



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

September 19, 2011

David E. Sexton, Chief Nuclear Officer  
and Vice President of Operations  
National Enrichment Facility  
P.O. Box 1789  
Eunice, NM 88231

SUBJECT: NRC INSPECTION REPORT NO. 07003103/2011011

Dear Mr. Sexton:

The U.S. Nuclear Regulatory Commission (NRC) conducted an inspection of activities associated with the construction of the Louisiana Energy Services, L. L. C., National Enrichment Facility between July 25 – 28, 2011 and August 8 – 12, 2011. The purpose of the inspection was to conduct a review of your response to the violations associated with the commercial grade dedication for items relied on for safety noted in NRC Inspection Report 07003103/2011008.

The inspection focused on corrective actions for notices of violation associated with commercial grade dedication activities for Cascades 3 and 4, items relied on for safety-41, within Separations Building Module 1001. Additionally, the programmatic elements of those violations, and others as discussed in the cover letter of Inspection Report 07003103/2011008, were examined, including a review of the extent of condition and extent of cause related to Cascades 3 and 4. The enclosed narrative inspection report, which documents the inspection results, was discussed with you and members of your staff on August 11, 2011, and again on August 12, 2011. Subsequently, your staff provided additional information for NRC review. The results of that review were discussed with you and members of your staff on August 23, 2011. Based on the results of this inspection, no violations or deviations were identified.

The review of commercial grade dedication activities for Cascades 3 and 4 was sufficient to ensure those cascades were constructed in accordance with the licensing requirements. This was accomplished through your staffs' thorough, independent review of all commercial grade dedication final documentation, holding associated management accountable through a signed Readiness Review Checklist, and significantly increased management oversight of all commercial grade dedication activities. These efforts were in keeping with your stated intentions during the July 11, 2011, public meeting, and were verified by NRC inspectors. Additionally, NRC inspectors performed an independent assessment of the commercial grade dedication activities conducted for four critical characteristics/key attributes associated with Cascades 3 and 4.

Corrective actions to address the programmatic aspects of previous commercial grade dedication violations, including the extent of condition and extent of cause, were adequate. Changes to the management team and organizational structure, along with improvements to the

procedures and processes used in all facets of commercial grade dedication, increases confidence that future commercial grade dedication activities will adhere to the regulatory requirements stated in your license.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC's public reading room, Agency-Wide Document Access and Management System (ADAMS) on the internet at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this letter, please contact me at (404) 997-4437.

Sincerely,

**/RA/**

M. Scott Freeman, Branch Chief  
Construction Inspection Branch 3

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

Enclosure:  
NRC Inspection Report 07003103/2011011 w/ attachments

cc w/encl: (See next page)

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Letter to David Sexton from S. Freeman, dated September 19, 2011

SUBJECT: NRC INSPECTION REPORT NO. 07003103/2011011

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**NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 70-3103

License: SNM-2010

Report No.: 07003103/2011011

Licensee: Louisiana Energy Services, L.L.C. (LES)

Location: National Enrichment Facility (NEF)  
Eunice, New Mexico

Inspection Dates: July 25 – 28, 2011  
August 8 – 12, 2011

Inspectors: E. Michel, Senior Construction Inspector, RII  
J. Brady, Senior Construction Inspector, RII  
M. Sheikh, Senior Construction Project Inspector, RII

Accompanying  
Personnel: J. Yerokun, Deputy Director, Division of Construction Inspection, RII  
F. Brown, Deputy Regional Administrator for Construction, RII  
A. Chowdhury, Staff Engineer, Center for Nuclear Waste Regulatory  
Analyses

Approved: S. Freeman, Chief, Construction Inspection Branch 3, RII

Enclosure

## **EXECUTIVE SUMMARY**

### **Louisiana Energy Services, L.L.C., National Enrichment Facility Nuclear Regulatory Commission Inspection Report No. 07003103/2011011**

#### **Quality Assurance: Control of Materials, Equipment, and Services (Pre-licensing and Construction) (Inspection Procedure 88108)**

Corrective actions taken for commercial grade dedication activities on Cascades 3 and 4 as a result of NRC Inspection Report 07003103/2011008 were adequate and included programmatic considerations. Root cause and detailed apparent cause evaluations evaluated the extent of condition and extent of cause of those issues. Programmatic and organizational changes made by the licensee were reviewed by NRC inspectors, and if successfully implemented, should ensure future commercial grade dedication activities will meet all regulatory and license requirements.

