



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

February 27, 2015

Gary J. Laughlin, Chief Nuclear Officer
and Head of Technical Services
Louisiana Energy Services, LLC
URENCO, USA
P.O. Box 1789
Eunice, NM 88231

SUBJECT: LOUISIANA ENERGY SERVICES, URENCO USA FACILITY – U.S. NUCLEAR
REGULATORY COMMISSION INSPECTION REPORT NO.70-3103/2015-006 and
70-3103/2013-008

Dear Mr. Laughlin:

This refers to the Nuclear Regulatory Commission (NRC) in-office inspection conducted from January 20-23, 2015. The purpose of the inspection was to perform follow-up inspection for Unresolved Item (URI) 07003103/2013-006-001, Licensee Review of Vendor Calculations. The enclosed report presents the results of the inspection. The findings were discussed with members of your staff at an exit meeting held on January 27, 2015.

During the inspection, the NRC staff examined activities conducted under your license as they related to public health and safety and to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of selected examinations of procedures, calculations, and representative records.

Based on the results of this inspection, one (1) Severity Level IV violation of NRC requirements was identified. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: (1) the Regional Administrator, Region II; and (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 *Code of Federal Regulations* (CFR) 2.390 of the NRC's Rules of Practice, a copy of this letter, its enclosure, and your response, if you choose to make one, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). To the extent possible, your response (if any) should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact me at 404-997-4451.

Sincerely,

/RA/

Jamie Heisserer, Chief
Construction Inspection Branch 2
Division of Construction Inspection

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

Enclosure:
NRC Inspection Report No. 70-3103/2015-006 and 70-3103/2013-008
w/attachment: Supplemental Information

cc w/encl: (See page 3)

Should you have any questions concerning this inspection, please contact me at 404-997-4451.

Sincerely,

/RA/

Jamie Heisserer, Chief
Construction Inspection Branch 2
Division of Construction Inspection

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

Enclosure:
NRC Inspection Report No. 70-3103/2015-006 and 70-3103/2013-008
w/attachment: Supplemental Information

cc w/encl: (See page 3)

DISTRIBUTION:

J. Yeorkun, RII
M. Lesser, RII
J. Hickey, RII
D. Seymour, RII
M. Raddatz, NMSS
B. Smith, NMSS
PUBLIC

☒ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☒ NON-SENSITIVE
ADAMS: ☒ Yes ACCESSION NUMBER: **ML15058A712** ☒ SUNSI REVIEW COMPLETE ☒ FORM 665 ATTACHED

OFFICE	RII:DCI	RII:DCP	RII:DCI	RII:DCI			
SIGNATURE	TP	DAS	JH	JTY			
NAME	T Ponko	D. Seymour	J. Heisserer	J Yerokun			
DATE	2/24/15	2/24/15	2/24/15	2/24/15	3/ /2015	3/ /2015	3/ /2015
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY
LETTER.DOCX

DOCUMENT NAME: G:\CC\DCI\CIB2\LES\IR 2015-006_PONKO\DRAFT IR 2015-006 COVER

cc:

Ryan Flynn, Deputy Secretary
New Mexico Department of Environment
Office of the Secretary
1190 St. Francis Drive
P. O. Box 26110
Santa Fe, NM 87502-0157

Matt White, Mayor
City of Eunice
P.O. Box 147/1106 Ave J
Eunice, NM 88231

The Honorable Sam D. Cobb, Mayor
City of Hobbs
200 E. Broadway
Hobbs, NM 88240

Cheryl Chance, Mayor
City of Jal
P.O. Drawer 340
Jal, NM 88252

Commissioner Gregory H. Fuller
Chairman
Lea County Board of County Commissioners
Lea County Courthouse
100 North Main, Suite 4
Lovington, NM 88260

Daniel F. Stenger, Counsel
Hogan and Hartson
555 13th Street, NW
Washington, DC 20004

Michael Ortiz, Chief
Radiation Controls Bureau
Field Operations Division
Environmental Department
Harold S. Runnels Building
1190 St. Francis Drive, Room S 2100
P.O. Box 26100
Santa Fe, NM 87502-0157

Dave Sexton
President and Chief Executive Officer
P.O. Box 1789
Eunice, NM 88231
Dave.Sexton@Urenco.com

cc: (cont'd on page 4)

(cc: cont'd)
Clint Williamson
Vice President of Communications
and External Relations
P.O. Box 1789
Eunice, NM 88231
Clint.Williamson@urenc.com

Perry Robinson
Outside General Counsel
National Enrichment Facility
P.O. Box 1789
Eunice, NM 88231

Richard A. Ratliff, PE, LMP
Radiation Program Officer
Bureau of Radiation Control
Department of State Health Services
Division for Regulatory Services
1100 West 49th Street
Austin, TX 78756-3189

U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-3103

License: SNM-2010

Report No.: 70-3103/2015-006 and 70-3103/2013-008

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

Facility: URENCO USA Facility (UUSA)

Location: Eunice, NM 88231

Inspection Dates: January 20-23, 2015

Inspectors: A. Ponko, Senior Construction Inspector, Division of Construction
Inspection

Approved: J. Heisserer, Chief
Construction Inspection Branch 2
Division of Construction Inspection

Enclosure

EXECUTIVE SUMMARY

One severity level (SL) IV non-cited violation of LES Quality Assurance Program Description (QAPD) Section 21.7, "Control of Purchased Material, Equipment and Services" was identified. Non-cited violation (NCV) 070-03103/2015-006-001, "Failure to Ensure that Procured Engineering Services Conformed to the Procurement Documents" was identified for LES's failure to ensure that the structural calculations for the foundations and the concrete tilt-up shear wall panels of the UF₆ Building of the Separations Building Module (SBM) 1005 facility conformed to the technical requirements of the LES SBM 1005 Design Specification.

