UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-8931

October 6, 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. 70-1113/2005-005

Dear Mr. Fuller:

This report refers to an announced routine emergency preparedness inspection conducted from August 8-12, and an announced regional initiative criticality safety/operations inspection (above core) conducted from September 6-7, 2005, at your Wilmington facility. The purpose of the inspections was to perform a review of the emergency preparedness program and the criticality warning system to determine the state of operational readiness and whether activities authorized by the license were conducted in accordance with NRC requirements. At the conclusion of the inspections, the findings and observations were discussed with the members of your staff.

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.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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.

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

Sincerely,

Deborah Seymour for ***/RA/***

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

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DATE	10/06/2005	10/06/2005	10/06/2005	10/06/2005			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-1113
License No.:	SNM-1097
Report No.:	70-1113/2005-005
Licensee:	Global Nuclear Fuel - Americas, L.L.C.
Location:	Wilmington, NC 28402
Dates:	August 8-12, and September 6-7, 2005
Inspector:	A. Gooden, Senior Fuel Facility Inspector O. Lopez, Fuel Facility Inspector D. Morey, Senior Criticality Safety Inspector
Accompanying Personnel:	N. Ashkeboussi, Nuclear Intern
Approved By:	J. Henson, Chief Fuel Facility Inspection Branch 2 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY
Global Nuclear Fuel - Americas, L.L.C.
NRC Inspection Report 70-1113/2005-005

The routine, announced inspection and regional initiative announced inspection involved observation of work activities, a review of selected records, and interviews with plant personnel in the areas of emergency preparedness and the criticality accident warning system.

Emergency Preparedness

Program changes did not impact the effectiveness of the emergency preparedness program. The independent audit provided an adequate assessment of the emergency preparedness program state of readiness (Paragraph 2.a).

The revised procedures continue to implement the Radiological Contingency and Emergency Plan (RC&EP) (Paragraph 2.b).

Key emergency response personnel were trained in accordance with Section 7.2 of the RC&EP. Communication drills demonstrated that minimum staffing levels for activation and staffing of the Emergency Control Center (ECC) were accomplished in a timely manner during off-hours and back shifts (Paragraph 2.c).

The offsite support interface was properly maintained (Paragraph 2.d).

Drills and exercises were conducted at the frequency required by the license. The critiques provided candid assessments of areas for improving the response during drills and/or actual events. An inspector followup item was identified to verify the adequacy of corrective actions to improve the reliability of the criticality warning system (Paragraph 2.e).

The selected emergency equipment was maintained in a state of readiness (Paragraph 2.f).

Criticality Warning System

An unresolved item was identified concerning the audibility of independent exterior criticality alarm annunciators (Paragraph 3.c).

Attachment:
Persons Contacted
Inspection Procedures
List of Items Opened, Closed, and Discussed
List of Acronyms

REPORT DETAILS

1. **Summary of Plant Status**

During the inspection period, routine maintenance activities and normal operations were observed in powder, pellet, and fuel assembly production.

2. **Emergency Preparedness (Inspection Procedure (IP) 88050) (F3)**

a. Review of Program Changes (F3.01)

(1) Scope and Observations

Changes to the licensee's Radiological Contingency and Emergency Plan (RC&EP), emergency 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.

Since the last inspection, a new manager for Emergency Preparedness and Site Security was assigned. This change did not appear to impact emergency preparedness because two individuals who were previously assigned as manager served on the emergency response team as Emergency Director (ED) or alternate ED, and were providing support to the newly assigned manager during the transition phase.

The licensee also tracked RC&EP commitments via the plant-wide tracking system to ensure Plan commitments (training, equipment maintenance, and other activities) were satisfied. Additional changes were made to the normal and emergency organization including the management reporting chain for emergency preparedness. The changes did not appear to reduce the effectiveness of the program. No facility changes were made.

The independent audit was a detailed compliance-oriented audit to ensure that the emergency preparedness program was adequately maintained and program commitments were met as described in the RC&EP. The audit check-list was reviewed to verify that key elements of the program were evaluated.

