



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

January 29, 2018

EN52886  
EN53046

Stephen Cowne, Chief Nuclear Officer  
and Compliance Manager  
URENCO USA  
P.O. Box 1789  
Eunice, NM 88231

SUBJECT: LOUISIANA ENERGY SERVICES, LLC, URENCO USA – NUCLEAR  
REGULATORY COMMISSION INTEGRATED INSPECTION REPORT  
70-3103/2017-005

Dear Mr. Cowne:

This letter refers to the inspections conducted from October 1 through December 31, 2017, at the Louisiana Energy Services, LLC, URENCO USA facility located in Eunice, New Mexico. The purpose of these inspections were to determine whether licensed activities were conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of these inspections, which were discussed with members of your staff on October 19, and December 14, 2017.

These inspections examined activities conducted under your license, as they related to public health and safety, to confirm compliance with NRC rules and regulations and with the conditions of your license. The inspection areas covered your Biennial Emergency Preparedness Exercise, Nuclear Criticality Safety, Plant Modifications, and Plant Operations. Within these areas, the inspections consisted of examination of selected procedures and representative records, observations of activities, and interviews with personnel. No violations of more than minor significance were identified.

In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390 of the NRC's "Rules of Practice and Procedure," 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), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this matter, please contact me at (404) 997-4703.

Sincerely,

*/RA/*

Omar R. López-Santiago, Chief  
Projects Branch 1  
Division of Fuel Facility Inspection

Docket No. 70-3103  
License No. SNM-2010

Enclosure:  
Inspection Report No. 70-3103/2017005  
w/Attachment: Supplemental Information

cc: (See page 3)

cc:

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cc: (Cont'd on page 4)

(cc: cont'd)

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SUBJECT: LOUISIANA ENERGY SERVICES, LLC, URENCO USA – NUCLEAR  
 REGULATORY COMMISSION INTEGRATED INSPECTION REPORT  
 70-3103/2017-005

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 ADAMS:  Yes    ACCESSION NUMBER: ML18029A107...     SUNSI REVIEW COMPLETE     FORM 665  
 ATTACHED

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DATE	01/08/2018	01/ /2018	01/17/2018	01/092018	01/08/2018	01/ 29 /2018	01/08/2018
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.: 70-3103

License: SNM-2010

Report No.: 70-3103/2017005

Licensee: Louisiana Energy Services, LLC

Facility: URENCO USA

Location: Eunice, NM

Inspection Dates: October 1 through December 31, 2017

Inspectors: B. Adkins, Senior Fuel Facility Inspector (Section B.1)  
K. Kirchbaum, Fuel Facility Inspector (Section B.1)  
N. Peterka, Fuel Facility Inspector (Sections B.2)  
T. Sippel, Fuel Facility Inspector (Section A.2 and B.1)  
J. Rivera-Ortiz, Senior Fuel Facility Inspector (Section A.1 and C.1)  
M. Ruffin, Fuel Facility Inspector (Section B.1)

Approved: Omar R. López-Santiago, Chief  
Projects Branch 1  
Division of Fuel Facility Inspection

Enclosure

## **EXECUTIVE SUMMARY**

Louisiana Energy Services, LLC  
URENCO USA

Nuclear Regulatory Commission Integrated Inspection Report 70-3103/2017005  
October 1 – December 31, 2017

Regional inspectors from the U.S. Nuclear Regulatory Commission (NRC) conducted announced inspections during normal shifts. The inspectors performed a selective examination of licensee activities by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

### **Safety Operations**

- The inspectors reviewed a sample of activities in the Operational Safety area to verify compliance with conditions of the license and regulatory requirements. No violations of more than minor significance were identified. (Section A.1)
- No violations of more than minor significance were identified related to the Nuclear Criticality Safety Program. (Section A.2)

### **Facility Support**

- The graded biennial emergency drill was implemented in accordance with the Emergency Plan and regulatory requirements. No violations of more than minor significance were identified. (Section B.1)
- The Plant Modifications program was implemented in accordance with the license application and regulatory requirements. No violations of more than minor significance were identified. (Section B.2)

