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NUCLEAR REGULATORY COMMISSION
REGION II
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August 25, 2000

Global Nuclear Fuels - Americas, L.L.C.
ATTN: Mr. D. K. Dowker, Plant Manager, FMO
Global Nuclear Fuels - Americas, L.L.C.
P. O. Box 780
Wilmington, NC 28402

SUBJECT: NRC INSPECTION REPORT NO. 70-1113/2000-05

Dear Mr. Dowker:

This refers to the inspection conducted on July 24-27, 2000, at the Wilmington facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the 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: (See Page 2)

Enclosure: NRC Inspection Report

cc w/encl:
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	70-1113
License No:	SNM-1097
Report No:	70-1113/2000-05
Licensee:	Global Nuclear Fuels - Americas, L.L.C.
Location:	Wilmington, NC 28402
Inspection Dates:	July 24 - 27, 2000
Inspectors:	W. Tobin, Senior Safeguards Inspector, NRC Region II P. Lee, Fire Safety Inspector, NRC Headquarters
Approved By:	E. J. McAlpine, Chief Fuel Facilities Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Global Nuclear Fuels - Americas, L.L.C.
NRC Inspection Report 70 -1113/2000-05

The Nuclear Regulatory Commission (NRC) performed a routine, announced fire safety inspection at Global Nuclear Fuels - Americas, L.L.C. (GNF-A), in Wilmington, North Carolina, on July 24-27, 2000. The inspection focused on the implementation of GNF-A fire protection program commitments concerning safe plant operations. Major fire safety performance reviewed included maintaining design bases of engineered fire protection systems; inspection, testing, and maintenance of fire protection and process safety equipment; control of combustibles; independent safety audits and the commitment tracking system; which ensure that fire risk at the facility would be appropriately minimized and managed.

Fire Suppression

- Offsite responders were well staffed and equipped for a rapid response to the site (Paragraph 2).

Engineered Fire Protection Systems

- Plant conditions had been adequately maintained within the design bases of automatic sprinkler systems and fire barrier systems to ensure mitigation and/or containment of a fire to minimize potential consequences (Paragraph 3).

Inspection, Testing, and Maintenance of Fire Protection and Process Safety Equipment

- Required inspection, testing, and maintenance had been adequately implemented to ensure availability and reliability of the plant fire protection systems and process safety equipment to perform intended safety functions (Paragraph 4).

Control of Combustibles

- Adequate control of combustibles had been provided within the process buildings to minimize potential fire severity and fire propagation. Control of combustibles to minimize potential fire exposure hazards to uranium hexafluoride (UF_6) cylinders, bulk flammables, combustibles, or chemical tanks had been adequately implemented (Paragraph 5).

Independent Fire Safety Audits and The Commitment Tracking System

- Requirements of the license application to perform independent safety audits of fire protection were being met. Fire safety recommendations from the insurer had been adequately evaluated, tracked, and managed (Paragraph 6).

Attachments:
Persons Contacted
Inspection Procedures Used
List of Items Closed
List of Acronyms

REPORT DETAILS

1. Summary of Plant Status

During this inspection the facility initiated the annual “shutdown” of production activities.

2. Compliance With Fire Safety License Conditions (88055) (O4)

a. Inspection Scope

Chapter 8, “Fire Safety,” of the license application (SNM-1097) was revised on December 7, 1999. The licensee is committed to an annual emergency exercise, detection and suppression systems, fire alarm pull stations, quarterly audits and fire barriers (doors and dampers). Site specific implementation procedures, self-audits and the insurers audit further provided for the scope of this inspection.

b. Observations and Findings

(1) Fire Prevention

The inspectors reviewed the documentation of the last two quarterly safety meetings during which the licensee reviewed NRC Bulletins and Generic Letters, the results of other NRC inspections, insurer’s audits and industry codes. Attending these safety meetings was the Wilmington Safety Review Committee (WSRC) which was staffed with managers and employees from the Industrial Safety and Radiological Safety Departments. The findings of these meetings and associated self-audits are tracked and trended in the licensee’s REGTRAC system.