(2) Conclusions

Program changes did not impact the effectiveness of the emergency preparedness program. The independent audit provided an adequate assessment of the emergency preparedness program state of readiness.

b. Implementing Procedures (F3.02)

(1) Scope and Observations

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

Since the last inspection, all implementing procedures were revised. The inspectors reviewed select procedures and determined that the procedures, although revised, continued to implement the RC&EP.

(2) Conclusions

The revised procedures continue to implement the RC&EP.

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

(1) Scope and Observations

The inspectors reviewed training records to verify that emergency response training was provided to key emergency response personnel in accordance with Section 7.2 of the RC&EP. The inspectors also reviewed the adequacy of the licensee's notification system for activation and staffing of the Emergency Control Center (ECC) during off-hours.

Key emergency response personnel (ED and alternates) were trained in accordance with Section 7.2 of the RC&EP. The annual refresher training provided personnel with a review of the major changes to the RC&EP and emergency procedures. Since the last inspection, several drills were conducted by the licensee with an emphasis on exercising the security organization. The inspectors conducted an interview with members of the security staff assigned the responsibility for activation and staffing of the emergency organization during off-hours. The interviewees were questioned regarding the primary and backup systems for activation of the emergency organization. No problems were noted. The interviewees were familiar with their role and the procedures for activating the emergency organization during normal and off-hours. The inspectors also questioned workers inside and outside the controlled area regarding what actions to take in the event of a criticality alarm. No problems were noted.

Regarding activation and staffing of the ECC during off-hours, the inspectors examined documentation to show that notification drills were conducted on a frequent basis. These drills demonstrated the estimated time of arrival by emergency response personnel to the ECC during back shifts and weekends. No problems were noted. The drill results demonstrated that the minimum staffing levels for activating and staffing the ECC could be accomplished in an hour or less. The performance by security personnel during notification drills demonstrated that training and procedures provided security staff with adequate instructions for ensuring timely activation and staffing during off-hours events.

(2) Conclusions

Key emergency response personnel and alternates were trained in accordance with Section 7.2 of the RC&EP. Communication drills demonstrated that minimum staffing levels for activation and staffing of the ECC were accomplished in a timely manner during off-hours and back shifts.

d. Offsite Support (F3.04)

(1) Scope and Observations

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

Documentation and interviews indicated that the licensee periodically contacted the offsite support groups to offer training, site tours, and provide changes to the RC&EP. The agreement letters with offsite support groups to provide medical, firefighting, and other services were maintained in accordance with Section 7.7 of the RC&EP.

(2) Conclusions

The offsite interface was properly maintained as evidenced by frequent contact between the licensee and offsite authorities on matters of mutual interest involving emergency preparedness.

e. Drills and Exercises (F3.05)

(1) Scope and Observations

Section 7.3 of the RC&EP required a biennial exercise be performed involving the onsite emergency response organization and many of the offsite support agencies. This area was reviewed for adequacy in testing both onsite and offsite emergency response capability. The effectiveness of the licensee's critiques to self identify areas of improvement was also reviewed.

The last exercise was conducted October 28, 2003, and involved both onsite and offsite support organizations. The next exercise was scheduled for October 2005.

Documentation from drills and actual events covering the period February 2004 through the time of this inspection was reviewed. During this period, drills focused primarily on security related incidents, and consequently did not exercise all major elements of the licensee's response program. The licensee acknowledged this matter and indicated that the biennial exercise scheduled for October 2005 would test critical elements of the emergency preparedness program not tested earlier. Licensee critiques were effective in the identification of areas for improvement. Items requiring corrective actions were tracked via the plant-wide Regulatory Tracking System (RTS). No problems were noted. RTS was an effective tool for following up on items identified during both drills and actual events.

Regarding actual events requiring activation of the emergency organization and staffing of the ECC, the inspectors noted that the majority of the events resulted from false alarms associated with the criticality warning system (CWS), but did not require an emergency declaration. The inspectors questioned the licensee regarding what actions were planned or were being taken to resolve the spurious alarms to ensure that the system performed its intended function in a reliable manner. In response, the inspectors

were provided documentation and informed that contractual arrangements were made with the equipment vendor and a CWS expert to perform a detailed assessment of the inside and outside CWS, and to produce a technical document including long term and short term recommendations to improve/upgrade the CWS to increase the reliability of the system. The licensee contact further stated that software upgrades were planned for the CWS monitoring consoles. The inspectors identified the actions planned by the licensee to improve/upgrade the CWS as Inspector Followup Item (IFI) 70-1113/2005-005-01: Verify the adequacy of corrective actions to improve the reliability of the CWS.