#### **Mechanical Components (Inspection Procedure 88136)**

Inspections related to the design and fabrication of items relied on for safety-41 in Cascades 3 and 4 concluded licensing requirements had been met. In addition to a review of the licensee's verification activities, the inspectors conducted independent field verifications of critical characteristics/key attributes for both Cascades 3 and 4.

#### **Quality Assurance: Problem Identification and Resolution (Inspection Procedure 88110)**

The licensee has taken corrective actions to assure the quality of structures, systems and components in Cascades 3 and 4 for items relied on for safety-41, and for future cascades. These actions included management changes to ensure that 10 CFR 50 Appendix B experienced managers are in key positions, procedure changes that provide a better defined process for commercial grade dedication of the cascade structures, systems, and components, and higher level signature authority for system structures on components dedication. Because the process changes will go into effect for Cascades 5 and up, the licensee's Readiness Review Checklist process, implemented to ensure readiness for the NRC authorization request for Cascades 3 and 4, provided the additional management oversight and responsibility necessary for assurance of quality for the items relied on for safety-41 structures, systems and components. The independent verification performed as part of the other sections described in this inspection report provided additional assurance of the quality of Cascade 3 and 4 for items relied on for safety-41.

#### **Attachments:**

List of Personnel Contacted  
Inspection Procedures Used  
List of Items Opened, Closed, and Discussed  
List of Acronyms Used  
List of Documents Reviewed

## **REPORT DETAILS**

### **1. Quality Assurance: Control of Materials, Equipment, and Services (Pre-licensing and Construction) Inspection Procedure (IP) 88108)**

#### **a. (Closed) Violation (VIO) 07003103/2011008-001, Failure to Adequately Implement Quality Assurance Program Description (QAPD) Section 10:**

The inspectors reviewed the seven examples identified in the NRC notice of violation (NOV), reviewed the licensee's response to the NOV dated June 30, 2011, and reviewed the licensee's corrective actions for each example, including field verifications of the conditions of upper steelworks welds and H-Frame welds of Cascades 3 and 4, and conducted interviews with appropriate plant personnel. The inspectors reviewed the detailed apparent cause (DACE) for condition report (CR) 2011-1361 associated with the QAPD, Section 10 violation. The seven violation examples involved failures to perform adequate inspections for the commercial grade dedication (CGD) of Cascade 4, items relied on for safety (IROFS)-41 items. The licensee corrected the seven examples through a combination of programmatic changes and focused corrective actions for each example. Specifically, the licensee (1) made changes to procedures EG-3-2100-05, CGD Process; EG-3-2100-09, Identification, Disposition, and Resolution of Nonconforming Items; and CGDP-041-0003, Cascade Upper Steel Units, Connectors and Fixing Plates Dedication; (2) developed work plans 1001-CIVIL-823-070, Visual Weld Inspection MH1A Cascade 4 and 1001-CIVIL-823-087, Re-inspection of Form Fabrication and H-Frame Welds in MA1A Cascade 4; (3) developed engineering change request (ECR)-6665, H Frame Weld Sizes; revised surveillance report 2011-S-03-087, Verification of the IMI-US Sensitive Leak Test (Pipework 6e) for MH1A, Cascade 4 for CGDP 041-0005, Cascade Pipework - Installation; and (4) conducted re-inspection of Cascades 3 and 4 welds. No hardware repairs were required for any of the violation examples. In addition, the licensee identified common reasons for the examples of this violation and proposed common corrective steps, some of which have already been implemented to prevent repetition of this violation. The inspectors identified quality control (QC) training as one common cause for the violation. The inspectors concluded that the seven examples were adequately corrected, that the extent of condition review was thorough, and that the proposed common corrective steps were adequate. The inspectors determined that the changes had been made to the procedures as described. This item is closed.