The inspectors reviewed the “Hot Work” procedure which required the fire watch to periodically monitor the work area for four hours after completion of the work. The Factory Mutual form used for welding and cutting repeated this requirement to the user and further required the availability of an extinguisher and excluded work within 35 feet of oil and wood. During this inspection, no welding nor cutting was observed.

In late 1999, the licensee reorganized the Emergency Preparedness Section. The new manager was experienced and ably supported by the Site Fire Chief. Procedures remained in effect, records remained accurate and the Emergency Team remained active.

(2) Fire Detection

The inspectors toured the facility, specifically the Incinerator Building, the Dry Conversion Building, the Warehouse and the Moderation Controlled Areas. The presence of heat, smoke, hydrogen and hydrogen fluoride detectors was noted. The inspectors randomly chose a heat detector and a smoke detector inside the Dry Conversion Building for functional testing by the licensee’s technicians. These tests were successfully completed. The alarm for such detectors annunciated audio/visually in the security alarm station. The records of the monthly tests of all detectors were

reviewed for the month of January 2000, and the inspectors determined that all were successfully in operation.

Unusual Incident Reports revealed that smoke was detected by an employee in the Shop Support Decontamination Facility on April 6, who pulled a fire alarm box. On April 15, again at the Shop Support Decontamination Facility, a fire watch noticed embers from a duct cutting project and also pulled the nearby fire alarm box. On May 17, at the Gadolinia Furnace, a relief operator pulled the fire alarm box when the furnace door did not close due to a blocked tray. All three of these fire alarms were responded to and subsequently investigated by the WSRC.

(3) Fire Suppression

To verify functionality, the inspectors randomly chose several pieces of equipment of the fire suppression systems for operational testing. Hydrant No. 35, Post Indicator Valve No. 315, the two-inch sprinkler of the fuel manufacturing operations expansion (FMOX) Warehouse (zones 3487 and 3488), and the fire pump from the water tank to the nuclear facility were tested successfully. In the Dry Conversion Building, the inspectors witnessed the technicians verifying the operability of a fire damper in a ventilation duct. The inspectors were onsite when the site fire alarm was sounded and verified the response capability of the site emergency responders.

For unknown reasons, Post Indicator Valves No. 61 and No. 613 did not alarm at the security station when they were “shut” from the “open” position. The inspectors had the licensee’s technician repeat the opening and closure of each valve and still there were no alarms generated. It was noted that these valves were locked and were successfully tested by the licensee during the monthly operability test on July 13, 2000. Prior to the close of the inspection, both of these valves were retested in the presence of the inspectors and did alarm at the security station.

At the time of this inspection, fifteen of the licensee’s 43 emergency team members were working inside the nuclear facility. All had been trained in “incipient fires” with basic fire fighting duties, haz-mat response and confined space rescue. The local county (Castle Hayne) station was equipped with two pumpers and two tankers for a total of 6500 gallons, each vehicle had a “deck gun” or deluge valve, and could communicate with the site directly over a mutual radio frequency. There were two day-shift county employees at this station plus an additional 20 volunteers. The licensee’s emergency team conducted a drill on November 16 with 17 offsite responders from three departments. There was a six minute response time to this drill which involved the Incinerator Building. The offsite responders had been furnished the Radiological Contingency and Emergency Plan as had the New Hanover County Emergency Management Office.

c. Conclusion

The licensee’s efforts to prevent, detect and suppress fires were effective. Equipment was performing the intended function. Fire brigade personnel were well trained. Offsite

responders were well staffed and equipped ensuring a timely response to the facility. The licensee is meeting the requirements in Chapter 8 of the license application.

