



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

October 27, 2014

EN 50276

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 70-1113/2014-004 AND  
INSPECTION REPORT 70-1113/2014-203**

Dear Mr. Vexler:

The Nuclear Regulatory Commission (NRC) conducted announced, routine inspections from July 1 through September 30, 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 operations, maintenance and surveillance, nuclear criticality safety, and plant modifications. 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 August 21, 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 Nos. 70-1113/2014-004  
and 70-113/2014-203 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 Nos.: 70-1113/2014-004 and 70-1113/2014-203

Licensee: Global Nuclear Fuel - Americas, LLC

Location: Wilmington, North Carolina 28402

Dates: July 1 through September 30, 2014

Inspectors: B. Adkins, Senior Fuel Facility Inspector (Section A.1)  
P. Glenn, Fuel Facility Inspector (Sections B.2)  
K. Kirchbaum, Fuel Facility Inspector (Sections B.1)  
C. Tripp, Senior Nuclear Process Engineer (Section A.2)  
N. Peterka, Fuel Facility Inspector, (Section B.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 Nos. 70-1113/2014-004 and 70-1113/2014-203  
July 1 through September 30, 2014

Inspections were conducted by NRC regional inspectors during normal shifts in the areas of operations, maintenance and surveillance, nuclear criticality safety, and plant modifications. 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.

### **Safety Operations**

- The Items Relied on for Safety reviewed were properly implemented and maintained in order to perform their intended safety function (Section A.1).
- The new criticality safety analysis (CSA) format provided for clear demonstration of double contingency and flowdown from the CSA to the Integrated Safety Analysis. Audits were found to be conducted adequately. The licensee's response to a reportable event was adequate. (Section A.2)

### **Facility Support**

- The licensee implemented its maintenance and surveillance program adequately to meet the requirements of the license application and regulations. (Section B.1)
- Plant modifications were implemented in accordance with the license and regulatory requirements. (Section B.2)

### **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<sub>2</sub>) powder, pellets, and light water reactor fuel bundles at its Wilmington, NC facility. The facility converts uranium hexafluoride (UF<sub>6</sub>) to UO<sub>2</sub> using a Dry Conversion Process (DCP) and performs UO<sub>2</sub>, gadolinium pellet and fuel fabrication operations. During the inspection period, normal production activities were ongoing.

#### A. Safety Operations

##### 1. Operational Safety (Inspection Procedure (IP) 88020)

##### a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records associated with the Dry Conversion Process (DCP) vaporization area. The inspectors determined that Items Relied on for Safety (IROFS) associated with DCP are being adequately implemented and properly communicated as described in the Integrated Safety Analysis (ISA). The following IROFS were selected as samples for the inspection:

- IROFS 201-01, Vaporization Cylinder Temperature and Pressure Control System
- IROFS 201-04, Cold Trap Temperature and Pressure Control System
- IROFS 201-09, Cold Trap Refrigerant Composition
- IROFS 201-11, UF<sub>6</sub> Skin Temperature Backflow Control
- IROFS 201-12, Reactor/UF<sub>6</sub> Feed Line Differential Pressure Interlock
- IROFS 201-13, Mobile Trolley Media
- IROFS 201-15, Non-Hydrogenous Oil – Mobile Trolley
- IROFS 201-20, UF<sub>6</sub> Feed Piping
- IROFS 201-21, Cold Trap Vessel Containment
- IROFS 900-03, GNF-A Facility MRA

The inspectors confirmed that the IROFS associated with DCP were present and capable of performing their intended safety functions. To complete this confirmation, the inspectors verified the physical presence of passive and active engineered safety controls, evaluated the safety controls to determine their capability and operability, and verified that potential accident scenarios were covered.

The inspectors determined that the licensee's administrative controls were properly implemented and communicated. The inspectors reviewed the operating procedures for DCP and determined that required actions as identified in the ISA Summary have been correctly transcribed into written operating procedures. The inspectors evaluated procedure contents with respect to operating limits and operator responses for upset conditions and verified that limits needed to assure safety were adequately described in the procedures.

The inspectors interviewed three plant operators and observed operators performing routine tasks and determined that operators were adequately implementing the required safety controls and adhering to applicable safety procedures. The inspectors reviewed

the postings and operator aids applicable to the tasks being observed and determined that these postings and operator aids were current, addressed safety controls, and were followed by the operators.

Through interviews and document reviews, the inspectors verified that the licensee had conducted preventive maintenance, calibration, and periodic surveillances as required by the ISA Summary for DCP system.