#### **b. (Closed) VIO 07003103/2011008-002, Failure to Adequately Implement QAPD Section 15:**

The inspectors reviewed the five examples identified in the NOV, reviewed the licensee's response to the NOV dated June 30, 2011, and reviewed the licensee's corrective actions for each. The five violation examples involved failures to have adequate technical justifications for use-as-is dispositions for nonconforming items. The licensee corrected each of the use-as-is justifications by providing adequate technical justification that did not rely on engineering judgment to comply with the regulatory and procedural requirements. No hardware repairs were required. The licensee also made changes to procedures EG-3-2100-05, EG-3-2100-09, and CGDP-041-0003, as part of the corrective actions for this violation. In addition, the licensee performed a DACE under CR 2011-1363 that collectively identified the apparent cause and evaluated the extent of



cause and extent of condition. The inspectors found that the extent of condition review results were documented in CRs 2011-2118 (Cascade 4) and 2011-2218 (Cascade 3), which identified that additional nonconformance reports (NCRs) were found that needed some clarification but no change in conclusion was required. All other use-as-is NCRs for Cascades 3 and 4 were reviewed for technical adequacy and no changes were needed. The DACE identified that this issue was similar to one from NRC inspection report (NRC IR) 07003103/2011006 and was contained in CR 2011-932. The inspectors reviewed the previous violation and licensee response. The corrective actions and extent of condition for that issue and this one were melded together in the corrective action program since they had the same apparent cause. The change to procedure EG-3-2100-09 raised the final level of approval for use-as-is technical justifications to the Engineering Manager, Design. The inspectors concluded that the 5 examples were adequately corrected, that the extent of condition review was thorough, and that the justified disposition adequately determined the acceptability of these nonconforming items for use. The inspectors determined that the changes had been made to the procedures as described. This item is closed.

c. (Closed) Unresolved Item (URI) 07003103/2011008-003, Inadequate Training Given to QC inspectors for Performing CGD activities

The inspectors reviewed URI 07003103/2011008-003, the Root Cause Evaluation (RCE) issued under CR 2011-1298, two training self-assessments and associated corrective actions, conducted interviews with licensee staff, and observed training entitled "Human Performance Fundamentals." The RCE addressed VIO 07003103/2011008-001 against Section 10 of the QAPD, as documented in IR 07003103/2011008. The inspectors observed that the RCE identified a contributing cause related to weaknesses in the UUSA (Urenco USA) continuing training program for qualification/certification of QC weld inspectors. The extent of condition was determined in the two self-assessments. The first self-assessment was associated with the qualification and certification of QC weld inspectors, and the second was associated with the qualification and certification of all other QC inspectors.

The inspectors observed that the licensee's corrective actions associated with VIO 07003103/2011008-001 and the training self-assessments included: (1) training of QC inspectors on revised Procedure EG-3-2100-05, the training included specific guidance on the preparation and completion of Form 3; (2) training of QC inspectors on Human Performance Fundamentals; (3) implementation of management observation program; (4) additional continuing training to address knowledge and skill gaps for weld inspectors; (5) improve the training program for visual inspectors for example to require 60 hours classroom instruction and 20 hours of field on-the-job training (OJT) before a candidate is tested; and (6) training on weld measurements and on selection of tools to measure fillet welds. These were ongoing corrective actions, and demonstrated the link between the previous violation and the licensee's identified training weaknesses.

The inspectors concluded that the URI would be closed to previous VIO 07003103/2011008-001 based on the contributing role the training issues played in that violation. Violation 07003103/2011008-001 is closed as of this report.

d. (Opened) URI 07003103/2011011-001, Implementation of Changes under 10 CFR 70.72(a) and (b).

The NRC inspectors interviewed licensee personnel and reviewed ECR-6665 related to modification of the upper steelworks H-Frame design. 10 CFR 70.72(b) requires, in part, that any change to structures, systems or equipment must be evaluated by the licensee as specified in paragraph (a) of 10 CFR 70.72 before the change is implemented. Paragraph (a) of 10 CFR 70.72 requires, in part, that the technical basis for the change be addressed prior to implementing the change. Changes related to ECR-6665 were installed prior to receiving a complete technical justification from the associated vendor. However, the licensee's position was that implementation occurred after a configuration change was either put into operation or called upon to implement the intended safety function; therefore the technical justification could be provided following installation. The inspectors ensured all changes to Cascades 3 and 4 IROFS-41 had received a technical justification.