### **Other Items**

- Event Notification (EN) follow-up inspection activities were performed for EN 52886, “Administrative Criticality Controls Not Used” and the associated written follow-up report, and also, for EN 53046, “Wrong IROFS Procedure Followed Prior To Filling Cylinder” and the associated written follow-up report. These items will remain open under LER 2017-001 and LER 2017-002, respectively, pending further inspection efforts. (Section C.1)

### **Attachment**

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

## **REPORT DETAILS**

### **Summary of Plant Status**

The URENCO, USA facility enriches uranium hexafluoride (UF<sub>6</sub>) using a gas centrifuge technology. During the inspection period, the licensee conducted routine plant operation of the operating cascades.

### **A. Safety Operations**

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

##### a. Inspection Scope

The inspectors interviewed licensee staff, reviewed records, and conducted plant walk-downs associated with the operation of the product cylinder filling, small component decontamination train, blending receiver station, product take-off station, tails take-off station, and feed purification take-off station. The inspectors selected a sample of safety controls (i.e. items relied on for safety or IROFS) for accident sequences applicable to these processes to verify that the IROFS were adequately implemented and maintained in accordance with the applicable regulatory requirements and the licensing basis of the facility. The inspectors selected the following IROFS for review.

- IROFS16a – Administrative control to limit moderator mass in new and cleaned 30B cylinders containing enriched uranic material to ensure subcriticality by allowing no visible oil and by limiting cylinder vapor pressure.
- IROFS16e and IROFS16f – Independent administrative controls to limit moderator mass in heeled cylinders containing enriched uranic material to ensure subcriticality by limiting cylinder vapor pressure and heeled 30B cylinder weight.
- IROFS54a and IROFS54b – Independent administrative controls to limit the uranic mass inventory to ensure a subcritical mass using bookkeeping procedures and by performing measurements.
- IROFS1 and IROFS2 – Independent active engineered controls consisting of an automatic trip of a defrost heater and fan on high station internal air temperature to ensure cylinder integrity.

The inspectors confirmed that the selected IROFS were present and capable of performing their intended safety function(s). The inspectors reviewed implementing procedures for the selected IROFS to verify that procedure instructions were consistent with the IROFS attributes described in the Integrated Safety Analysis (ISA) Summary document and the Safety Analysis Report (SAR). The inspectors reviewed a sample of recent records documenting the completion of the IROFS to verify that safety controls were implemented in accordance with the procedures. The inspectors also interviewed plant staff, particularly operators and supervisors, to assess their knowledge on the



IROFS functions. The inspectors also verified that management measures, specifically procedures and training, were conducted for the selected IROFS as required by the licensing basis documents of the facility.

For IROFS16e/f, the inspectors observed plant operators implement portions of the IROFS for heeled cylinder UREU103304 to verify compliance with the implementing procedure. The inspectors observed the control room pre-job briefing, discussed the steps to verify the type of cylinder to be processed, observed and interviewed operators during IROFS activities performed to determine the heel weight, and observed portions of the vapor pressure test.

The inspectors reviewed training material and attendance records in the area of operations safety for the IROFS selected for review to verify that the licensee provided frequent training to the staff as described in the management measures section of the SAR. The inspectors also interviewed licensee staff and reviewed documentation to verify that: (a) safety-significant changes to procedures in the area of Operations Safety, (b) changes to the Operations Safety program organization, and (c) program audits/self-assessments performed since the last NRC inspection in this area, if any, were implemented in accordance with the license requirements.

Additionally, the inspectors reviewed a sample of adverse conditions entered in the corrective action program (CAP) (i.e. Performance Improvement Program) in 2017 to verify that safety-significant plant issues were entered in the corrective action program for evaluation and resolution. The scope of corrective action documents review included the implementation of compensatory measures for unavailable IROFSs (when applicable) to verify compliance with procedure CA-3-1000-01, Performance Improvement Program.

b. Conclusion

No violations of more than minor significance were identified.