The inspectors reviewed a sampling of the licensee's corrective action program entries for the past twelve months and determined that noted deviations from procedures and unforeseen process changes affecting nuclear criticality, chemical, radiological, or fire safety were appropriately documented and investigated promptly. Also, the inspectors evaluated the corrective actions and determined that the completed corrective actions were adequate.

### Conclusion

No findings of significance were identified.

## 2. Nuclear Criticality Safety (NCS) (IPs 88015 and 88016)

### a. Inspection Scope and Observations

The inspectors reviewed the licensee's NCS Program. This consisted of reviewing new and revised analyses, associated code validation, staff training, audits, plant activities, and event follow-up. The inspection consisted of reviews of selected portions of the documents listed in the Attachment, interviews with licensee management and staff, and field observation of audits and operations.

The inspectors reviewed new and revised analyses as listed, in particular the criticality analysis (CSA-701-1), ISA documentation (QRA[Quantitative Risk Analyses]-701), and ISA Summary associated with changes to the decontamination area. In a previous inspection, the inspectors had noted that the criticality analysis for the decon area did not clearly describe the basis for double contingency, and disagreed with the ISA documents on the independence of its administrative controls. This issue was tracked as Inspection Follow-up Item (IFI) 70-1113/2013-202-01. During the current inspection, the inspectors noted that the CSA had been updated to the new format, in which scenarios leading to criticality were listed and the basis for meeting double contingency and controls for each scenario described. For the scenario of previous concern in which an unsafe batch of uranium was introduced to the decon sort table, upstream measures to remove gross contamination and weigh the filters prior to entering the decon area are now listed as controls. In addition, verifying the mass limits on material brought into the area is now an explicit control and must be performed using calibrated scales. The inspectors walked down the area and observed the layout of the sort table, trenches, and modified geometry of the sump. The inspectors also reviewed the ISA documentation and confirmed that it is consistent with the CSA. Scenarios postulated in the process hazard analysis (PHA) were analyzed and shown to be doubly contingent, along with additional scenarios identified by the NCS staff, based on the newly formalized controls. Therefore, IFI 70-1113/2013-202-01 is closed.

The inspectors reviewed the new validation for the SCALE-6.1 code package, noting that it followed a similar methodology as previous validations for Monte Carlo N-Particle (MCNP) and Geometry Enhanced Merit (GEMER). Some critical benchmarks had been changed and tests for data normality and goodness-of-fit were applied more consistently than in previous validations. The inspectors noted that in the GEMER validation, the data normality (both  $k_{\text{eff}}$  values and data residuals) and the goodness-of-fit tests were passed, and so the licensee had used the single-sided lower tolerance limit (SSLTL) method for each area of applicability (AOA). In the SCALE-6.1 validation, however, the outcome of these tests varied, and the choice of method did not always appear consistent with the outcome. AOA-1, which entails homogeneous low-enriched uranium, used the single-sided lower tolerance band (SSLTB) approach, even though the regression correlation coefficient and goodness-of-fit test ( $\chi^2$ -test) were not passed. The SSLTB method is only intended for use when there is an apparent trend in the bias. The inspectors deemed this not significant because the slope of the fit was essentially flat and therefore statistically indistinguishable from an SSLTL limit. For AOA-4, however, which entails heterogeneous low-enriched uranium with cadmium absorbers, the  $k_{\text{eff}}$  values passed the normality test but the data residuals did not. The licensee used the SSLTL method, even though this method relies on data normality. The licensee stated that it used the SSLTL method because the  $k_{\text{eff}}$  values passed the normality test. However, the validation report stated that when the calculated  $k_{\text{eff}}$  values or their residuals are not normally distributed, the nonparametric method (NPM) should be used. When a strong bias trend is present, it may be that the calculated  $k_{\text{eff}}$  values are not normally distributed even if their residuals are. When there is no apparent trend in the data, it is not clear why the calculated  $k_{\text{eff}}$  values would be normally distributed but their residuals would not. The inspectors determined that applying the NPM for AOA-4 would have resulted in an upper subcritical limit (USL)  $\sim 0.6\%$  lower. Further discussion indicated that the choice of a statistical method was not at the discretion of the analyst, but was determined automatically by the in-house code USL statistical analysis (USLSA). SCALE-6.1 has not yet been used to support any facility analyses. The licensee opened Condition Report (CR) CR 11770, to evaluate the basis for the choice of a statistical method in the validation report, and specifically the use of the SSLTL method for AOA-4, prior to its use. The basis for determining the choice of statistical methods for determining the USL in the SCALE-6.1 validation report will be tracked as IFI 70-1113/2014-004-01.