The inspectors determined that further involvement from the NRC Office of Nuclear Material Safety and Safeguards was warranted, given the generic nature of this issue. This item will remain unresolved as URI 07003103/2011011-001.

e. Critical Characteristic (CC) Verification

1). Scope and Observations

The inspectors conducted interviews, and reviewed the Critical Characteristic Verification Plan (CCVP) for cascade 3 hexagon bolt material CC 8a, 3-CCVP-2010-012-CENT-8A, Rev 0, and the documentation supporting acceptance of a sample of those bolts to verify the adequacy of the Method 1 dedication activities. Specifically, the inspectors reviewed the chemical test reports and tensile testing reports to verify they met the requirements of the stated acceptance criteria from ISO-898-1, Hexagon Head Bolts – Product Grades A and B. Additionally the inspectors reviewed CRs and NCRs associated with the CC verification to ensure they were adequately resolved.

The inspectors performed field verifications, conducted interviews, and reviewed the Critical Characteristic Verification Package for Cascade 3, CC 1b (CCVP No. 3-CCVP-2010-012-USPW-1B, Rev 0) for fixed clamp clearance Method 1 CGD. Specifically, the inspectors verified that clearances for clamps UUSA Clamp ID # F-007, F-008, F-009, and F-017 met the applicable acceptance criteria, and the results were appropriately documented. The inspectors also verified the clamps were labeled and/or controlled in such a manner as to support materials verification requirements for CC 1c (fixed clamp materials).

The inspectors reviewed the CGD plan for Cascade 4 upper steel units, subunits and connectors (CGDP-041-0003, Rev 0). This plan was created, in part, to dedicate weld filler metal used in the upper steel works and corresponds to Key Attribute 10d from the Agreement on Key Attributes TC 12 Cascade Header Pipework (Including Upper Steelwork) in the NEF Project, QPS/Sk/09/019, Issue 02. The inspectors reviewed the associated work plan (WP-1001-CIVIL-823-058) to verify the weld filler metal chemistry lab results met the applicable acceptance standards for Method 1 CGD. Additionally the inspectors conducted interviews with the technical staff, and reviewed the technical evaluation for NCR 2011-0745, Rev 3 to verify it was adequately dispositioned in accordance with the licensee's QAPD.

CGDP-041-0003, Rev 0 was also created, in part, to perform Method 1 dedication of the upper steel works as-built configuration on Cascade 4. This corresponds to Key Attribute 11 from the Agreement on Key Attributes TC 12 Cascade Header Pipework (Including Upper Steelwork) in the NEF Project, QPS/Sk/09/019, Issue 02. The inspectors reviewed the associated work plan (WP-1001-CIVIL-823-058), and performed field verification of a sample of the as built configuration to ensure it met the applicable acceptance standards. Specifically, the inspectors verified connector SAP Part No. 1729077 on the “battleship”; multiple subunit SAP Part No. 1729040 on the H-frames; and one example of SAP Part No. 172209, position 109.

## 2). Conclusions

The inspectors determined that, for the sample of CCs/Key Attributes reviewed, that they were appropriately dedicated, and met the requirements the licensee’s QAPD.

## 2. **Quality Assurance: Design and Documentation Control (Pre-licensing and Construction) (IP 88107)**

### (Discussed) VIO 07003103/2011002-001, Failure to Control Design Changes

The violation involved the licensee’s failure to establish a procedure or process for handling concessions. Concessions were deviations from the original design identified by Enrichment Technology Corporation (ETC), the vendor for the design, and passed on to UUSA with the certificate of conformance (CoC). The inspectors reviewed the violation, the licensee’s response dated June 9, 2011, and the licensee’s actions to restore compliance. The inspectors focused specifically on the actions for Cascades 3 and 4. The DACE contained in CR 2011-761 identified that ETC had provided the licensee with a CoC for each of Cascades 1, 2, and 3, which included concessions. Although UUSA management had approved the concessions, UUSA did not have a process to place the concessions in the UUSA design control program so that engineering change requests (ECRs) could be issued to update design documents. The cause was attributed to the cascade supply agreement having been originated outside the procurement department.