(2) Conclusions

Drills and exercises were conducted at the frequency required by the license. The critiques provided candid assessments of areas for improving the response during drills and/or actual events. An IFI was identified to verify the adequacy of corrective actions to improve the reliability of the criticality warning system.

f. Emergency Equipment and Facilities (F3.06)

(1) Scope and Observations

The Emergency Control Center (ECC) response equipment, instrumentation, and supplies used to evaluate and assess radiological conditions were examined to determine if maintained in a state of operational readiness.

The inspectors reviewed periodic surveillance sheets and observed an inventory and operability check of equipment at the ECC and offsite medical facility. In addition, surveillance documentation for the Fire Brigade equipment was examined. No problems were noted.

(2) Conclusions

The selected emergency equipment was maintained in a state of readiness.

3. Headquarters Nuclear Criticality Safety Program (IP 88020)

a. Criticality Accident Alarm System

(1) Scope and Observations

The inspectors reviewed the licensee's criticality accident alarm system including detector placement, audibility, maintenance, and outage procedures. The inspectors reviewed selected aspects of the following documents:

- Calculation Summary, "Radiological Analysis Summary Report Outdoor Criticality Warning System," dated January 5, 1999
- Procedure NSI O-4.0, "Nuclear Safety Instrumentation," Revision 49, dated December 8, 2005

The inspectors reviewed the licensee's criticality accident alarm system detector placement. The inspectors noted that the licensee used one interconnected detector/annunciator set for the fuel manufacturing operations (FMO) building and six independent detector/annunciator sets to cover exterior fissile material operations. The inspectors reviewed criticality detector coverage calculations and observed that the FMO (inside) detectors had a radius of coverage of 250 feet and the exterior (outside) detectors had a radius of coverage of 1600 feet. The inspectors determined that the licensee coverage calculations followed the method of Appendix A of ANSI/ANS-8.3, Criticality Accident Alarm Systems, and thus met license requirements to provide criticality accident detection coverage.

The inspectors noted that, during recent audibility testing of criticality accident alarm system horns, licensee maintenance staff identified questionable audibility of horns from the exterior system known as data acquisition monitor (DAM) #23. The inspectors learned that DAM #23 had five horns, one on a pole at the detector site, one at the incinerator building, and three at the fuel examination technology (FET) building. At the time of discovery, the horn at the incinerator building and the three horns at the FET building were inoperable and alarms signaled from DAM #23 were inaudible. During the week prior to the inspection, the licensee had installed a portable criticality alarm detector/annunciator in the FET building, a procedurally required response to inoperable horns. Over the weekend preceding the inspection, the licensee had repaired the horn at the incinerator building and one of the horns at the FET building. During the inspection, the inspectors requested that DAM #23 horns be sounded and noted during this test that the alarm could not be clearly heard outside of the FET building. The licensee felt that the alarm was minimally audible during the test but acknowledged that DAM #23 alarms were inaudible with the four remote horns out of service.

The licensee considered that any fissile operation covered by DAM #23 that affected the FET building, that is, criticality events that would require evacuation of the FET building, would be detected by the FMO criticality alarm system and this meant that the DAM #23 system had redundant coverage. The inspectors determined that most exterior fissile operations would not be seen by the FMO criticality detectors because their radius of coverage was 250 feet and, therefore, the DAM #23 criticality alarm system did not have redundant coverage. The licensee revised the area of coverage calculation for the FMO (inside) criticality detectors resulting in a radius of coverage of 1000 feet. The inspectors reviewed the revised coverage on a plan drawing of the GNF site and noted that at least half of the exterior fissile operations seen by DAM #23 at 1600 feet would not be seen by the FMO building at 1000 feet. The inspectors also noted that Procedure NSI O-4.0, which covers criticality alarm system outages, did not recognize FMO building detectors as adequate for coverage of exterior fissile material operations. Interviews with licensee management, engineering and maintenance staff revealed that the inoperable alarms had been discovered approximately three weeks prior to initiation of corrective actions and compensatory measures. Further NRC review of criticality accident alarm audibility will be tracked as Unresolved Item (URI) 70-1113/2005-05-02.