2. Nuclear Criticality Safety (IP 88015)

a. Inspection Scope

*Criticality Analysis*

The inspectors reviewed selected criticality safety basis documentation, including criticality safety evaluations (CSEs) and criticality safety analyses (CSAs) to verify that they were consistent with the commitments in the License Application. This included the consideration of the Double Contingency Principle, assurance of subcriticality under normal and credible abnormal conditions with the use of subcritical margin, technical practices and methodologies, and treatment of Nuclear Criticality Safety (NCS) parameters. The criticality safety basis documentation were selected based on factors such as risk-significance, unusually heavy reliance on administrative controls, and operating history (recent events). The CSEs and CSAs reviewed are listed in Section 4 of the Attachment to this report.

The inspectors reviewed the licensee's generation of accident sequences to determine whether the criticality safety basis documentation systematically identified normal and credible abnormal conditions in accordance with the commitments and methodologies in the License Application for the analysis of process upsets. This included the review of accident sequences that the licensee considered not credible to determine whether the basis for incredibility was consistent with the commitments, and methodologies in the License Application, and were documented in sufficient detail to permit an independent assessment of credibility. Additionally, the inspectors reviewed selected accident sequences designated as not credible to determine whether the bases for incredibility rely on any items which should be identified as formal NCS controls or IROFS. This review was conducted for the storage of items to be washed (including sample bottles) near the Small Component Decontamination Train (SCDT).

#### *Criticality Implementation*

The inspectors performed walk-downs of the SCDT, the Slab Tanks, the Liquid Effluent Collection Tanks (LECTs), 30B Cylinder storage areas and loading stations, to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the applicable criticality safety basis documentation. The inspectors reviewed process and system descriptions and specifications to verify that engineered controls were included. The engineered controls reviewed included safe by design aspects of the Slab Tanks. The inspectors reviewed applicable portions of operating procedures (e.g. OP-3-0420-01, Product Systems), IROFS boundary definition documents (e.g., NEF-BD-16e), and postings to verify that selected administrative controls established in the CSEs were included. The administrative control review focused on IROFS16a/e/f and IROFS54a/b. The inspectors interviewed operators and engineers to verify that administrative actions established in the CSEs were understood and implemented properly.

#### *Criticality Operational Oversight*

The inspectors reviewed NCS-related training material to determine whether operator training included instruction in criticality hazards and control methods, whether the licensee's established NCS-related operator training was consistent with commitments in Sections 5.1.1 and 11.3.3.1.1 of the License Application, and whether NCS staff was involved in the development of operator training. Additionally, the inspectors interviewed operators to determine whether they were cognizant of NCS hazards and control methods as they relate to their specific job function. The NCS-related training material reviewed included the most recent general employee refresher training and the most recent NCS refresher training.

The inspectors reviewed a record of a recent NCS audit (NCSI-17-0044) and accompanied a licensee NCS staff member on a tour of the area selected for the weekly walk-down to determine whether NCS staff routinely assesses field compliance with established NCS controls.

The inspectors reviewed selected aspects of the implementation of IROFS54a/b and IROFS55a/b to verify that the licensee has established controls on long-term accumulations. Specifically, the inspectors walked down the SCDT, Slab Tanks, and LECTS, and interviewed operations and NCS staff concerning the implementation of these IROFS. The inspectors reviewed assumptions and calculations used in

implementing the IROFS (e.g., the basis for holdup assumptions) to verify that uncertainties in quantities of holdup and in the assumed  $^{235}\text{U}$  per item were accounted for.

#### *Criticality Programmatic Oversight*

The inspectors conducted interviews and reviewed records to determine whether NCS staff reviewed new and/or revised fissile material operations and procedures, including maintenance plans, consistent with program procedures and at a level commensurate with their significance.

The inspectors reviewed the selected criticality safety basis documents to verify that they were performed in accordance with NCS program procedures and received appropriate independent review and approval.