To correct this problem, the licensee amended their contract with ETC to require a Supplier Deviation Disposition Request (SDDR) from ETC for each concession. The SDDRs were required to be identified for each concession on the CoC. Licensee procedure 3-3000-01, Supplier Deviation Disposition Requests, provides the interface for processing SDDRs and the interface with Procedure EG-3-4100-05, Engineering Change Request, and EG-3-4100-02, Plant Modification, to ensure that the design change process is used where required. The licensee’s corrective actions included a review of all concessions compiled in the final CoC for Cascades 3 and 4 to identify design changes that needed to be incorporated and actions to be taken using Procedure EG-3-4100-05, and EG-3-4100-02. Identified changes for Cascades 3 and 4 were documented in a matrix, ECRs have been generated, and CR 2011-2552 was initiated to track closure of the ECRs. The inspectors noted from their review of CR2011-761, and confirmed thru discussion with engineering staff, that thus far no concessions had affected the operability of any IROFS structures, systems, and components. The inspectors determined that completed and planned corrective actions taken by the

licensee were adequate to restore compliance with NRC regulations, with respect to Cascade 3 and 4. Disposition of concessions for Cascades 1 and 2, and 5 and beyond will be reviewed separately. This item remains open.

### 3. **Mechanical Components (IP 88136)**

#### a. **(Closed) URI 07003103/2011008-004, Gaps Under Upper Steelworks Support**

The inspectors reviewed URI 07003103/2011008-004, conducted independent field verification of the condition, and reviewed the licensee's evaluation. The URI involved previously unidentified gaps under the vertical structural support members in the upper steelworks associated with Cascades 3 and 4, which had not been evaluated. The licensee provided adequate technical justification to conclude the design function of IROFS-41 would be met. This URI is closed.

#### b. **Design Change Review**

##### 1). **Scope and Observations**

NRC inspectors reviewed the cumulative effects of design changes and repairs on Cascade 3 and 4 steel welded connections against the design requirements of the Integrated Safety Analysis (ISA) to verify those design requirements were met. The inspectors conducted interviews with licensee staff, and reviewed the licensee's written response including a reanalysis of non-conforming as-built welds and repair of six welds which required rework to verify compliance with American Society of Civil Engineers (ASCE) 43-05 and the ISA.

##### 2). **Conclusions**

The inspectors concluded that the cumulative effects of changes and repairs to Cascade 3 and 4 welded connections met the design requirements of the ISA.

### 4. **Quality Assurance: Problem Identification, Resolution and Corrective Action (IP 88110)**

#### a. **Scope and Observations**

The inspectors reviewed the licensee requests for authorization to operate Cascades 3 and 4 dated March 28, 2011; May 27, 2011; and July 25, 2011. The inspectors reviewed the presentation slides from the July 11, 2011 public meeting held in Atlanta concerning "Cascade IROFS 41 Conformance." The inspectors reviewed the licensee's internal management accountability Cascade 3 and 4 Readiness Review Checklists and discussed the area of responsibility assignments with the responsible managers to determine the approach taken to assure readiness for the NRC's Cascade 3 and 4 authorizations to operate.

The inspectors reviewed the issues associated with the CGD program to determine if corrective actions were effective in correcting the issues identified in previous inspections and those identified by the licensee in the Readiness Review Checklist

process. Procedure EG-3-2100-05 defined the CGD program. EG-3-2100-05 Form 3 was used to perform the CGD of structures, systems and components (SSCs). The inspectors reviewed the following revisions of the procedure: Revision 10 originally used for CGD of Cascades 3 and 4; Revision 11, issued in May 2011 to address issues from NRC IR 2011-008; and Revision 12, issued shortly after the completion of this inspection to address lessons learned from performing the Readiness Review Checklist and some questions concerning Form 3 from this inspection. The inspectors also reviewed Quality Assurance (QA) audits and surveillances of the CGD program, performed in response to previous issues. These documents were reviewed to ensure the CGD process complied with the QAPD, and to verify lessons learned were adequately incorporated. Other documents reviewed are listed in the Attachment.

