

The licensee continued to excavate and remove CaF_2 containing trace amounts of uranium from the shut down waste treatment lagoons. The inspector observed the licensee transferring soil from lagoon No. 3 in dump trucks to a controlled warehouse for proper packaging. The dump trucks were adequately surveyed prior to exiting the controlled area. The soil was packed in nylon double poly bags and properly labeled as hazardous material for shipment to a disposal site. There are three lagoons and the licensee has almost completed the final soil removal from the third lagoon. The other two lagoons were being prepped for resurfacing. The inspector did not identify any concerns in this area.

(3) Conclusions

The inspector determined that the licensee was adequately removing soil from the shut down CaF_2 lagoons for proper disposal. In addition, the inspector determined that the soil was properly packaged and labeled for shipment.

d. Incinerator Controls(1) Inspection Scope

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

(2) Observation and Findings

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. The inspector noted that the licensee's incinerator was robust and in good condition. 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, and that Nuclear Critical Safety Engineers performed surveys of the incinerator. There were no concerns in this area.

(3) Conclusions

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

5. Environmental Protection (IP 88045)(R2)

a. Scope

The inspector reviewed selected portions of the licensee's Environmental Protection Program to verify that program implementation and sample results were consistent with license requirements and to verify that plant operations had not significantly increased radioactivity levels in the environment. In addition, the inspector reviewed the licensee's environmental audit program results.

b. Observations and Findings

The inspector reviewed selected results from soil, vegetation, surface water, and environmental air samples collected in 2003 and observed that environmental gross alpha, gross beta, and uranium values consistently remained below licensee action levels for the majority of environmental media samples. The inspector observed that when the environmental samples for radioactivity and uranium levels exceeded licensee action levels, the licensee issued Environmental Action Level (EAL) investigation statements in a timely manner. The EAL investigation statements had recommended appropriate corrective actions (i.e., re-sampling, trending, etc.). The technician followed the EPI, O-7.0, Soil, Ditch, Vegetation, and State Split Sampling, Revision 29, May 22, 2003.

Additionally, the inspector observed the collection of a monthly groundwater sample at well PL-11A. The technician followed the groundwater sample collection and preparation steps specified in O-8.0, Sample Collection from Site Wells, Revision 36, January 19, 2004. According to the licensee, the State of North Carolina had not provided an annual comparison of split environmental sample results since the last inspection. The last NC Annual Report was in CY 1999.

The inspector reviewed selected portions of the 2003 quarterly audit of the environmental protection program. These audits were performed by an Environmental Health and Safety engineer. The inspector noted that the quarterly audits were of sufficient depth and appropriately targeted. Audit findings and recommendations were documented, assigned, and tracked to completion or follow-up. In addition, the inspector reviewed selected unusual incident reports pertaining to environmental protection and waste management for the period January 2003 to January 2004. The inspector verified that proper notification and follow-up actions were taken as appropriate. There were no concerns noted in this area.

c. Conclusions

The licensee had implemented the environmental monitoring program in accordance with license requirements. No new additional environmental contamination problems were noted.

6. Follow up on Previously Identified Issues

(Closed) VIO 70-1113/2003-05-01: Failure to Properly Label a Hazardous Material Shipment. This issue involved a shipping personnel applying a Type III label to a package of hazardous material, when the material was actually a Type II package. The inspector interviewed the individual who applied the label. Through discussion and observation the inspector noted that the licensee now uses an automated computer system to display labels for appropriate packages. The licensee has significantly reduced human error in labeling packages.

7. Exit Meetings

The inspection scope and results were summarized on April 30, 2004, with those persons indicated in the Attachment. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary information is not included in this report. Dissenting comments were not received from the licensee.

ATTACHMENT

1. LIST OF PERSONS CONTACTED

Licensee

M. Allen, Program Manager, Emergency Preparedness & Site Security
Q. AO, Principal Criticality Safety Engineer
J. Ball, Manager, Global Supply Chain
R. Crate, Manager, Fuel Manufacturing Operations
T. Crawford, Sr. Environmental Engineer
G. Dickman, Nuclear Material Control & Accounting Engineer
M. Dodds, Sr. Criticality Safety Engineer
R. Foleck, Program Manager, Facility Licensing
P. Mathur, EHS Specialist
C. Monetta, Manager, Environment, Health & Safety
S. Murray, Manager, GE-NE Outage Services-EHS
L. Paulson, Manager, Nuclear Safety
R. Roessler, Manager, Facilities & Maintenance
G. Smith, Manager, Integrated Safety
R. Stevens, Technical Leader, FMO Maintenance Support Team
H. Strickler, Manager, Site Environment, Health & Safety
C. Vaughan, Manager, Facility Licensing
P. Godwin, Chief, Emergency Response
G. Luft, Program Manager, Environment Project
S. Smith Radiation Safety
J. Reeves, Configuration Management

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

2. INSPECTION PROCEDURES USED

IP 88035	Radioactive Waste Management
IP 88045	Environmental Protection
IP 88055	Fire Protection
IP 88057	Hazard Identification and Assessment
IP 88058	Standard Operating Procedures
IP 88059	Site Wide Safety Procedures
IP 88060	Detection and Monitoring
IP 88061	Chemical Safety Training
IP 88064	Emergency Response Procedures

3. LIST OF ITEMS OPENED AND CLOSED

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
VIO 70-1113/2003-05-01	Closed	Failure to Properly Label a Hazardous Material Shipment (Paragraph 4)

4. LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CaF ₂	calcium fluoride
CFR	Code of Federal Regulation
COP	Chemical Operating Procedure
DCP	Dry Conversion Process
EAL	Environmental Action Level
EPI	Environmental Protection Instruction
FMO	Fuel Manufacturing Operations
FMOX	Fuel Manufacturing Operations Expansion
HF	Hydrofluoric Acid
HVAC	Heating, Ventilation, and Air Conditioning
IP	Inspection Procedure
ISA	Integrated Safety Analysis
mrem/yr	millirem per year
No.	Number
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
SNM	Special Nuclear Material
SOI	Standard Operating Instruction
TOP	Temporary Operating Procedure