UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

April 23, 2014

Mr. Amir Vexler
FMO Facility Manager
Global Nuclear Fuel – Americas, L.L.C.
P.O. Box 780, Mail Code J20
Wilmington, NC 28402

SUBJECT: GLOBAL NUCLEAR FUEL – AMERICAS, L.L.C. – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-1113/2014-002

Dear Mr. Vexler:

The Nuclear Regulatory Commission (NRC) conducted announced, routine inspections from January 1 through March 31, 2014, at the Global Nuclear Fuel – Americas (GNF-A) facility in Wilmington, North Carolina. The purpose of the inspections was to review the implementation of programs and procedures for Operational Safety, Fire Protection, and Emergency Preparedness. The reviews were performed to determine whether activities authorized by your license were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of these inspections. At the conclusion of the inspections, the inspection results were discussed with you and members of your staff at the exit meeting on February 27, 2014.

During the inspections, the staff examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspections consisted of facility walk-downs, selective examinations of relevant procedures and records, interviews with plant personnel, and plant observations. Based on the results of the inspection, no findings of significance were identified.

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 2.390 of 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 Agencywide Documents Access and Management System (ADAMS), which is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions, please call me at (404) 997-4629.

Sincerely,

/RA/

Marvin D. Sykes, Chief
Projects Branch 2
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report No. 70-1113/2014-002
w/Attachment: Supplemental Information

cc:
Scott Murray, Manager
Facility Licensing
Global Nuclear Fuels – Americas, L.L.C.
Electronic Mail Distribution

W. Lee Cox, III, Chief
North Carolina Department of Health and Human Services
Division of Health Service Regulation
Radiation Protection Section
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U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.:	70-1113
License No.:	SNM-1097
Report No.:	70-1113/2014-002
Licensee:	Global Nuclear Fuel - Americas, LLC
Location:	Wilmington, North Carolina 28402
Dates:	January 1 through March 31, 2014
Inspectors:	M. Crespo, Senior Fuel Facility Inspector (Section B.1) K. Kirchbaum, Fuel Facility Inspector (Sections A.2) R. Prince, Fuel Facility Inspector (Section A.1, C.1, C.2)
Approved by:	M. Sykes, Chief Projects Branch 2 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Global Nuclear Fuel - Americas, LLC
NRC Integrated Inspection Report No. 70-1113/2014-002
January 1 through March 31, 2014

Inspections were conducted by NRC regional inspectors during normal shifts in the areas of safety operations, emergency preparedness, and fire protection. During the inspection period, normal production activities were ongoing. These announced, routine inspections consisted of a selective examination of procedures and representative records, observations of activities, walk-downs of Items Relied on for Safety (IROFS), and interviews with licensee personnel. No safety significant findings were identified.

Operational Safety

- The facility's operations were implemented in accordance with the license application and regulatory requirements. (Section A.1)

Fire Protection

- The fire protection program was implemented in accordance with the license application and regulatory requirements. (Section A.2)

Emergency Preparedness

- The emergency preparedness program was implemented in accordance with the emergency plan and regulatory requirements. (Section B.1)

Attachment

Key Points of Contact
List of Items Opened, Closed, and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

Summary of Plant Status

Global Nuclear Fuel – Americas (GNF-A), LLC manufactures uranium dioxide (UO_2) powder, pellets, and light water reactor fuel bundles at its Wilmington, NC facility. The facility converts uranium hexafluoride (UF_6) to UO_2 using a Dry Conversion Process (DCP) and performs UO_2, gadolinium pellet and fuel fabrication operations. During the inspection period, normal production activities were ongoing.

A. Operational Safety

1. Operational Safety (IP 88020)

a. Inspection Scope and Observations

The inspectors toured production areas and observed operators and general plant and equipment condition and operational status. Operators were attentive to their duties and general work areas maintained free of miscellaneous debris and clutter. Items Relied on for Safety (IROFS) were noted to be available to perform their intended function if called upon. Housekeeping in process areas and in the vicinity of operating equipment was orderly and maintained in accordance with licensee housekeeping standards. Inspectors noted that general plant cleanliness had noticeably improved since the last inspection.

The inspectors interviewed licensee personnel responsible for the scheduling and maintenance of the functional testing and component calibration surveillance programs. The inspectors verified that the licensee's work control program had provisions to ensure the adequate pre-job planning, scheduling, and preparation of functional test and calibration work packages to support surveillance activities. The inspectors reviewed functional test instructions (FTIs) to ensure that test packages challenged and verified operability of IROFS and safety controls.