Each manager was required by signature to attest to the readiness of their area of responsibility defined in the Readiness Review Checklist. The inspectors found that the approaches taken to determine readiness varied by organization, as expected. A master tracking list was kept of the known items required to be resolved, and each day at 11:00 a.m. a meeting was held to discuss the status of these items. This meeting was chaired by the Vice President (VP) of Projects, was attended on a frequent basis by the CNO/VP of Operations, as well as the staff managers that were assigned areas of responsibility. Oversight was provided by the Chief Executive Officer's (CEO) Chief of Staff. The reviews identified additional items to be added to the master tracking list and for which CRs were written. The completed tracking list for Cascade 3 contained 242 items that were tracked to completion. A similar list existed for Cascade 4, which contained 864 items that were tracked to completion. The inspectors found that this approach was effective at resolving identified issues in a timely manner. It was also effective at reinforcing management expectations on a daily basis to ensure proper behavior and appropriate safety culture. A lessons-learned document was created to allow the process for future cascade readiness reviews to be improved. This was consistent with the July 11 presentation which identified that the licensee's intent was to learn from their success by building in quality as they go. This document was placed in the CR process on August 8. This document was not complete at the end of the inspection. The inspectors' review of the DACEs and RCEs associated with Cascades 3 and 4 confirmed many of the statements from the July 11 presentation.

Management oversight was described in the July 11 presentation as an area that had been ineffective and needed improvement. The licensee reorganized their management structure and placed managers with 10 CFR 50 Appendix B experience in key management positions. The CGD program group was moved to directly under the Projects Director of Engineering and a new CGD program manager was placed in charge. The CCs verification function was moved to a Verification group under the VP of Projects in the Work Control area. QA was moved under the VP of Operations to have better independence from the Projects/Construction line organization. This allowed the QC function to have oversight on the CCs verification function instead of directly performing the activity. Oversight by management was increased and signature levels were moved up the organization to ensure that quality could be adequately verified.

The inspectors' review of the issues associated with the CGD process and the changes contained in Revisions 11 and 12 of Procedure EG-3-2100-05 found that the changes were effective in improving the program and correcting specific problems with the procedure identified in the past. However, corrections made to Form 3's for Cascades 3 and 4, as a result of the Readiness Review, were made on the Form 3 revision in effect

at the time, which was Revision 10 and earlier revisions. The inspectors found that the additional reviews performed under the Readiness Review Checklist effort were effective in providing adequate quality for the existing Form 3's used for Cascades 3 and 4. Licensee management intended to use the new procedure revisions for Cascades 5 and up. The later revisions build in the quality reviews as the process goes forward, which is consistent with the approach outlined in the July 11 presentation.

QC performed the CGD program CC verification and signed as the dedicating organization on the EG-3-2100-05 Form 3 in the work control process for Cascades 3 and 4. As part of the Cascade 3 and 4 review process, management recognized that this function being performed by QC was not an oversight function, but a line function. As such, there was no QC oversight of the verification function so there were questions about the actual independence of the QA function. Licensee management addressed this problem by reorganizing and placing a QC type function called Verification in the Projects organization to perform the CC checks required for the Form 3 SSC CGD. The QA function was moved in the organizational structure under the VP of Operations so that QA/QC could maintain independence. This new structure was described in Revision 30 of the QAPD and will be effective for Cascades 5 and up. These changes were also described in the July 11 public meeting presentation. The inspectors determined that these changes would put QC in the appropriate oversight role that is common with most Appendix B QA organizations.

b. Conclusions

The licensee has taken corrective actions to assure the quality of SSCs in Cascade 3 and 4 for IROFS-41. These actions included management changes to ensure that 10 CFR 50 Appendix B experienced managers are in key positions, procedure changes that provide a better defined process for CGD of the cascade SSCs, and higher level signature authority for SSC dedication. Because the process changes would go into effect for Cascades 5 and up, the inspectors concluded that for Cascades 3 and 4 the Readiness Review Checklist process provided the additional management oversight and responsibility necessary to provide assurance of quality for the IROFS-41 SSCs. In addition, the inspectors' independent verification discussed above and the independent verification described in Section 1, VIO 2011008-001 and VIO 2011008-002 closure, URI 2011008-003 closure, and Critical Characteristic Verification; and Section 3, URI 2011008-004 closure, also support that the Readiness Review Checklist Process was effective at assuring the quality of Cascade 3 and 4 IROFS-41.

5. Exit Meeting/Interviews

Issues identified during the inspection were summarized daily during the inspection periods of July 25 – 28, 2011; and August 8-12, 2011 by the inspection team. A formal exit meeting was held on August 11, 2011; and again on August 12, 2011 with the licensee's management team including CEO, G. Smith. The inspectors described the areas inspected and discussed the inspection results in detail with the licensee staff. A re-exit meeting was held on August 23, 2011, via telephone, with the licensee's management team. Although proprietary documents were reviewed during this inspection, the proprietary nature of these documents is not included in this report.