The inspectors accompanied NCS staff on an audit of the gadolinia line. The audit was coordinated with the area manager and health physics, and consisted of a review of Nuclear Safety Release/Requirements (NSR/R) implementation, compliance with limits, and discussion with operators. The inspectors observed that the audit appeared to be comprehensive and thorough. The audit resulted in the three minor observations concerning a failure to secure all locations in the gad rod storage cabinet, a missing clasp for a cover over an off-spec pellet chute, and degraded latches on doors on a conveyor for transporting powder from the scrap furnace. The degraded material condition of these items was of minor significance since additional geometry and moderator failures would be needed before criticality would be possible.

The inspectors also reviewed the licensee's follow-up for reported event EN 50276, which involved a water leak into the dry scrap recycle Moderator Restricted Area (MRA). The leak originated from a length of flexible  $\frac{1}{2}$ -inch plastic tubing that had been installed on top of a large ventilation duct passing through the MRA. The tubing was not readily visible as it was obscured by the ductwork, and had a similar appearance to electrical wiring bundled nearby. The presence of the water tubing is at variance with the MRA



requirements and was not shown on system drawings. The leak which occurred was a small amount of water several feet from an empty unicone and some floor storage units. The inspectors determined that the licensee's corrective actions were appropriate, which involved an extent of condition review that did not identify any additional unauthorized water lines in MRAs. The inspectors walked down all the MRAs and did not identify any additional safety concerns. This closes Licensee Event Report (LER) 2014-003.

The inspectors reviewed training records and discussed training with newly qualified NCS staff, and determined their training to be adequate and consistent with industry practice and license commitments. The inspectors also reviewed the removal of IROFS from the HF recovery area, from the standpoint of criticality safety. The removal of IROFS had been approved by amendment dated December 19, 2013. The inspectors determined that criticality control relied on redundant metal filters to prevent carryover of significant amounts of fissile material downstream to the HF recovery building. Controls to prevent carryover of fissile material are still identified as IROFS. The only IROFS removed were those associated with chemical hazards in the recovery building, because the chemicals are no longer associated with licensed material. The inspectors therefore determined that there is no impact on criticality safety.

b. Conclusion

The new CSA format, initially used for reanalysis of the decon area, provided for clear demonstration of double contingency and flowdown from the CSA to the ISA. A possible inconsistency in the application of code validation methods resulted in an IFI. The audits were found to be conducted adequately, but identified multiple instances of deficiencies in the material condition of engineered safety controls. The licensee's response to the reportable event was adequate. No other safety concerns were noted.

B. Facility Support

1. Maintenance and Surveillance of Safety Controls (IP 88025)

a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records and procedures associated with GNF-A maintenance processes. Specifically, the inspectors reviewed the most recently completed Functional Test Instructions (FTI) and all associated equipment calibration records to verify IROFS related equipment is being tested with the proper revisions of test documents, within the required periodicity, and that all required data is being properly documented. The inspectors focused on the Vaporization Area of the DCP and determined that the IROFS are being adequately implemented and properly maintained as described in the ISA.

The inspectors interviewed staff, supervisors, and operators in the control room and determined that the licensee staff is adequately performing testing and surveillances as required to ensure the availability of safety significant equipment. Through interviews and document reviews, the inspectors verified that the licensee conducted preventive maintenance, calibration, and periodic surveillance as required by the ISA Summary.

The inspectors attended various production meetings and safety meetings throughout the inspection to observe the organizational implementation of the corrective and preventative maintenance programs. The inspectors performed walkdowns of the DCP

areas. Special attention paid to the Vaporization rooms and equipment. The inspectors noted conditions of IROFS related equipment and overall material conditions to be satisfactory.

b. Conclusion

No findings of significance were identified.

2. Plant Modifications (PPMs) (IP 88070)

a. Inspection Scope and Observations

The inspectors interviewed select managers, supervisors, and staff to verify that the licensee has established an effective configuration management system to evaluate, implement, and track PPMs to the site which could affect safety. The inspectors also performed plant walkdowns of the modifications reviewed. The inspectors evaluated PPM procedure changes since the last PPM inspection to verify that the changes were consistent with license requirements including specific requirements related to configuration management.