The inspectors observed a functional test performed to verify the operability of pressure and temperature sensors with automatic functions to shut down a UF_6 cylinder heater upon receipt of an actuation signal. The inspectors observed instrument technicians in the field installing test instrumentation to perform the functional test and the communications between personnel in the field and control room operators. Anticipated signals were received in the control room and operators confirmed and acknowledged alarms as they activated during the performance of the functional test. Operators discussed the function and purpose of the various alarms that were tested and the anticipated equipment response and demonstrated knowledge of the test parameters. No issues were identified.

During the course of the inspection the licensee experienced blockage in a pigtail in preparation to remove a cylinder from an autoclave. The inspector observed the licensee's response and preparations to replace the pigtail. Based on interviews and observations, the inspectors found that licensee personnel followed appropriate procedures in the preparation and removal of the pigtail. Necessary support personnel

and disciplines coordinated work activities in a deliberate and controlled manner. Appropriate radiological control measures were established to support work activities. The replacement of the pigtail was completed with no issues identified by the inspectors.

Based on inspectors' request, control room operators randomly displayed key equipment parameters on control room display panels and described the alarm response actions that would be taken in the event of an actual alarm condition. Operators were knowledgeable of the required actions and readily navigated control panels to display and acknowledge the status of system components and equipment.

Operating procedures were current and contained appropriate actions and instructions relating to alarm responses. IROFS and safety-related steps were referenced at key procedure steps and clearly annotated to facilitate their use.

b. Conclusion

There were no findings of safety significance.

2. Fire Protection-Annual (IP 88055)

a. Inspection Scope and Observations

The inspectors reviewed GNF-A Fire Protection procedures and toured plant areas containing safety controls and IROFS to assess the material condition of fire protection equipment, systems, and features. The inspectors verified that flammable materials were stored in marked cabinets as specified in approved procedures and that housekeeping and the control of combustible materials were adequate and consistent with the approved procedures.

The inspectors reviewed records and interviewed GNF-A personnel to verify that the observed fire protection systems were maintained in an adequate state of readiness and had been properly tested to verify their ability to perform their safety function. The inspectors determined that fire dampers, doors, and penetration seals were being maintained in a condition that would ensure they were available and reliable to perform their safety function. Flammable liquid storage cabinets, hose reels, and portable fire extinguishers were adequately maintained. Also, the inspectors determined that fire hoses and portable extinguishers were provided at their designated locations and access was unobstructed.

Based on field observations and discussions with licensee personnel, the inspectors determined that firefighting vehicles and supplies were adequately maintained and available for use. Firefighting vehicles were observed to be stocked with appropriate equipment and supplies. Personnel protective equipment for emergency response personnel was available for use and adequately maintained.

The inspectors reviewed the GNF-A corrective action program (CAP) entries for the past 14 months and determined that the GNF-A is identifying safety control or IROFS fire protection operability problems at an appropriate threshold and entering them into the CAP. Also, the inspectors evaluated the corrective actions associated with condition reports (CRs) and determined that those completed corrective actions are adequate with additional corrective actions scheduled for completion.

The inspectors reviewed Emergency Response Organization (ERO) drills for the past year and verified the Emergency Response Team (ERT) members received training and participated in drills at least an annual basis. The inspectors verified that the offsite fire support organizations were offered an opportunity for site orientation. The inspectors did not note any issues with the communication equipment and verified that the members of the ERT had access to their own portable radio communications while they were on duty.

b. Conclusion

No findings of significance were identified.

B. Facility Support

1. Emergency Preparedness (IP 88050)

a. Inspection Scope and Observations

The inspectors performed observation of plant activities, conducted personnel interviews, evaluated procedure changes, and inspected documentation and determined GNF-A's emergency preparedness program had been maintained in a state of operational readiness and had been coordinated with offsite support agencies.

The inspectors determined that there had been no emergency plan changes since the last inspection. The inspectors noted minor typographical errors in the current revision of the emergency plan that did not affect the effectiveness of the plan and passed those along to the licensee for correction.

The Inspectors reviewed a sampling of emergency plan implementing procedure (EPIP) changes and determined that the changes were in compliance with the emergency plan. The inspectors determined current copies of the EPIPs were readily available to members of the ERO. The inspectors reviewed the licensee's emergency call roster and verified the list was current and means were available to alert personnel to augment the on-shift staffing and the emergency response positions.