## SUPPLEMENTAL INFORMATION

### 1. List of Personnel Contacted

G. Smith – CEO  
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D. Sexton – VP Ops/CNO  
J. Reed – VP Projects  
P. Robinson – VP Licensing/General Counsel  
R. Page – Director Project Engineering  
A. Sorrell – Compliance Director  
L. Lorati – CGD Project Manager  
G. Shultz – Director, Core-NC  
B. Bare – Programs and Performance Director  
O. Torres – QA Director (acting)  
L. Hardin – Project Manager  
G. Silvey – QC Supervisor  
W. Padgett – Licensing/ISA  
G. Beckett – CGD Lead  
D. Dauner – Mechanical Engineer  
W. Schmidt - Senior Engineering Advisor  
T. Taylor – Licensing Engineer

### 2. Inspection Procedures Used

IP 88107	Quality Assurance: Design and Documentation Control (Pre-licensing and Construction)
IP 88108	Quality Assurance: Control of Materials, Equipment, and Services (Pre-licensing and Construction)
IP 88110	Quality Assurance: Problem Identification, Resolution and Corrective Action
IP 88136	Mechanical Components

### 3. List of Items Opened, Closed and Discussed

VIO 0703103/2011008-001	Closed	Failure to Adequately Implement QAPD Section 10 (Section 1.a)
VIO 07003103/2011008-002	Closed	Failure to Adequately implement QAPD Section 15 (Section 1.b)
URI 07003103/2011008-003	Closed	Inadequate training given to QC inspectors for performing CGD activities (Section 1.c)

URI 07003103/2011008-004	Closed	Gaps under upper steelworks support (Section 3.a)
VIO 07003103/2011002-001	Discussed	Failure to Control Design Changes (Section 2)
URI 0703103/2011011-001	Opened	Implementation of Changes under 10 CFR 70.72(a) and (b) (Section 1.d)

#### 4. List of Acronyms Used

ADAMS	Agency Document Access and Management System
ASCE	American Society of Civil Engineers
CC	Critical characteristic
CEO	Chief Executive Officer
CGD	Commercial Grade Dedication
CoC	Certificate of Conformance
CR	Condition Report
DACE	Detailed Apparent Cause Evaluation
ECR	Engineering Change Request
ETC	Enrichment Technology Company
IP	Inspection Procedure
IROFS	Items Relied on For Safety
ISA	Integrated Safety Analysis
ISO	International Organization for Standardization
LES	Louisiana Energy Services, LLC
NCR	Nonconformance Report
NEF	National Enrichment Facility
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRC IR	NRC Inspection Report
OJT	On the Job Training
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QC	Quality Control
RCE	Root Cause Evaluation
RII	NRC Region II
SAR	Safety Analysis Report
SSCs	Structures, Systems, and Components
URI	Unresolved Item
UUSA	Urenco USA
VIO	Violation
VP	Vice President



5. List of Documents Reviewed

**Quality Assurance: Control of Materials, Equipment, and Services (Pre-licensing and Construction) IP 88108)**

Work Plans

1001-MECH-453-028, Main Header Pipe Clamps Cascade 3, Rev 0

1001-CIVIL-823-058, Perform Cascade 4 Field Inspections for CGDP 041-0003, Rev 0

Drawings

ETC 4054393-4

ETC 4052674-2

ETC 4052674-2

Condition Reports (CR) & Nonconformance Reports (NCR)

CR 2011-1200

CR 2011-1244

CR 2011-1298

CR 2011-1361

CR 2011-1381

CR 2011-1486

CR 2011-2440

CR 2011-2462

CR 2011-2542

CR 2011-2594

CR 2011-2595

CR 2011-2596

CR 2011-2597

CR 2011-2618

CR 2011-2626

CR 2011-2627

CR 2011-2628

CR 2011-2630

CR 2011-2634

CR 2011-2636

CR 2011-2641

CR 2011-2646

CR 2011-2654

NCR 2011-0745

NCR 2011-1296

NCR 2011-1349

NCR 2011-1485

NCR 2011-1532

NCR 2011-2074

Procedures and Commercial Grade Dedication Plans

EG-3-2100-05, Commercial Grade Dedication, Revision 11

AD-3-1000-11, Commercial Grade Dedication Verification Team Organization and Conduct of Operations, Revision 0