The inspectors verified that the licensee's work control program had provisions to ensure the adequate pre-job planning and preparation of PPM design packages. The inspectors verified that the licensee's configuration management system had adequate provisions to ensure that permanent plant modifications did not degrade the performance capabilities of IROFS or other safety controls that are part of the safety design basis.

The inspectors reviewed select plant modification design packages since the last PPM inspection for accuracy. The inspectors verified that, as applicable, post maintenance installation and testing requirements were adequately identified and performed prior to implementation of permanent plant modification design packages. Completed modifications were adequately reviewed prior to implementation and before returning affected equipment to service. Projects inspected included, but were not limited to the GAD heat detector sensor relocation, installation of knife gate valves on the GAD slugger and press dump hoods, and the GAD feed hopper platform installation.,

The inspectors verified that the selected PPMs involving IROFS were adequately designed and implemented and that assumptions were validated with the actual configuration and operation of the modified processes. The inspectors also verified that the licensee had implemented management measures such as procedures, configuration management, audits and assessments, and training to assure that modified IROFS were available and reliable to perform their intended safety function when needed.

The inspectors reviewed the licensee's internal audits of the configuration management program. The inspectors determined that audits were being conducted and that findings were entered in the licensee's problem identification and resolution system.

The inspectors verified that the licensee addressed the impacts of modifications to the ISA, ISA Summary, and other safety program information developed in accordance with 10 CFR 70.62. The inspectors also verified that the reviewed PPMs were in compliance with the requirements of 10 CFR 70.72.

The inspectors reviewed the licensee's problem identification and resolution program to verify that issues relating to the preparation and installation of PPM were entered into the corrective action program and the adequacy of corrective actions.

b. Conclusion

No findings of significance were identified.

E. 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 August 21, 2014, to 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. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
Beaty, F.	PP&SS Area Engineer
Brotman, A.	Training Leader, FMO
Crott, R.	Nuclear Safety Manager
Degolyer, J.	ISA Projects Manager
Dodds, M.	Sr. Criticality Safety Engineer
Dunn, E.	Criticality Safety Engineer
Eghbali, D.	Senior Criticality Safety Engineer
Gaul, M.	Integrated Safety
Holmes, N.	GNF-A Chief Operating Officer
Howell, B.	Manager, PP&SS
Lachance, P.	FMO Maintenance
Latham, U.	Sr. Admin Specialist, Licensing
Murray, S.	Manager, Licensing
Ollis, P.	Licensing Engineer, Licensing and Liabilities
Reeves, J.	Manager, Integrated Safety Analysis
Rohner, J.	Manager, Criticality Safety Program
Vexler, A.	FMO Operations Leader & Facility Manager

### 2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

IFI 70-1113/2014-004-01      Tracks the licensee's basis for determining the choice of statistical methods for determining the USL in the SCALE-6.1 validation report.

#### Closed

IFI 70-1113/2013-202-01      Tracks the licensee's revision of the CSA and ISA Summary to clarify the basis for double contingency in the decontamination area and to clearly demonstrate independence.

### 3. INSPECTION PROCEDURES USED

88015	Headquarters Nuclear Criticality Safety Program
88016	Nuclear Criticality Safety Evaluations and Analyses
88020	Operational Safety
88025	Maintenance and Surveillance
88070	Plant Modifications