The inspectors reviewed 2017-A-08-013, Report for the URENCO USA (UUSA) Nuclear Criticality Safety NQA-1 Biennial Audit, to verify that audits of the NCS program were conducted at a frequency consistent with license requirements and with appropriate thoroughness. The inspectors conducted interviews and reviewed Performance Improvement Program entries to verify that audit observations and findings are communicated to licensee management and were appropriately followed up on. The entries reviewed included EV119828 and EV120575.

The inspectors reviewed an NCS staff member's qualification record (E-NCS-QG, NCS Criticality Engineer) and conducted interviews to verify that NCS engineers are qualified in accordance with license requirements. Additionally, the inspectors reviewed records and interviewed NCS staff to verify that NCS staff members only performed those functions for which they were qualified.

#### *Criticality Incident Response and Corrective Action*

The inspectors reviewed selected entries in the Performance Improvement Program related to NCS to determine whether anomalous conditions were promptly identified and entered into the program, whether they received the appropriate level of investigation consistent with license commitments and procedures, whether proposed corrective actions were sufficiently broad, whether they were prioritized on a schedule commensurate with their significance, and whether they were completed as scheduled and were adequate to prevent recurrence. Additionally, the inspectors reviewed NCS and CAAS related entries to assess reportability. The entries reviewed included EV117642, EV119865, EV120300, EV120585, and EV121872.

#### b. Conclusion

No violations of more than minor significance were identified.

**B. Facility Support**1. Evaluation of Exercises and Drills (IP 88051)a. Inspection Scope

The inspectors observed and evaluated the licensee's graded biennial exercise conducted on October 18, 2017. The scenario included a fire resulting from a front-end loader accident near the Uranium Byproduct Cylinder (UBC) Storage Pad. The resulting fire impinging on a UF<sub>6</sub> cylinder resulted in a breach of a UF<sub>6</sub> cylinder. The simulated accident resulted in an injured person near the scene and the fatality of the driver.

The inspectors reviewed the emergency exercise scenario and discussed the exercise objectives with licensing and emergency management personnel before the exercise. The inspectors observed player and controller briefings conducted before the exercise to verify that licensee staff were aware of their responsibilities as they apply to the graded emergency exercise. The inspectors walked down the plant before the exercise to assess the effectiveness of the visual aids used in the drill and to verify that the licensee had not inappropriately pre-staged equipment in anticipation of the exercise.

At the initiation of the emergency drill, the inspectors observed the emergency response organization to verify that the licensee assessed the accident scenario, analyzed the plant condition, and classified the event as a site area emergency in accordance with the Emergency Plan. The inspectors observed the activation of the Emergency Operations Center (EOC) to verify that all required positions were fully staffed in accordance with the Emergency Plan. The inspectors observed the protective action recommendations implemented by the EOC to verify the recommendations were appropriate for the accident scenario and in accordance with the Emergency Plan.

The inspectors observed EOC activities to verify the initial offsite notifications were within the time period specified in the Emergency Plan. The inspectors observed onsite communications to the occupational workers to verify they were consistent with the protective action recommendations implemented by the EOC. The occupational workers participated in the protective action (i.e., shelter-in-place) and personnel accountability in accordance with approved procedures. The inspectors reviewed the press releases released by the EOC communicators to verify the press releases were based on information approved by the Emergency Director (ED) and were in accordance with the Emergency Plan.

The inspectors observed EOC activities to verify the ED maintained adequate command and control of the EOC. The inspectors reviewed the inputs and assumptions used for offsite dose assessment to verify the licensee's use of the Radiological Assessment System for Consequence Analysis software was appropriate. The inspectors observed EOC activities and briefings to verify the ED utilized the dose assessment and environmental monitoring results during the assessment of the accident scenario, including the decision to end the site area emergency. Prior to exercise termination, the inspectors observed the ED initiate post-accident recovery planning activities in the areas of human resources, logistics, and procurement.