The inspectors reviewed emergency preparedness training records and interviewed the ERO staff to verify the personnel assigned to emergency response positions were knowledgeable and trained to perform their duties. The inspectors verified that the licensee provided training for special emergency equipment such as for communications, radiation and chemical monitoring, and personal protection and the individuals responsible for utilizing the equipment were qualified. The inspectors verified that the licensee offered offsite responders periodic training, including fire, law enforcement, and medical, and the training included orientation tours, site-specific hazards training, and the identification of the locations and nature of radioactive and hazardous materials.

The inspectors evaluated the licensee's corrective actions (CR 8893) to address the NRC's observations regarding offsite notifications from the last graded drill. The inspectors noted that the licensee attributed the failure to make certain notifications, in part, to not having a drill controller present to represent offsite agencies that were called away on actual emergencies the morning of the drill. The inspectors noted that the licensee identified a corrective action to ensure a drill controller is available to act as those roles in the future. In addition, the licensee developed a new procedure, WI-28-

114-16, “Emergency Classification & Notification,” dated November 21, 2013, to assist personnel in making the appropriate timely notifications. The inspectors noted that the procedure clearly laid out the requirements for notifications and which position had responsibility. The licensee committed to formalized training in the CR, which will be evaluated during the next exercise. The inspectors noted no issues with the licensee's corrective actions.

The inspectors reviewed the written off-site support and mutual aid agreements and interviewed the off-site response agencies and determined the off-site agencies maintained an adequate understanding of the written agreements and commitments. The inspectors interacted with the emergency management staff at the New Hanover Medical Center, New Hanover Emergency Management and 911 Operations Center, and the New Hanover County Fire Services and determined the licensee maintained an appropriate working relationship.

The inspectors conducted tours of the emergency response facilities and equipment storage locations at the site to evaluate the material condition and readiness of the facilities and equipment. The Inspectors toured the Emergency Control Center (ECC) and verified that the center was readily assessable and maintained the appropriate amount of communications and emergency preparedness equipment and supplies. The inspectors identified that radiation technicians were unaware of any radiological instruments repositories aside from the instruments available in their office and in the ECC. The inspectors determined that the emergency preparedness manager was knowledgeable of the properly maintained repository in the Wilmington Field Services Center. The other repository was housed in the Radiation Protection Manager's office. The licensee opened condition report 9641 to address the issue regarding the lack of formalization and training of the emergency equipment stored in designated lockers. No violations of requirements were identified.

The inspectors visited the New Hanover County Sheriff to verify that working relationships have been established with the local law enforcement. The inspectors visited the New Hanover Emergency Management and 911 Operations Center to verify the center was operational and available as an alternate location for the ECC.

The inspectors reviewed the 2013 audit of the emergency preparedness organization and noted that several corrective actions were identified and input into the CAP for resolution.

b. Conclusion

No findings of significance were identified.

C. Follow-up on Previous Events

1. Event Notice (EN) 49341 – Item relied on for Safety May Not be Available

The licensee made an event notification report (EN 49341) on September 13, 2013, when it was discovered that a feed tube level sensor on a press was not fail safe upon loss of signal. The sensor is a sole IROFS that serves to prevent or mitigate conditions associated with the initiating event based on a fire scenario. The failure sequence was associated with a local loss of power to the level sensor. The licensee discovered that if the feed tube level sensor lost local power to the sensor switch the sensor would fail

"open" resulting in an unsafe configuration. A wire to the switch would have to be cut or otherwise become disconnected for the postulated event to occur. The initial event notification report was made in accordance with 10 CFR 70, Appendix A, (a)(4) for one-hour reports, which states that an IROFS must remain available and reliable to perform its function in an accident sequence evaluated in the ISA. Based on the discovery, the licensee could not determine within the one hour time frame if the IROFS satisfied the "reliability" aspect of the sole IROFS to perform its intended function. Consequently the licensee conservatively made a one-hour report. The licensee subsequently determined that the IROFS was "reliable" and retracted the event notification report.

Based upon a review of documentation and interviews with the licensee, the inspectors found that the affected equipment was shut down and that no material was being processed at the time of the discovery of the situation. The situation was discovered by the licensee in conjunction with an ongoing project to eliminate sole IROFS where possible. The inspectors determined that the IROFS was "operable" throughout this period and the system was not in service at the time of discovery. The system remained out of service until the licensee completed an assessment of the situation and implemented corrective actions. The IROFS circuitry was reconfigured and tested so the IROFS would fail in a safe condition in the event that local power to the level switch is lost. The licensee installed a second IROFS (a heat sensor) to address the specific accident sequence for the applicable IROFS (401-15). The installation of the heat sensor eliminated the sole IROFS condition. The inspectors noted that the licensee entered the condition into their corrective action program (CR 7975) for evaluation and extent of condition review.