#### 4. DOCUMENTS REVIEWED

##### Procedures:

CP-16-108, Corrective Action Program, Revision (Rev.) 6.0  
 OP 1331.00.100, DCP Vaporization – General Information, Rev. 02  
 OP 1331.00.201, DCP Vaporization – Pre-Startup, Rev. 00  
 OP 1331.00.203, DCP Vaporization – Autoclave Loading, Rev. 01  
 OP 1331.00.204, DCP Vaporization – Vaporization Process, Rev. 00  
 OP 1331.00.205, DCP Vaporization – Cold Trap Operations, Rev. 00  
 OP 1331.00.206, DCP Vaporization – Autoclave Unloading, Rev. 00  
 OP 1331.00.209, DCP Vaporization – Abnormal Operations, Rev. 00  
 OP 1331.00.211, DCP Vaporization – Basic Operator Maintenance, Rev. 01  
 CP-27-114, Integrated Safety Analysis, Rev. 2  
 OP 1331.210, DCP Vaporization – Alarm Response and Emergency Operations, Rev. 02  
 QRA-201, DCP-Vaporization, Rev. 06  
 FTI-1331-01, Shutdown of the UF6 (G) Feed to the Kiln if the Kiln Pressure Exceeds the UF6 Feed Line Pressure, Rev. 5  
 FTI-1331-02a, Shutdown of the UF6 (G) Feed to Kiln if a Skin Temperature Drops Below 70°C. This prevents Backflow of Reactor gases into the 30B Cylinder, Rev. 4  
 FTI-1331-03a, Shutdown of UF6 Cylinder Heater if Cylinder A Pressure Exceeds 2.5 KG/CM2 or if Skin Temperature Increases above 120°C, Rev. 5.1  
 FTI-1331-04a, Shutdown Cold Trap Top Heaters if either the Temperature Exceeds 135 C, the Pressure Exceeds 2.5 KG/CM2 or the Load Cell Weight Exceeds 180 KGS, Rev. 5  
 FTI-1331-04b, Shutdown Cold Trap Bottom Heaters if either the Temperature Exceeds 135 C, the Pressure exceeds 2.5 KG/CM2 or the Load Cell Weight Exceeds 180 KGS, Rev. 4.1  
 FTI-1331-05a, Shutdown of Autoclave A Nitrogen Purge to Cylinder in the Event of a UF6 Leak Detection by the HF Detectors, Rev. 5  
 FTI-1331-06a, Prevent the Operation of the Autoclave A Heater if the Autoclave Door is not Locked Close, Rev. 4  
 FTI-1331-07a, Prevent the Heatup of Cylinder A if the Valve XV#1900 is Closed, Rev. 4  
 FTI-1331-08, Cold Trap Heaters will not Operate if the Valve XV#1941 is Closed, Rev. 4  
 FTI-1331-09a, Shutdown of UF6 Cylinder Fan if the Cylinder A Pressure Exceeds 2.7 KG/CM2 or if the Skin Temperature Increases above 120C, Rev. 5.1  
 FTI-1331-10, Detection of HF Vapors in Vaporization Room Turns on Alarm Lights, Turns off Heaters and Close Autoclave and Cold Trap Valves, Rev. 2  
 FTI-1331-11, Vaporization Area Stack Exhaust Shutdown, Rev. 0  
 WI-27-106-21, Lockout/Tagout Program, Rev. 0.0  
 CP-16-108, Corrective Action Program, Rev. 6.0  
 CP-27-114, Integrated Safety Analysis, Rev. 2, dated December 11, 2013  
 OP 1070.35, GAD Shop Rotary Press, Rev. 46, dated August 7, 2014

##### Condition Reports Written as a Result of the Inspection:

CR 11831, Improper Removal of Design Requirements as a Management Measure for IROFS 201-20 and Failure to Provide Records for ASME B31.3 Compliance  
 CR-11748, Update FTI to Explicitly Acknowledge Operator Notifications  
 CR-11831, During routine NRC inspection, two minor violations were noted  
 CR 11765, dated August 21, 2014  
 CR 11772, dated August 21, 2014  
 CR 11778, dated August 21, 2014

Other Documents:

General Electric Dry Conversion Process Project 50003 Material Specification Line Class – Process and Utility Piping, dated April 13, 1995

JCC Dry Conversion Process Wilmington, N.C., Standard S10.1320, Piping Classification, Rev. C, dated June 1995

Incumbent DCP Vaporization Qualification Card for SSO Number 204001059

Incumbent DCP Vaporization Qualification Card for SSO Number 204009144

Incumbent DCP Vaporization Qualification Card for SSO Number 204016278

Technical Report 1331, Rev. 26

JCC Dry Conversion Process Wilmington, N.C., S02.1331, Technical Specification for Cold Trap, Rev. 0, dated March 1, 1995

P001331, Vaporization Line P&ID, Rev. 13

Nuclear Safety Release/Requirements (NSR/R) # 15.02.04, DCP Mobile-Trolley, Rev. 01, dated September 6, 2007

Manufacturing Material or Services Purchase Instruction (MMSPI) 1-FMO-029, Aluminum Oxide Special Grade (GR), Rev. 1, dated January 14, 1999

MMSPI 1-FMO-088, Fomblin Y-LAV 25/6 (Alcatel 113), Rev. 3, dated November 19, 1998

MMSPI 1-FMO-010, “Genetron” – 123 Refrigerant, Rev. 3, dated October 19, 2004

NSR/R # 15.02.03, DCP Cold-Trap, Rev. 05, dated November 9, 2012

PRI 4-10, Manufacturing Material or Services Purchase Instructions (MMSPI), dated April 25, 2014

CR-11028, Replace CS Teflon Lined HF Pipe with Monel 400 in the DCP 3rd Floor Equip Room

