



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

December 7, 2011

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

**SUBJECT: LOUISIANA ENERGY SERVICES, L.L.C., NATIONAL ENRICHMENT FACILITY
- NRC INSPECTION REPORT NO. 07003103/2011012**

Dear Mr. Laughlin:

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 October 31 to November 3, 2011. The purpose was to inspect the procurement, fabrication, installation, and dedication of mechanical components used to meet Items Relied on for Safety 41. The inspection primarily focused on the dedication activities associated with the centrifuges, pipe works, and upper steelworks components for Cascades 1.7 and 1.8. The enclosed narrative inspection report, which documents the inspection results, was discussed with you and members of your staff on November 3, 2011.

No findings were identified during this inspection.

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 any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

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Sincerely,

/RA/

M. Scott Freeman, Chief
Construction Inspection Branch 3

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

Enclosures: NRC Inspection Report 07003103/2011012 w/ Attachment: Supplemental Information

cc w/encl: (See page 3)

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| DATE | 12/ 5 /2011 | 12/5/2011 | 12/ 6/2011 | 12/ 6/2011 | 12/ 6/2011 | 12/6/2011 |
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cc w/encl:

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Letter to Jay Laughlin from S. Freeman, dated December 7, 2011

SUBJECT: NRC INSPECTION REPORT NO. 07003103/2011012

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NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-3103

License: SNM-2010

Report No.: 07003103/2011012

Licensee: Louisiana Energy Services, L.L.C.

Location: National Enrichment Facility
Eunice, New Mexico

Inspection Dates: October 31, 2011 through November 3, 2011

Inspectors: J. Bartleman, Senior Construction Inspector, RII/DCI
M. Magee, Construction Resident Inspector, RII/DCP
S. Alexander, Construction Inspector, RII/DCI
J. Parrott, Safety Inspection Engineer, HQ/NMSS
D. Wright, Construction Project Inspector, RII/DCP

Accompanying
Personnel: S. Freeman, Chief, DCI, CIB3, RII
Patricia Holahan, Acting Deputy Regional Administrator for Construction,
RII

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. 07003103/2011012

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

The inspectors evaluated the procurement, fabrication, and installation of Items Relied on for Safety 41 mechanical components by verifying Quality Level-1 criteria. The inspection included a review of applicable commercial grade dedication activities for critical characteristics of Cascades 1.7 and 1.8 centrifuges, header pipe works, and upper steelworks.

The inspectors also reviewed the licensee's work plans to determine if measurements verifying critical characteristics of piping and steelworks were performed in accordance with the commercial grade dedications plans. The inspectors sampled several critical characteristics from centrifuges, pipe works, and upper steelworks to verify that they met the acceptance criteria. The inspectors also reviewed the licensee's procedures for compliance with 10 CFR Part 21, "Reporting of Defects and Noncompliance."

Mechanical Components - Inspection Procedure 88136

The inspectors assessed the fabrication and installation of the centrifuges, pipe works and upper steelworks for Cascades 1.7 and 1.8. The inspectors reviewed applicable commercial grade dedication packages and supporting documentation (including drawings and work packages) to determine whether the critical characteristics specified were adequately verified for the centrifuges, pipe works, and upper steelworks. In addition to a review of the licensee's verification activities, the inspectors observed field verifications of critical characteristics/key attributes for both Cascades 1.7 and 1.8. The inspectors assessed documentation associated with the installation of centrifuges for Cascades 1.7, 1.8, 2.1, and 2.2. The inspectors also verified a sample of centrifuge locations in Cascades 1.7, 1.8, 2.1, 2.3, and 2.4.

The inspectors evaluated the installation of Items Relied on for Safety 41 mechanical components by reviewing applicable commercial grade dedication activities of Cascades 1.7 and 1.8 header pipe works and upper steelworks. The inspectors reviewed supporting documentation such as work plans and procedures to determine if measurements verifying critical characteristics of piping and steelworks were performed in accordance with the commercial grade dedications plans. The inspectors also conducted field observations of licensee staff performing various critical characteristic measurements. The inspectors also conducted independent field verifications of critical characteristics for Cascades 1.7 and 1.8.

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. Summary of Facility Status

The licensee continued to perform construction activities for Separations Building Modules 1001/1002 and 1003/1004, and the Cylinder Receipt and Dispatch Building at the Louisiana Energy Services, L.L.C., National Enrichment Facility.