An extent of condition was conducted and the licensee identified one other situation (press pellet counter) where a loss of local power to a sole IROFS switch could have failed in an unsafe condition. A second IROFS was installed to address this condition, again eliminating the sole IROFS situation.

The inspectors determined that the basis for the licensee's retraction of the event notification considered the following:

- The original sole IROFS was determined to be "reliable,"
- The loss of local power (i.e., a local wire becoming disconnected) was considered an "unlikely" event,
- The licensee has not experienced any failures for the switch involved resulting from a loss of local power,
- In the event of a loss of total power the feed valve would have failed closed preventing feed of material to the press,
- The system remained out of service until the second IROFS control was installed, and
- An extent of condition was completed and appropriate corrective actions taken prior to placing the system back in service.

Based on a review of documentation and interviews with licensee personnel the inspectors noted that at no time did an unsafe condition exist and determined that the licensee had implemented adequate corrective actions. The failure sequence involved a loss of power to the level sensor's switch. In the event of a total loss of power to the system or facility the associated feed valve (IROFS) is designed to fail in a closed (i.e., safe) position, preventing feed of material to the press. Under this more likely scenario, the inspectors determined that failure of the level sensor would not pose a safety

concern since material feed to the press would be prevented. Based on the low probability that an electrical lead wire could become disconnected the inspectors determined that the IROFS was “reliable” and the condition was not reportable. This item is closed.

2. EN 49759: Licensee Event Report 70-1113/2014-01-01, Inoperable Criticality Warning System Horn

The licensee made an Event Notification Report (EN 49759) on January 23, 2014, when it was discovered during routine testing of the outdoor Criticality Warning System (CWS) that a data acquisition model had inadequate voltage to activate a portion of the local alarm horns. Specifically, the alarm horns in the Wilmington Field Services Center (WFSC) were not sufficiently activated to provide the necessary warning to personnel in the area of a criticality event. The issue was subsequently attributable to a low voltage battery charger.

The battery charger was replaced with a new model and the affected outdoor CWS horns successfully retested. The system was returned to service on January 22, 2014. Routine testing of the CWS horns and battery chargers was performed by the licensee. The inspectors asked if the routine testing of the battery charger could have detected the low voltage condition. The licensee believes that the condition resulted from a combination of cold weather and the age of the units in the field.

An extent of condition was performed and the licensee tested all other similar CWS outdoor battery charger-horn combinations. All other units were successfully tested with no issues identified.

The inspectors noted that the licensee is in the process of replacing the current CWS system with a new system. Additionally the licensee has removed fissile active material from the WFSC eliminating the possibility of a criticality event in this area and the need for CWS coverage. Additionally the licensee plans to install access control measures, including physical barriers to the WFSC area to prevent the unauthorized movement of fissile material into the area that could pose a criticality concern. This work is scheduled for completion by the third quarter of 2014.

Once the new criticality alarm system is installed only one outside area will remain where the current CWS horns are powered by the present battery charger model. This area is associated with the onsite lagoons, a location in which a criticality event is considered to be highly improbable. That in conjunction with the preventative maintenance and CWS routine testing program provides adequate assurance that the horns will be available if called upon. This item is closed.

D. Exit Meeting

The inspection scope and results were presented to members of the licensee’s staff at various meetings throughout the inspection period and were summarized on February 27, with A. Vexler and staff. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

SUPPLEMENTAL INFORMATION

1. LIST OF PERSONS CONTACTED

Name	Title
T. Alston	DCP Control Room Operator
E. Anderson	EHS, Medical
F. Beaty	DCP Area Engineer
M. Campbell	Manager, Fire Safety
C. Davidson	EHS, Fire Safety
J. DeGolyer	Emergency Preparedness
A. Hilton	Manager, FAB
B. Howell	Manager, PP&SS
U. Latham	Sr. Admin Specialist, Licensing
M. Leik	EHS Programs
S. Murray	Manager, Licensing
S. O'Connor	EHS
P. Ollis	Licensing Engineer
L. Paulson	GLE Manager, EHS/Nuclear Safety
T. Priest	Radiation Protection
J. Rohner	Criticality Safety Program Manager
E. Saito	Manager, EHS
M. Venters	Emergency Preparedness Program Manager