CR-10716, DCP to HF Building HF Piping Replacement

CR-11482, Periodic Review of the NSE Quarterly Audits

CR-13196, Declare Functional Equivalent for FCV#2212 N2/H2 Valve

CR-13207, Provide Functional Equivalent for H2 Flowmeter

WO 442548, Replace Sch 40 2 inch Monel 400 Pipe on Line 3 DCP 3rd Floor

WO 103417, Calibration Inspection DCP Line 2 Cold Trap Non-Acc Scale

WO 71772, Annual Calibration PT-11143 Cold Trap Outlet UF6 Pressure

WO 71711, Annual Calibration: Calib PT11101, Autoclave 1A Outlet UF6 Pressure Range – 1 to 3 KG/CM

WO 71780, Annual Calibration: Calibration TT-11000 Autoclave Heating Safety Temperature

WO 71608, Annual Calibration: Calibration PT-71608

WO 71592, Annual Calibration: Calibration Pressure: PT 12100 Kiln Reactor Pressure

WO 103319, Monthly Calibration: Essential Calibration AT-11329 HF/UF6 Detector Vaporization

WO 103197, Monthly Calibration: Essential Calibration AT-11309 HF/UF6 Detector Vaporization

WO 71780, Annual Calibration: Calibration TT-11000 Autoclave Heating Safety Temperature

WO 74130, Assist with installation/termination/checkout of new wiring and relay panel to move H2 controls to the roof. CR-11936 authorizes changes to the system.

PHA-201, ISA Reference Report for the DCP Vaporization Node Group, Rev. 2

QRA-201, DCP – Vaporization, Rev. 6

QRA-401/503, Fabrication Press, Rev. 11, dated July 2014

DWG-3005E12, “FMOX Potable Water Piping System Layout,” Rev. 0, dated September 25, 2012

Integrated Safety Analysis Summary, Rev. 17, dated January 30, 2014

NSR/R 2.17.02, dated December 4, 1997

NSR/R 15.06.02, dated December 19, 1997

NSR/R 05.04.01, dated February 17, 2014  
NSR/R 05.02.18, Rev. 0, dated December 16, 1996  
NSR/R 05.02.18, Rev. 7, dated April 30, 2012  
CSA-5063-01, "Gadolinia Rod-Cabinet Operation at 5%," Rev. 02, dated June 11, 2014  
CSA-5063-01, "Gadolinia Rod-Cabinet Operation at 5%," Rev. 02.01, dated July 13, 2014  
QRA 407/506, "Fabrication – UO2/Gad Rod Processing," Rev 6, dated May 27, 2014  
CSA-701-1.01, "Criticality Safety Analysis: Decon Inner Room," dated June 6, 2014  
CSA-701-1.02, "Criticality Safety Analysis: Decon Inner Room," dated August 15/ 2014  
CSA 1080.20, "Criticality Safety Analysis: New Decon Interaction Analysis," Rev. 4, dated March 3, 2013  
PHA-701, "ISA Reference Report for the 701 Node Group," Rev. 1, dated June 3, 2014  
QRA-701, "Decon," Rev. 7, dated June 2014  
NS-11-012, "Probability Development for Identification of Uranium Spills During Operator Interface," dated August 15, 2011  
"SCALE6.1/KENO-VI Monte Carlo Code Validation Rpt," Rev. 0, dated November 30, 2012  
"MCNP-05P Validation Report," Rev. 0, dated August 2008  
NS-13-004, "CSE Qualification, [redacted]," dated December 18, 2013  
NS-13-003, "Senior CSE Qualification, [redacted]," dated December 6, 2013  
"GEH Criticality Safety Engineer Training & Qualification Manual," Rev. 4, dated December 2010  
"GEMER Monte Carlo Code Validation Report," Rev. 5.1, dated January 2010  
Work Order 113335, dated August 20, 2014  
Work Order 113337, dated August 20, 2014  
CR 11770, dated August 21, 2014  
Change Request Package 9191  
Change Request Package 9439  
Change Request Package 10612  
Change Request Package 10685  
Change Request Package 11002  
Change Request Package 11275  
Change Request Package 11349  
Change Request Package 11593  
Change Request Package 11601  
Change Request Package 11643  
Change Request Package 11644  
Change Request Package 12523  
Change Request Package 13458  
FTI 1070.35 F12  
ISA Reviewer Final Test, Rev. 6, dated August 22, 2013  
Condition Reports 10172, 10240, 10241, 10469