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

1. Scope and Observations

The inspectors verified that quality documents supplied by bolt, weld wire, and centrifuge recipient material vendors used in the fabrication and installation of the centrifuges in Cascades 1.7, 1.8, 2.1 and 2.2 contained acceptable technical and quality assurance (QA) requirements for only the supplier furnished documentation, such as certified material test reports (CMTRs).

The inspectors verified the posting requirements contained in licensee procedure LS-3-1000-01 and the location and content of two of the four on-site posting locations complied with NRC regulations in 10 CFR Part 21, "Reporting of Defects and Noncompliance."

2. Conclusions

The inspectors determined that, based on the sample of records reviewed, the licensee's procurement control and testing system was sufficient to control testing activities for items used in the fabrication of the centrifuges installed in Cascades 1.7, 1.8, 2.1, and 2.2 and met the requirements of the QA Program Document (QAPD). No findings of significance were identified.

3. Mechanical Components IP 88136

a. Centrifuges

1. Scope and Observations

The inspectors reviewed the licensee's method of maintaining QA records associated with the centrifuges to determine if the records were being maintained and controlled in accordance with the QAPD. The Inspectors reviewed the placement of centrifuges in Cascades 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, and 2.5 to determine if they were consistent with the on-site records and electronic record database. The inspectors selected a sample of centrifuges within each cascade and recorded the serial number and position identification number of each centrifuge. The inspectors sampled 22 centrifuge positions located in Cascade 2.2; 21 centrifuge positions located in Cascade 2.3; 22 centrifuge positions located in Cascade 2.4; and 21 centrifuge positions located in Cascade 2.5

The inspectors cross referenced the field data against hard copy QA records to determine if the serial numbers and locations of centrifuges within the sample population were accurately transcribed from the hard copy QA records into the electronic record database, and if the hard copy handling unit centrifuge performance invoices (delivery documents) accurately reflected data of the centrifuges and QA records for Cascades 1.7, 1.8, 2.1, and 2.2. The inspectors also reviewed the electronic database to determine if it contained sufficient traceability information to identify the specific internal subcomponents that were assembled into the final centrifuge assembly.

The inspectors reviewed two key attributes associated with the centrifuges. These key attributes were associated with the centrifuge footer bolts and centrifuge recipient (shell). The inspectors reviewed manufacturer supplied CMTRs associated with the materials used for the centrifuge M27 footer bolts, centrifuge recipient/shell, and centrifuge weld filler used in Cascades 1.7, 1.8, 2.1, and 2.2 to determine if the materials used met the requirements specified in the associated commercial grade dedication (CGD) plan.

2. Conclusions

The inspectors determined that, based on the sample of hard copy records that were reviewed and the examination of the electronic record database content, the licensee's tracking and documentation of centrifuge subcomponents and assembled centrifuge placement was sufficient to maintain traceability of centrifuges in Cascades 1.7, 1.8, 2.1, and 2.2 in accordance with the QAPD. For Cascades 1.7, 1.8, 2.1, and 2.2 only the CMTRs provided by the centrifuge component manufacturer and supplier for the centrifuge footer bolts, centrifuge recipient shell, and centrifuge weld filler meet the code material requirements required by the QAPD. No findings of significance were identified.

b. Pipe works and Upper Steelworks

1. Scope and Observations

The inspectors reviewed documentation and evaluated the installation and CGD activities related to Cascades 1.7 and 1.8 pipe works and upper steelworks to determine if licensee activities related to the verification of the critical characteristics (CCs) of the mechanical components in Items Relied on For Safety (IROFS) 41 were controlled and accomplished in accordance with approved specifications, drawings, and procedures, and the QAPD.

The inspectors reviewed various mechanical work plans (WPs) for Cascades 1.7 and 1.8, and observed field work activities to determine if work was performed using written instructions contained in the WP and whether the Verification Team (VT) inspectors were specifically qualified for IROFS 41 measurement work. The inspectors observed initial and follow-up verifications of multiple component measurements, including: pipe diameter, pipe wall thickness, clamp material hardness, clamp bolt configuration and torquing and positive material identification (PMI) testing.

The inspectors interviewed responsible VT personnel and observed PMI measurement activities to determine if licensee activities, related to the verification of the CCs of the mechanical components in IROFS 41, were controlled and accomplished in accordance with the QAPD.