3. Engineered Fire Protection Systems

a. Scope

The inspectors reviewed and evaluated plant conditions to ensure that they were within the design bases and/or the performance capabilities of engineered fire protection systems (i.e., sprinkler and fire barrier systems). The inspectors performed walk-down inspections of fire protection systems, interviewed plant employees, and reviewed documentation and records related to the scope of this inspection.

b. Observations and Findings

The inspectors performed walk-down inspections of sprinkler-protected areas in the fuel manufacturing operations (FMO) and fuel manufacturing operations expansion (FMOX) buildings to ensure that plant conditions were within the original design bases of automatic sprinkler suppression systems. The inspectors noted that the fire hazards found (i.e., the type of combustibles, the quantity, and the storage configurations) would not challenge the effectiveness or the capability of automatic sprinkler systems to contain or suppress a fire. The licensee has also observed adequate control of combustibles in adjacent areas to minimize the potential of a significant fire that could propagate into the sprinkler-protected areas and challenge the performance capabilities of the automatic sprinkler systems. The inspectors noted that the plant water supply was adequate to meet the performance demands of the automatic sprinkler systems protecting areas in the FMO and FMOX buildings.

The inspectors observed during walk-down inspections of the dry conversion process (DCP) building that the as-found combustible loading within the DCP building was well controlled at levels that resulted in minimal fire hazards. No apparent or significant concerns (i.e., large unprotected openings) were noted in connection with the integrity of the fire barriers that would prevent the performance of intended safety functions. However, a deficiency was noted for the fire door that would not close automatically to protect the door opening between a main corridor and the UF_6 cylinder staging areas in the DCP building. The licensee indicated that the fire door was recently damaged as a result of moving of equipment and had issued a work order (No. 00-3038-00) to repair the deficiency. As an interim measure, the licensee had instructed all operators to manually shut the door after entry or exit to prevent leaving an opening in the fire barrier wall. The licensee had also established routine weekly walk-down inspection of all fire doors for possible deficiencies. The inspectors determined that the damaged fire door presented minimal risk after implementation of the interim measure. The plant conditions were adequately maintained within the design bases and capabilities of the fire barrier systems.

c. Conclusions

The licensee has adequately maintained plant conditions within the design bases of automatic sprinkler systems and fire barrier systems to ensure mitigation and/or containment of a fire to minimize potential consequences.

4. Inspection, Testing, and Maintenance of Fire Protection and Process Safety Equipment

a. Scope

The inspectors performed walk-down inspections, interviewed plant personnel, and examined licensee records and procedures for inspection, testing, and maintenance (ITM) of key fire safety systems and equipment. Appropriate ITM ensures the availability and the reliability of fire protection systems and equipment to perform their intended safety functions.

b. Observations and Findings

(1) General

The inspectors reviewed the licensee's ITM records and design drawings, and performed walk-down examinations of fire protection systems and safety equipment. The inspectors determined that the overall ITM for the following fire protection systems and equipment was in accordance with plant procedures to ensure availability and the reliability to perform their intended safety functions:

- hydrogen gas detection systems
- hydrogen gas supply shutoff valves
- natural gas supply shutoff valves
- automatic sprinkler systems
- hydrants and control valves
- plant fire pumps (diesel and electric)
- water supply storage and distribution systems
- heat and smoke detectors
- plant fire alarm system and backup power supply
- fire barrier systems (including fire doors and dampers)
- fire hoses and standpipe systems
- portable fire extinguishers

The licensee's plant procedures were consistent with requirements established by the National Fire Protection Association. The inspectors noted no obvious deficiencies in the material condition of selected protection equipment examined during walk-down inspections.

(2) Process Safety Equipment

The licensee had implemented ITM for hydrogen detectors, which are important to minimize the risk of a fire and explosion in processes using hydrogen (i.e., the DCP process kilns). A monthly calibration of hydrogen detectors verifies the alarm setpoints (i.e., 20 percent and 50 percent of hydrogen lower explosive limits) and alarm indications. The annual functional test consisted of the testing of interlocks that isolated

hydrogen gas supply to three process kilns in the DCP building. The inspectors noted that monthly calibration of hydrogen detectors were performed. The licensee had performed annual functional tests during March, June, and July 2000. The inspectors also noted that a similar functional test was established (and scheduled during plant shutdown) to verify the isolation of a natural gas supply under upset conditions for calciner line No.5. The inspectors determined that the licensee had provided the appropriate ITM required to ensure the functions of key safety equipment that minimize the risk of a fire or an explosion for DCP processes using flammable gases.