QA-3-3000-02, QC Inspector Training and Qualification, Revision 3  
 QA-3-2000-03, Training, Qualification, and Certification of QA Personnel, Revision 3  
 QA-3-3000-05, Written Practice for Qualification and Certification of Non-Destructive Examination Personnel, Revision 2  
 TQ-3-0700-01, General Employee Training, Revision 8  
 TQ-3-0100-04, Training Records, Revision 3  
 CGDP-041-0003, Cascade Upper Steel Units, Subunits and Connectors Dedication, Rev 0  
 D-2010-012, CGD Plan, Rev 0

#### Vendor/Supplier Documents

Enrichment Technology QPS/Sk/09/019, Issue 01  
 Enrichment Technology QPS/Sk/09/019, Issue 02  
 Enrichment Technology ETC4189462, Issue 1, O-ring Seal Between Centrifuge and Header Pipework

#### Miscellaneous Documents

2010 Independent Audit of QA Functions, dated September 22, 2010  
 2009-A-08-060, Independent Audit of the QA Function, dated October 1,, 2009  
 RCE 2010-2530-CR  
 RCE 2011-1298-CR  
 DACE for CR 2011-0480  
 DACE for CR 2011-1361  
 DS/EN ISO 898-1, Mechanical Properties of Fasteners Made of Carbon Steel and Alloy Steel – Part 1: Bolts, Screws and Studs with Specified Property Classes – Course Thread and Fine Pitch Thread.  
 3-CCVP-2010-012-CENT-8A, Critical Characteristic Verification Package, Rev 0  
 3-CCVP-2010-012-USPW-1B, Critical Characteristic Verification Package, Rev 0  
 AWS A5.18/A5.18M:2005, Specification for Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding  
 QAPD, Revision 30  
 SAR, Revision 30  
 NRC IR 2011-008  
 LES responses to NOV's contained in NRC IR 2011-008

### **Quality Assurance: Design and Documentation Control (Pre-licensing and Construction) (IP 88107)**

#### Condition Reports (CR) & Nonconformance Reports (NCR)

CR 2011-761  
 CR 2011-2552

#### Procedures and Commercial Grade Dedication Plans

EG-3-4100-05, Engineering Change Request, Revision 9  
 EG-3-4100-02, Plant Modifications, Revision 7

#### Miscellaneous Documents

DACE for CR 2011-761  
 Certificate of Conformance for Cascade 3, dated October 5, 2010  
 Certificate of Conformance for Cascade 4, dated November 30, 2010

### **Mechanical Components (IP 88136)**

#### Condition Reports (CR) & Nonconformance Reports (NCR)

CR 2011-1312  
NCR 2011-0498  
NCR 2011-1312

#### Miscellaneous Documents

QAPD, Revision 30

### **Quality Assurance: Problem Identification, Resolution and Corrective Action (IP 88110)**

#### Condition Reports (CR) & Nonconformance Reports (NCR)

CR 2011-1312  
CR 2011-1486

#### Procedures and Commercial Grade Dedication Plans

EG-3-2100-05, Commercial Grade Dedication, Revisions 10, 11, and 12  
CA-3-1000-01, Performance Improvement Program  
CA-3-1000-02, Apparent cause Evaluation Guidelines  
CA-3-1000-03, Root Cause Evaluation Guidelines  
CA-3-1000-07, Common Cause Evaluation Guidelines

#### Miscellaneous Documents

DACE for CR 2011-1361  
DACE for CR 2011-1363  
RCE for CGD of Cascade 3, CR 2010-2530  
RCE for Cascade 4 H-Frame Welds, CR 2011-1298  
QA Surveillances: 2011-S-01-001, 2011-S-04-002, 2011-S-07-218  
QA Audit 2010-A-05-013 issued 12/6/10  
QAPD, Revision 30  
SAR, Revision 30  
NRC IRs: 07003103/2011002, 2011006, 2011008, 201010, 201013, & 201015  
LES responses to NOVs contained in NRC IRs 07003103/2010013, 2011002, 2011006, 2011008