The inspectors observed licensee personnel calibrate and use the PMI instrument to determine if the instrument was operated in accordance with procedure VT-3-2000-01 including the applicable radiation health and safety requirements for working with portable x-ray equipment. The inspectors observed in-process verification activities of licensee personnel using the PMI instrument on 6 sliding clamps and 3 fixed clamps that was being performed under WP 1001-MECH-453-074 to determine if the licensee followed procedures, properly documented the location of the clamps measured, and if the clamps met the applicable CCs of CGD plan EG-3-2-2100-05-F-2. The inspectors reviewed training documentation for the VT inspectors to verify if they were qualified to perform the CC verification activities they performed.

The inspectors reviewed WPs, 1001-MECH-453-070, Complete Pipe Works Inspections for Wall Thickness and Diameter, Cascade 7, and 1001-CIVIL-823-098, MH1B Cascade 7 Fixed and Sliding Process Piping Clamp Bolts, Nuts, Ferromagnetic Testing, Washer Installation Verification and Clamp Re-Alignment and Torquing, for completion and adherence to specified limits. The inspectors independently verified the spacing/gap requirement for the fixed and sliding clamps and observed verifications of multiple component CC measurements including bolt torque verification and weld filler material analysis inspection for Cascade 1.7 and PMI testing and main pipe header bend wall thickness and pipe diameter/ovality measurements for Cascade 1.8.

The inspectors reviewed non-destructive examination records and radiographic testing (RT) results on welds associated with a variety of pipe sizes for the pipe works associated with Cascades 1.7, 1.8, 2.1, and 2.2 to determine if adequate quality measures associated with the cascades had been established and implemented. Specifically, the inspectors reviewed electronic versions of RT film records for pressure boundary welds to determine if indications and defects were correctly identified and if the welds met the applicable code requirements. The inspectors reviewed 35 weld records for Cascade 1.7; 38 weld records for Cascade 1.8; 36 weld records for Cascade 2.1; and 42 weld records for Cascade 2.2. The inspectors reviewed the records of good welds, defective welds, and repaired welds to provide a representative sampling of completed welds associated with the pipe works for Cascades 1.7, 1.8, 2.1, and 2.2.

The inspectors reviewed welds on the upper steel of Cascade 1.6 to determine if adequate quality measures associated with CGD of the cascade had been established and were being implemented. Specifically, the inspectors visually examined 18 welds to determine if weld accessibility, length, and size were consistent with that documented in WP 1001-CIVIL-823-066, "Upper Steel Weld Quality Verification Commercial Grade 041-0003 MH1B Cascade 6".

2. Conclusions

The Inspectors determined that, based on the sample of RT records reviewed, the licensee maintained adequate controls over welding examination and documentation

activities associated with pipe work welds. Overall, the inspection of activities related to the CGD of IROFS-41 mechanical components for Cascades 1.7, 1.8, 2.1, and 2.2 determined that work was controlled in accordance with the QAPD. No findings of significance were identified.

6. Exit Meeting/Interviews

Issues identified during the inspection were summarized daily during the inspection periods of October 31 to November 3, 2011, by the inspection team. A formal exit meeting was held on November 3, 2011, with the licensee's management team. The inspectors described the areas inspected and discussed the inspection results in detail with the licensee staff. Although security-in-confidence and proprietary documents were reviewed during this inspection, the security and/or proprietary nature of these documents is not included in this report.

SUPPLEMENTAL INFORMATION

1. List of Personnel Contacted

J. Laughlin, Chief Nuclear Officer and Vice President of Operations
B. Bare, Programs and Performance Director
G. Beckett, CGD Group Supervisor
D. Cummings, Level II Verification Inspector
D. Dauner, Mechanical Engineer
K. Garner, Level II Certified Visual Examiner & CWI Inspector
J. Geiger, Enrichment Technology US Cascade Supply Manager
R. Griffin, Enrichment Technology US Engineering Team Lead
L. Lorati, CGD Project Manager
J. Marchi, QA Supervisor
P. Robinson, VP Licensing/General Counsel
M. Rhoads, Level II Verification Inspector
G. Sergeant, URENCO USA Verification Team Manager
A. Sorrell, Compliance Director
O. Torres, QA Manager
T. Taylor, Licensing Engineer
R. Finney, Quality Control Inspector

2. Inspection Procedures Used

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

IP 88136 Mechanical Components

3. List of Items Opened, Closed and Discussed

None.