The licensee tests criticality alarm audibility by sounding the alarms once per month and relying on employees to report audibility problems. The inspectors determined that no systematic effort was routinely made to determine criticality alarm system horn operability. As a result of the audibility test procedure, inoperable horns were not detected until a significant inaudibility situation occurred. The licensee acknowledged that criticality alarm

system audibility testing was inadequate and committed to revise the audibility test procedure to routinely check the individual horn operability. Revision of the criticality alarm audibility test procedure to improve identification of inoperable horns will be tracked as IFI 70-1113/2005-05-03.

Procedure NSI O-4.0, which covers criticality alarm system outages, requires disabling of criticality alarm system horns during specified maintenance evolutions. The criticality alarm system horns are also disabled during storms. During these outages, radiation protection personnel are required to continuously monitor the alarm panel at the main alarm station in order to manually activate the horns upon a valid alarm signal. During the inspection, the inspectors observed that the criticality alarm system horns in the FMO building were disabled due to a maintenance evolution on a detector set. The inspectors observed that radiation protection personnel were actively monitoring the main alarm panel as required and understood the requirement to assess alarm indications and activate the criticality alarm annunciators. The inspectors noted that the licensee relied on a posting on the main alarm panel to inform responsible employees of the requirement to monitor and evaluate criticality alarm indications and activate the criticality alarm annunciators. The inspectors determined that the licensee should have written procedures covering these criticality alarm outage requirements. Licensee staff agreed and committed to develop appropriate written procedures. The inspectors determined that, based on the existing posting and the demonstrated skill level of current employees, that there was no immediate safety concern. Development of a written procedure to cover criticality alarm outage procedures will be tracked as IFI 70-1113/2005-05-04.

(2) Conclusions

An unresolved item was identified concerning audibility of independent exterior criticality alarm annunciators.

3. Exit Meeting

The inspection results were summarized on August 12, 2005, and September 9, 2005 (by telephone), with licensee management representatives. Although proprietary documents and processes were occasionally reviewed during the inspection, the proprietary nature of these documents or processes has been deleted from this report. During the September 9 exit meeting, dissenting comments were expressed by the licensee regarding the audibility of the criticality warning system.

ATTACHMENT

1. PARTIAL LIST OF PERSONS CONTACTED

D. Barbour, Program Manager, Wilmington Field Service Center
R. Crate, Manager, Fuel Manufacturing Operations
D. Godwin, Chief Emergency Response
A. Mabry, Program Manager, Radiological Engineering
P. Ollis, Manager, Emergency Preparedness and Site Security
L. Paulson, Manager, Nuclear Safety
C. Priest, Team Leader, Radiation Protection
E. Saito, Manager, GNF Environmental Health and Safety
G. Smith, Manager, FMO Technical Resources & Maintenance
H. Strickler, Manager, Site Environment, Health, and Safety
C. Vaughan, Manager, Facility Licensing

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

2. INSPECTION PROCEDURE

IP 88020	Regional Criticality Safety Inspection Program
IP 88050	Emergency Preparedness

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Description
70-1113/2005-05-01	Open	IFI - Verify the Adequacy of Corrective Actions to Improve the Reliability of the CWS (Paragraph 2.e).
70-1113/2005-05-02	Open	URI - Further NRC Review of Criticality Accident Alarm Audibility (Paragraph 3.a).
70-1113/2005-05-03	Open	IFI - Revision of the Criticality Alarm Audibility Test Procedure to Improve Identification of Inoperable Horns (Paragraph 3.a).
70-1113/2005-05-04	Open	IFI - Development of a Written Procedure to Cover Criticality Alarm Outage Procedures (Paragraph 3.a).

4. LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CWS	Criticality Warning System
DAM	Data Aquisition Monitor
ECC	Emergency Control Center
ED	Emergency Director
FET	Fuel Examination Technology
FMO	Fuel Manufacturing Operations
GNF-A	Global Nuclear Fuel - Americas
IFI	Inspector Followup Item
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
RC&EP	Radiological Contingency and Emergency Plan
RTS	Regulatory Tracking System
URI	Unresolved Item