The inspectors observed members of the licensee's emergency response team assemble at the designated assembly area and the arrival of the off-site emergency responders including fire, EMT, and HAZMAT. The inspectors observed the emergency response team's assessment of the affected area, search and rescue activities for casualties, firefighting, and recovery actions. The inspectors observed the Incident Commander's (IC) response to additional emerging situations and determined the IC maintained proper command and control of the emergency response team. The inspectors observed the IC coordinate with the off-site emergency responders to verify the emergency response team activities were appropriate for the exercise scenario.

The inspectors observed the staff critiques of the emergency exercise to verify that the critiques were effective at identifying lessons learned and areas of improvement. The inspectors attended a post-critique evaluation held by the licensee to determine if drill objectives were adequately satisfied as defined in the exercise scenario. Based on the results of the evaluation, the licensee concluded that all drill objectives were fully satisfied; therefore, no formal corrective actions were required. The inspectors noted that the licensee entered all observations, recommendations, and potential improvements from items discussed after the emergency exercise into their lessons learned database for future program improvement.

b. Conclusion

No violations of more than minor significance were identified.

2. Plant Modifications (IP 88070)

a. Inspection Scope

The inspectors interviewed licensee personnel involved in the licensee's configuration control processes and reviewed pertinent documents in order to verify that the licensee has established an effective configuration management system to evaluate, implement, and track plant modifications (PMs) which could affect safety.

The inspectors reviewed the licensee's work control program for provisions to ensure adequate pre-job planning and preparation of plant modification design packages. The configuration management system was also reviewed to ensure that plant modifications did not degrade the performance capabilities of IROFS or other safety-related equipment that are part of the original design basis. The inspectors checked that the licensee addressed baseline design criteria stipulated in 10 CFR 70.64 in the designs of plant modifications. The inspectors also reviewed, and subsequently walked down, designs of plant modifications in order to verify that the specific design criteria specified in applicable modification packages were satisfied.

The inspectors examined plant modification design packages, including Quality Level 2AC (QL-2AC) design packages, since the last NRC plant modifications inspection for accuracy and flow of change process. The inspectors walked down modifications to confirm that the "as-built" drawings agreed with the field configurations for the addition of an additional pressure transducer for IROFS 16 series.

The inspectors noted that the licensee had management measures in place to ensure that any IROFS affected by facility changes remained capable of performing their intended safety function before approving any modification for operation. The inspectors reviewed the ISA, ISA Summary, and other safety program information developed in accordance with 10 CFR 70.62 in order to determine that the licensee addressed the impacts of modifications to these regulatory documents.

The inspectors reviewed external audits and the licensee's problem identification and resolution program to verify that issues relating to the preparation and installation of plant modifications were entered into the CAP program and that the effectiveness of corrective actions was adequate. Inspectors also examined training for the licensee employees performing the modification in order to verify that these individuals were qualified to perform the work

b. Conclusion

No violations of more than minor significance were identified.

**C. Other Areas**

1. Event Follow-Up

a. (Opened) Written Follow-up Report for Event Notification (EN) 52886, Administrative Criticality Controls Not Used (LER 2017001)

On October 17, 2017, the NRC issued Inspection Report 70-3103/2017-004 (ADAMS ML17290A081) which included the initial review of EN 52886 reported by the licensee on August 4, 2017. Additionally, on September 26, 2017, the licensee submitted a written follow-up report for EN 52866 in accordance with 10 CFR 70.74 (ADAMS ML17272A136), which is identified in this inspection report as event report LER 2017001 for tracking purposes. The event involved the implementation of criticality controls IROFS 54a and IROFS 54b for the operation of the SCDT.