(3) Previously Noted Weaknesses

The inspectors followed up on weaknesses previously identified in NRC Inspection Report 70-1113/99-202 (Section 1.b) related to the ITM of fire dampers, heat detectors, and administrative closeout of ITM work orders. The inspectors noted that functional testing of fire dampers and annual testing of heat detectors had been incorporated into the licensee's maintenance, planning, and account control system that ensure the performance of required ITM. The inspectors noted from the review of ITM records for the past 12 months that the licensee had adequately closeout work orders issued for routine ITM of fire protection systems, and had corrected the weakness related to the failure to monitor and close ITM work orders.

c. Conclusions

The licensee had adequately implemented the ITM necessary to ensure the availability and the reliability of the plant fire protection systems and process safety equipment to perform their intended safety functions.

5. Control of Combustibles

a. Scope

The inspectors reviewed the licensee's control of combustible material, liquids, and gases to minimize the occurrence, severity, and spread of a fire in the process buildings and selected plant areas. The inspectors walked through the process and plant areas, interviewed plant employees, and reviewed documentation and records related to the areas identified in the scope of the inspection.

b. Observations and Findings

(1) Control of Combustibles Within the Process Buildings

The inspectors examined the control of combustibles throughout the process buildings (i.e., FMO, FMOX, and DCP) and observed that it was adequately implemented. Flammable gases used for manufacturing processes were piped in from outside the process buildings, and flammable gas cylinders were properly stored. Flammable and combustible liquids were adequately stored using listed flammable liquid storage cabinets and containers. The process equipment found in the DCP were mostly noncombustible and contained a minimum amount of plastic. The amount of transient combustibles and overall combustible loading found was below the levels required to

cause a severe fire that could lead to a flashover (i.e., ignition of all combustibles within a room).

(2) Control of Combustibles Outside the Process Buildings and Plant Area

The inspectors reviewed the potential for exterior fire exposures to the FMO, FMOX, and DCP buildings. The inspectors noted that the areas surrounding the process buildings were generally kept free of significant amounts of combustibles that could present a fire exposure hazard to the process buildings.

The inspectors also reviewed the control of combustibles to minimize the potential fire exposure hazard to radiological or hazardous material (e.g., UF_6 cylinders, fuel and material storage, hydrogen supply tanks, nitric acid tanks, the hydrogen fluoride building, etc.) The inspectors did not observe any conditions that would contribute to significant fire exposure hazards and found the control of combustibles adequate for the plant areas examined.

c. Conclusions

Combustibles were adequately controlled within the process buildings to minimize potential fire severity and fire propagation. Combustibles were also adequately controlled to minimize potential fire exposure hazards of UF_6 cylinders, bulk flammables, combustibles, or chemical tanks.

6. Independent Fire Safety Audits and the Commitment Tracking System

a. Scope

The inspectors reviewed concerns or recommendations from the safety audits of insurers, their safety significance as applied to nuclear operations at GNF-A, and the licensee's tracking of commitments related to correcting the identified concerns. The inspectors interviewed plant employees and reviewed documentation and records during the inspection.

b. Observations and Findings

(1) Independent Fire Safety Audits: The inspectors reviewed two fire safety audits performed by American Nuclear Insurer on October 26, 1999 and Industrial Risk Insurer on May 20, 2000. The insurers had identified fire safety recommendations for the GNF-A facilities and other facilities collocated on the General Electric plant site. The inspectors reviewed the safety significance of the recommendations and noted that they were primarily related to improving fire protection measures needed to minimize the risks to property. There were no significant fire safety concerns related to the overall fire protection of the nuclear operations or material in the FMO, FMOX, or DCP buildings.