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

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

3. INSPECTION PROCEDURES USED

IP 88020 Operational Safety
IP 88050 Emergency Preparedness
IP 88055 Fire Protection (Annual)

4. DOCUMENTS REVIEWED

Procedures:
OP 1332.00.100, Revision (Rev.) 01, DCP Conversion – General Information
OP 1332.00.204, Rev. 00, DCP Conversion – Normal Operations
OP 1332.00.207, Rev. 00, DCP Conversion – Abnormal Operations
OP 2300.00, Rev. 8, Work Order Administration
OP 1334.00.202, Rev. 02, DCP Homogenization – Startup
OP 1334.00.203, Rev. 05, DCP Homogenization – Loading Powder
OP 1334.00.204, Rev. 02, DCP Homogenization – Normal Operations

OP 1334.00.208, Rev. 00, DCP Homogenization – Alarm Response & Emergency Operations
WI-20-107-01, Rev. 0, Conduct of Evaluation
WI-20-107-02, Rev. 1, Conduct of Requalification
WI-20-107-03, Rev. 0, Conduct of Instructor Led Training
WI-20-107-04, Rev. 0, Conduct of On-the-Job Training
FTI 1331-03a, Rev. 5.1, Shutdown of UF6 Cylinder Heater if the Cylinder A Pressure Exceeds 2.5 kg/cm2 or if the Skin Temperature Increases Above 120o C
FTI 1210.04, Rev. 2.2, Dry Cycle Furnace Powder Discharge: High Moisture Powder is Rejected into the 3-Gallon Can Reject Powder Hood
FTI 1332-17, Rev. 3, Steam Supply Interlocks
FTI 1335-10, Rev. 10.2, Prevent Excess Mass in the Unicone (>490 kg) and the Bicone (>450 kg)
FTI 1220.02, Rev. 0, DSR Vibromill: Incorrect Material Type or Incorrect Release Status Will Not Authorize Material Movement to Feed Station by FBS
OP 1332.00, Rev. A, Training Manual, Dry Conversion Process
WI-27-110-02, Diesel Fire Pump Weekly Run Test, Rev. 1.0, dated September 27, 2012
CP-27-108, Combustible Control Program, Rev. 2, dated January 9, 2012
WI-27-109-01, Hot Work Permits, Rev. 1, dated September 10, 2013
WI-27-110-01, Fire Extinguishger Inspection, Maintenance, And Replacement, Rev. 2.0, dated December 11, 2013
WI-27-110-16, Sprinkler System Water Supply Valve Monthly Inspection, Rev. 1.0, dated November 19, 2013
WI-27-110-17, Sprinkler System Quarterly Inspection and Flow Alarm Test, Rev. 0, dated April 5, 2013
WI-27-110-18, Sprinkler System Semi-Annual Supervisory Device Test, Rev. 0, dated May 15, 2012
WI-27-110-25, Dry Pipe Sprinkler System Weekly Inspection, Rev. 0, dated July 5, 2012

Records:
Pre-Fire Plans:
- HF Building; dated March 19, 2013
- FMO/FMOX; dated March 6, 2013
- DCP/FMOX Warehouse; dated March 20, 2013
- Incinerator; dated March 20, 2013
- Spent Solvent/Storage; dated April 12, 2013
- Generator Building; dated April 12, 2013
- WFSC Nuclear Service Building; dated February 27, 2013

CRs Review:
- CR 5389/5390, Battery testing is done for short duration via a load bank vice 30 minute test per NFPA 72
- CR 6077, Update, expand and formalize procedures and PM routines to inspect/test the diesel and electric fire pumps
- CR 6078, Update, expand and formalize procedures and PM routines to inspect/test the elevated tank and fire water reservoir
- CR 8869, Triennial audit of Fire Protection and Explosion Prevention Programs

Other Documents:

2013 Triennial Audit of GNF-A Fire and Explosion Prevention Program (CR 8869), EHS-2013-01 Fire and Exp Prev. dated November 6-12, 2013

FHA 1320.00 DCP Fire Hazard Analysis Rev 0 dated June 2011

WI-27-104-01, "Nuclear Safety and Security Event Communication and Notification," Rev. 2.1, dated March 28, 2013

WI-28-114-16, "Emergency Classification & Notification," Rev. 0.0, dated November 21, 2013

"Emergency Control Center Monthly Check List," Rev. 16, dated August 20, 2013

"2013 GNF-A Radiological Contingency & Emergency Plan Audit and Assessment," dated February 19, 2014