As part of the Operational Safety inspection discussed in Section A.1 of this report, the inspectors performed walk-downs of the areas and systems involved in the event and discussed with licensee staff the status of the corrective actions. However, at the time of the on-site inspection licensee staff informed the inspectors that there were plans to submit additional information related to the event to the NRC. On January 10, 2018, the licensee submitted a supplement to the original written follow-up report to provide additional information on the risk and safety significance of the event (ADAMS ML18016A054). Items LER 2017001 and EN 52886 will remain open pending the review of final licensee documentation submitted to the NRC describing the circumstances leading to the event and the potential safety consequences.

b. (Opened) Written Follow-up Report for EN 53046, Wrong IROFS Procedure Followed Prior To Filling Cylinder (LER 2017002)

On October 31, 2017, the licensee submitted EN 53046 describing an event involving a heeled cylinder that was inadvertently introduced into the product filling process as a new/clean cylinder. The discrepancy resulted in the completion of the incorrect IROFS for moderator control when the cylinder was being connected to the filling process. On

November 2, 2017, the licensee submitted an update to EN 53046 to address the likelihood of a criticality event based on the liquid sample results for the UF<sub>6</sub> product in the affected cylinder. On December 27, 2017, the licensee submitted a written follow-up report for EN 53046 in accordance with 10 CFR 70.74 (ADAMS ML17363A223), which is identified in this inspection report as event report LER 2017002 for tracking purposes. The written follow-up report included a more specific risk assessment of the event based on the approved ISA methodology of the facility.

As part of the Operational Safety inspection discussed in Section A.1 of this report, the inspectors reviewed the licensee's causal evaluation and the revisions made to procedure OP-3-0420-01, "Product System," to address the primary cause of the event. However, at the time of the on-site inspection the licensee had not finalized the written follow-up report for the event, which was submitted later on December 27, 2017 as required by 10 CFR 70.74. Therefore all the documentation related to the event was not ready for review during the on-site inspection. Items LER 2017002 and EN 53046 will remain open pending the review of the licensee's final documentation submitted to the NRC describing the circumstances leading to the event and the potential safety consequences.

**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 October 19, and December 14, 2017, to Mr. David Sexton, and other members of the staff. Proprietary information was discussed but not included in the report.

## SUPPLEMENTAL INFORMATION

### 1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
M. Bogenreider	Operations Shift Manager
J. LaGabed	Recycling Supervisor
R. Medina	Senior Licensing Specialist
Q. Newell	NCS Manager
A. Riedy	Senior ISA Engineer
J. Sanford	Acting Compliance Manager/Safety and Emergency Response Manager
D. Sexton	Managing Director UUSA and President & CEO of LES, LLC
J. Taylor	Licensing Specialist I
B. Veach	Sr. Emergency Preparedness Specialist
N. Wells	Licensing Specialist III

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

#### Items Discussed

EN 52886	EN	Administrative Criticality Controls Not Used (Section C.1.a)
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#### Opened

LER 2017001	LER	Follow-up Written Report for EN 52886, Administrative Criticality Controls Not Used (Section C.1.a)
LER 2017002	LER	Follow-up Written Report for EN53046, IROFS 16a Implemented Instead of IROFS 16e/f for a Heeled Product Cylinder (Section C.1.b)

### 3. INSPECTION PROCEDURES USED

88020	Operational Safety
88015	Nuclear Criticality Safety
88051	Evaluation of Exercises and Drills
88070	Plant Modifications

### 4. DOCUMENTS REVIEWED

#### Records:

2017-A-06-012, Report for the URENCO USA Plant Engineering Audit, Revision (Rev.) 0, dated July 26, 2017

2017-A-08-013, Report for the URENCO USA (UUSA) Nuclear Criticality Safety NQA-1 Biennial Audit, Rev. 0

CC-EG-2016-0010, 70.72 (c) Evaluations for Proposed Changes for Changed 2016-0010, Rev. 0