(2) Commitment Tracking System: The licensee indicated that the formal commitment tracking systems (i.e., GNF-A's REGTRACK or General Electric's corporate-wide ES&H

Compliance Center Audit Tracking System) were used to track corrective actions for safety issues that arise at GNF-A. To evaluate the licensee commitment tracking systems and the licensee's performance in implementing corrective actions, the inspectors reviewed the implementation status of the fire safety recommendations of the insurers. The inspectors noted that the licensee, using the commitment tracking systems, had assigned responsible managers and detail corrective action tasks, along with completion dates. The inspectors determined that the licensee had completed 10 out of 14 recommendations identified by the insurers between 1997 and 1999. The licensee had formally closed three of the recommendations (94-9-1, 92-3-1, and 93-7-3) on the basis of management risk decisions to accept potential property loss or changes in the use of the facility. The one remaining recommendation (i.e., upgrade roofs) was an active, ongoing long-term project.

The inspectors also noted that all items identified in the insurer's audit of October 1999 were completed ahead of the schedules indicated on GNF-A's REGTRACK system. These items were completed from 11 to 60 days before the scheduled completion dates. The inspectors also verified and noted that the most recent Inspector Followup Item (IFI) 70-1113/2000-01 was entered into the REGTRACK system on June 20, 2000.

c. Conclusions

The licensee has met requirements of Section 8.3 of the license application for performing an independent safety audit of fire protection at the GNF-A facilities. The licensee has adequately evaluated, tracked, and managed insurer-identified fire safety recommendations.

7. Inspector Followup Items (92701)

IFI 70-1113/99-202-01: This IFI addressed the licensee's commitment to establish and implement adequate administrative controls and/or engineered controls to prevent storage of combustibles in the proximity of the UF_6 cylinder yard to minimize the risk of potential fire exposure. The inspectors performed a walk-down inspection of the area surrounding the UF_6 cylinder yard and noted that postings had been provided to prevent the storage of combustibles within 10 feet of the fence surrounding the UF_6 cylinder yard. The inspectors observed that the requirement was adequately implemented. No further issues were identified; therefore, IFI 70-1113/99-202-01 is closed.

8. Exit Meeting

The exit meeting was held on July 27, 2000, with those indicated in the attachment. The inspectors summarized the findings of the inspection. There were no regulatory issues discussed. No dissent was voiced by the licensee. The inspectors commented favorably about the support of the Castle Hayne Fire Department.

ATTACHMENT

1. Persons Contacted

F. Beaty, Fuel Manufacturing Maintenance
T. Beckingham, Site Maintenance
*D. Bianco, Castle Hayne Fire Chief
*R. Bragg, Supervisor Uranium Recovery
B. Cole, Fire Alarm Technician
*D. Dowker, Plant Manager
R. Foleck, Senior Licensing Specialist
*D. Godwin, Site Fire Chief
J. Goodson, Electrical Engineer
J. Green, Fire Systems Technician
*D. Hassler, Maintenance Manager
B. Hines, Fuel Manufacturing Maintenance
M. Karnes, Fire Alarm Technician
*H. Knight, Supervisor Emergency Preparedness
*G. Luciano, Supervisor Incinerator Facility
*R. Pace, Site Maintenance Manager
M. Phipps, Facility Manager
K. Shackleford, Castle Hayne Fire Lieutenant
*C. Vaughan, Manager Licensing

Other licensee employees contacted included engineers, technicians and operations staff.

*Denotes attendance at the Exit Meeting.

2. Inspection Procedures Used

88055 Fire Protection
92701 Followup on Previous Item

3. List of Items Closed

Number	Item	Status
70-1113/99-202-01	IFI	Closed

4. List of Acronyms

DCP	Dry Conversion Process
FMO	Fuel Manufacturing Operations
FMOX	Fuel Manufacturing Operations Expansion
GNF-A	Global Nuclear Fuels - Americas, L.L.C.
IFI	Inspector Followup Item
ITM	Inspection, Testing, and Maintenance
SNM	Special Nuclear Material
WSRC	Wilmington Safety Review Committee