4. List of Acronyms Used

| | |
|-------|--|
| ADAMS | Agencywide Document Access and Management System |
| CC | Critical Characteristic |
| CGD | Commercial Grade Dedication |
| CMTR | Certified Material Test Report |
| CR | Condition Report |
| IP | Inspection Procedure |
| IROFS | Items Relied on For Safety |
| NRC | Nuclear Regulatory Commission |
| PARS | Publicly Available Records |
| PMI | Positive Material Identification |
| QA | Quality Assurance |
| QAPD | Quality Assurance Program Description |
| RII | NRC Region II |
| RT | Radiographic Testing |
| VT | Verification Team |
| WP | Work Plan |

5. List of Documents Reviewed

Procedures

EG-3-2100-05, "Commercial Grade Dedication Process", Revisions 10, 11, and 12
 EG-3-6000-23, "Alignment and Leveling of Flomels", Revision 1, dated January 11, 2010
 EG-3-6000-24, "Grouting of Flomels", Revision 1, dated September 10, 2010
 QA-3-1000-01, "QA Evaluation of Nuclear Industry Assessment Committee (NIAC) Assessment Reports," Revision 0, dated December 12, 2008
 QA-3-2000-08, "Approved Supplier List," Revision 6, dated November 15, 2010
 QA-3000-17, "Welding Inspection"
 VT-3-2000-01, "Operation of the Innov-X Systems Delta Series X-Ray Fluorescence Spectrometer", Rev 0

Work Plans

1001-CIVIL-823-043, "Remove, Re-install bolts & Torque Verification SBM 1001 Cascade 5," Revision 0, dated January 19, 2011
 1001-CIVIL-823-066, "Upper Steel Weld Quality Verification Commercial Grade 041-0003 MH1B Cascade 6"
 1001-CIVIL-823-073, "Weld Wire Sampling for H-Frames and Upper Steel in MH1B Cascade 7"
 1001-CIVIL-823-096, "Cascade 6 Fixed and Sliding Process Piping Clamp Bolts, Nuts, Ferromagnetic Testing, and Washer Installation Verification"
 1001-CIVIL-823-098, "MH1B Cascade 7 Fixed and sliding Process Piping Clamp Bolts, Nuts, Ferromagnetic Testing, Washer Installation Verification and Clamp Re-Alignment and Torquing."
 1003-CIVIL-400-001, "UF6 Area Floor Pre-drilling – Assay 1003"

1003-CIVIL-823-092, "Installation of Welded Pipe Supports in the UF6 Area EG-3-6000-30 Weld Supports"
 1003-CIVIL-828-051, "Install Concrete Slab in Assay Hall 1003"
 1003-CIVIL-828-092, "Installation of Welded Pipe Supports in the UF6 Area EG-3-6000-30 Weld Supports".
 1003-CIVIL-843-025, "Welding of Stools"
 1003-CIVIL-853-001, "Installation of Flomels in Assay Hall 1003"
 1001-MECH-453-061, "Perform Cascade 5 Field inspection for CGDP-041-005"
 1001-MECH-453-062, "Perform Cascade 6 Field Inspections for CGDP-041-005"
 1001-MECH-453-067, "PMI Testing of Main header Fixed and Sliding Aluminum Clamps - Cascade 1.6"
 1001-MECH-453-068, "Complete Pipeworks Inspections for Wall Thickness and Diameter - Cascade 5"
 1001-MECH-453-069, "Complete Pipeworks Inspections for Wall Thickness and Diameter"
 1001-MECH-453-070, "Complete Pipe Works Inspections for Wall Thickness and Diameter, Cascade 7"
 1001-MECH-453-072, "Complete Pipeworks Inspection for Wall Thickness and Diameter - Cascade 6 - MH1B"
 1001-MECH-453-074, PMI Testing of Main Header Fixed and Sliding Aluminum Clamps"
 1001-MECH-453-076, "Main Pipe Header Bend Wall Thickness and Ovality"

Condition Reports

CR 2008-3501
 CR 2008-3502
 CR 2008-3503
 CR 2011-3173
 CR 2011-3178
 CR 2011-3702

Miscellaneous Documents

QAPD, Revision 30
 Action Item Tracking Report 2008-3476
 Action Item Tracking Report 2008-3475
 Action Item Tracking Report 2008-3423
 Selected Centrifuge Placement Records
 Evaluation Report 2011-E-05-080, dated June 11, 2011
 Evaluation Report 2010-E-11-159, dated November 11, 2010
 Evaluation Report 2010-E-11-163, dated November 13, 2010
 LS-3-1000-01, "Implementation 10 CFR 21"
 LS-3-1009-09, "NRC Posting Requirements"
 Manufacturer Supplied CMTRs
 PMI Training Certificates for Selected VT Inspectors
 Quality Assurance Audit 2008-3139-EXT-AUD, performed October 27-29, 2008