CC-EG-2016-0021, 70.72 (c) Evaluations for Proposed Changes for Change 2016-0021, Rev. 0  
 CC-EG-2016-0021, Configuration change form for Change 2016-0021, Rev. 0  
 CC-EG-2016-0055, Configuration change form for Change 2016-0055, Rev. 0  
 CC-EG-2016-0250, 70.72 (c) Evaluations for Proposed Changes for Change 2016-0250, Rev. 0  
 ECR-9413, Adjust the calibrated range of pressure transmitter 1005-633-2MP3 to Match Utility PCS limits, dated September 12, 2016  
 Emergency Plan, Revision (Rev.) 25a  
 ISA-IAD-0027, Conservative Uranic Content for Components to be Decontaminated in the MFD, Rev. 0  
 LBDCCR No. 016-0012, dated July 27, 2016  
 LBDCCR No. 16-0020, dated December 28, 2016  
 MOD-ECR-9393, Add Second Local Pressure Transducer to System 465 Blending and Sampling System  
 NCS-CSA-016, Criticality Safety Analysis of 30B Cylinders, Rev. 3  
 NCS-CSA-031, Nuclear Criticality Safety Analysis of the SCDT, Rev. 0  
 NCS-CSE-032, NCSE of the Safe By Design Slab Tanks, Rev. 1  
 NCSI-17-0044, IROFS16a/e/f, dated November 16, 2017  
 NEF-BD-16e, Administrative Limit Moderator Mass in a Heeled 30B Cylinder, Rev. 1  
 SBDV-2017-0012, Assays 1001, 1002, 1003, 1004, 1005, 1006 Process Gas Pipework; Second Transducer and Piping  
 SBDV-2017-0013, Rebuilt D40B Pump 8  
 SBDV-2017-0014, LECTS Slab Tanks 4B1 Recirculation Pump 4D1 Replacement  
 URENCO USA Emergency Preparedness, Full Scale Exercise – 2017  
 WO 1000292522, SBD Verification (SBDV-2017-0013)  
 Work Order #1000301409  
 Work Order #1000301412

Procedures:

AD-3-1000-01-F-4, Temporary Procedure/Task Instruction Change for OP-3-0420-01, dated December 13, 2017  
 CR-2-1000-01, Nuclear Criticality Safety Program Description, Rev. 8  
 EG-3-3100-02, IROFS Boundary Definitions, Rev. 2  
 EG-3-3100-06, Integrated Safety Analysis Process, Rev. 14  
 EG-3-3200-03, Safe-By-Design Attribution Verification, Rev. 5  
 EP-3-0200-01, Classification of Emergency Events, Rev. 7  
 EP-3-0200-02, Emergency Notification, Rev. 19  
 EP-3-0200-04, Environmental Monitoring and Sampling, Rev. 6  
 EP-3-0200-06, Assembly and Personnel Accountability, Rev. 9  
 EP-3-0200-07, Recovery and Termination, Rev. 4  
 EP-3-0200-11, Emergency Operations Center Operations, Rev. 6  
 EP-3-0200-13, Emergency Public Information Plan, Rev. 0  
 MA-3-0400-05, Calibration and Adjustment of IROFS 16 Series Pressure Transducers, Rev. 4, dated July 27, 2017  
 MA-3-1000-29, SBD (Safe By Design) Verifications, Rev. 0  
 MA-3-2000-09, Use of Volumetric Tester, Rev. 2  
 MA-3-3400-01, IROFS1 Station Heater and Fan High Temperature Trip – RTD Surveillance, Rev. 0  
 MA-3-3400-02, IROFS2 Station Heater and Fan High Temperature Trip – TC Surveillance, Rev. 7

OP-3-0420-01, Product Systems, Rev. 43  
 OP-3-3300-01, Operations Surveillance Procedure, Rev. 31  
 RW-3-2000-01, LECTS Slab Tank Operations, Rev. 8  
 RW-3-2000-05, Small Component Decontamination Train Uranium Waste Mass  
 Bookkeeping, Rev. 8  
 RW-3-4000-01, Startup, Shutdown, and Operation of the SCDT, Rev. 5  
 RW-3-4000-01, Startup, Shutdown, and Operation of the SCDT, Rev. 3

Condition Reports Reviewed:

EV119649, EV117307, EV117642, EV119828, EV119865, EV120300, EV120575,  
 EV120585, EV121872, EV 119232, EV 120052, EV 120404, EV 119079, EV 120386, EV  
 120223, EV 120009, EV 121801

Condition Reports Written as a Result of the Inspection:

EV122263, EV122264, EV122265, EV122268, EV122269, EV122271, EV122272

Other Documents:

Apparent Cause Evaluation 120386  
 CAAS detector cluster map  
 E-NCS-QG, NCS Criticality Engineer, Rev. 3  
 GXNCST, Nuclear Criticality Safety Continuing Training, dated October 12, 2017  
 IROFS Training Transcript for J Brink, E. Camp, M. Mason, J. Urrutia, and R. Williams  
 LES-K-0011, Process Station Defrost Heater and Fan High Temperature Trip – RTD  
 (IROFS1), Rev. 0  
 LES-K-0012, Process Station Defrost Heater and Fan High Temperature Trip –  
 Thermocouple (IROFS2), Rev. 0  
 Maintenance WO 1000275597, 1Y IROFS 16A Pressure Transducer Calibration, dated  
 March 21, 2017  
 Maintenance WO 1000290195, 1Y IROFS 16A Pressure Transducer Calibration, dated  
 June 15, 2017  
 Maintenance WO 1000300113, 1Y IROFS 16A Pressure Transducer Calibration, dated  
 October 31, 2017  
 OSIROFSQC00100, IROFS and Operating Requirements Manual (ORM) Qualification  
 Guide for J. Thomason, dated December 23, 2016  
 EN 53046: [https://www.nrc.gov/reading-rm/doc-collections/event-  
 status/event/2017/20171101en.html#en53046](https://www.nrc.gov/reading-rm/doc-collections/event-status/event/2017/20171101en.html#en53046)  
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 status/event/2017/20171103en.html#en53046](https://www.nrc.gov/reading-rm/doc-collections/event-status/event/2017/20171103en.html#en53046)  
 TQ-3-0100-12-F-6, Certification/Evaluation Form for Recycling Operators (J. Abney, D.  
 Foster, J. Purvis), dated May 15, 2016  
 Operations Shift Log – Verification of IROFS 16e/f dated, December 1, 2017  
 Operations Shift Log – Verification of IROFS 16e/f, dated December 8, 2017  
 OA-2011-01, UF6 & HF Phase Diagram, dated January 10, 2011  
 GET CBT, Consolidated GET by CBT, dated August 1, 2016  
 Maintenance WO 1000275004, 1Y IROFS 1 & 2, dated February 9, 2017  
 Maintenance WO 1000275015, 1Y IROFS 1 & 2, dated February 21, 2017  
 Maintenance WO 1000275648, 1Y IROFS 1 & 2, dated March 15, 2017  
 Root Cause Evaluation Report - EV120009, dated September 13, 2017  
 Maintenance WO 1000300517, 1Y IROFS 1 & 2, dated October 2, 2017  
 Operations Shift Log – Verification of IROFS 16e/f, dated November 20, 2017  
 Operations Shift Log – Verification of IROFS 16e/f, dated November 28, 2017

Quality Assurance Program Description, Rev. 40, dated July 10, 2017  
Operations Shift Log – Verification of IROFS 16a, dated November 12, 2017  
RW-3-4000-01-F-1, IROFS54a for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-A-1127, Completed on November 27, 2017  
RW-3-4000-01-F-2, IROFS54b for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-B-1127, Completed on November 27, 2017  
RW-3-4000-01-F-1, IROFS54a for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-A-1129, Completed on November 29, 2017  
RW-3-4000-01-F-2, IROFS54b for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-B-1129, Completed on dated November 29, 2017  
RW-3-4000-01-F-1, IROFS54a for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-A-1130, Completed on November 30, 2017  
RW-3-4000-01-F-2, IROFS54b for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-B-1130, Completed on November 30, 2017  
RW-3-4000-01-F-1, IROFS54a for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-A-1204, Completed on December 4, 2017  
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RW-3-4000-01-F-1, IROFS54a for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-A-1205, Completed on December 5, 2017  
RW-3-4000-01-F-2, IROFS54b for Uranium Waste Mass Determination by Conservative Estimate – Campaign 17-B-1205, Completed on December 5, 2017