REPORT DETAILS

1. Structural Concrete Activities (IP 88132)

a. Inspection Scope and Observations

The inspectors reviewed information associated with Unresolved Item (URI) 070-03103/2013-006-001, Licensee Review of Vendor Calculations, to determine if a violation of regulatory requirements existed.

The structural design criteria for the SBM 1005 facility are provided in LES Design Specification, LES-S-S-0006, SBM-1005 Design Specification, Rev. 3 (LES SBM 1005 Design Specification). For the design of the SBM 1005 facility, LES procured engineering services from Parsons, requiring compliance with the LES SBM 1005 Design Specification in the procurement documents. However, LES retained ultimate responsibility for the design and construction of the SBM 1005 facility.

The LES SBM 1005 Design Specification requires that all SBM 1005 buildings, foundations, internal structures and supports covered under the scope of the specification meet the structural design, analysis and load requirements of the International Building Code, 2003 Edition (IBC2003). Additionally, the LES SBM 1005 Design Specification states that IROFS27e structures shall be designed for the LES Design Basis Earthquake (DBE) and extreme weather loads in accordance with the American Institute of Steel Construction (AISC) Allowable Stress Design (ASD) "Manual of Steel Construction" and the American Concrete Institute, "Building Code Requirements for Structural Concrete (ACI 318)." The LES SBM 1005 Design Specification further states that for IROFS27e structures the requirements of AISC N690, "American National Standard Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities" and ACI 349, "Code Requirements for Nuclear Safety Related Concrete Structures" apply to the design and analysis for the design basis earthquake (DBE) and tornado wind load combinations. ACI 318-02 and ACI 349-01 are listed as the applicable editions of the ACI standards in the LES SBM 1005 Design Specification. Consistent with these requirements, the load combinations for concrete foundations provided in Section 7.5 of the LES SBM 1005 Design Specification are based on Chapter 9 of ACI 318-02 and Chapter 9 of ACI 349-01.

The inspectors determined that the calculations prepared by Parsons for the foundations and concrete tilt-up shearwall panels of the IROFS27e UF₆ Building of the SBM 1005 facility did not conform to the requirements of the LES SBM 1005 Design Specification. Specifically, the strength reduction factors identified as design inputs in the calculations were not consistent with the requirements of ACI 318-02. In these calculations, the strength reduction factors provided in Chapter 9 of ACI 349-01 were incorrectly used with load combinations based on Chapter 9 of ACI 318-02, resulting in non-conservative errors in the calculated demand to capacity ratios corresponding to these load combinations. As a result of these design input errors, the demand to capacity ratios corresponding to the ACI 318-02 load combinations were underestimated by up to 12 percent. The inspectors further determined that these deviations from the technical requirements of the LES SBM 1005 Design Specification were not identified by LES during their acceptance review of the calculations; consequently, calculations containing non-conservative design input errors were released for unlimited use.

LES QAPD, Revision 33b, Section 21.7, "Control of Purchased Material, Equipment and Services," states, in part, that measures are established to ensure conformance with the procurement specifications and documents.

LES Procedure EG-3-4200-03, Revision 14, "Preparation and Control of Engineering Calculations," requires in Section 5.5, "Owner Acceptance Review of Vendor Calculations," that the reviewer confirms the design inputs and that a technically acceptable approach was used in the calculation.

Contrary to the above, on March 8, 2013 and March 25, 2013, the measures established by LES failed to ensure that procured engineering services provided by Parsons for the detailed structural design of the foundations and the concrete tilt-up shearwall panels of the IROFS 27e UF₆ Building of the SBM 1005 facility conformed to the technical requirements of the procurement documents. Specifically, LES failed to verify that all design inputs were considered and that a technically acceptable approach, implementing the LES project specific design criteria, was used in calculations 444758-1005-C-CAL-008, "Foundation Design," Rev. 2, and 444758-1005-C-CAL-012, "Concrete Tilt-up Shearwall Panel Design," Rev. 1, as required by LES Procedure EG-3-4200-03, Rev 14, "Preparation and Control of Engineering Calculations." Consequently, the design method used for the foundations and concrete tilt-up shearwall panels of the IROFS27e UF₆ Building of the SBM 1005 facility did not conform to the requirements of IBC2003 and ACI 318-02 as required by the SBM 1005 Design Specification (LES-S-S-00006, SBM-1005 Design Specification, Rev. 3). In these calculations, the design strengths of structural members that were used for comparison with load combinations based on Chapter 9 of ACI 318-02 were not calculated in accordance with Section 9.3.1 of the same standard, as required in Chapter 9 of ACI 318-02. The strength reduction factors provided in Chapter 9 of ACI 349-01 were incorrectly used with load combinations based on Chapter 9 of ACI 318-02, resulting in non-conservative errors in the calculated demand to capacity ratios corresponding to these load combinations.

The licensee initiated Event Reports (ER) 2013-1239 and ER 2015-123 to evaluate this issue. Based on an extent of condition review conducted by Parsons, similar design input errors were determined to be present in 13 structural concrete calculations, 5 for the UF₆ Building of the SBM 1005 facility and 8 for the SBM 1003 Facility. Parsons evaluated the deviations and concluded that no design changes or physical modifications to existing construction would be required because the affected components in their judgment possessed adequate margin to compensate for the errors. Subsequently, the affected calculations were revised by Parsons.

b. Conclusion

One severity level (SL) IV non-cited violation (Section 6.5d) of LES QAPD Section 21.7, "Control of Purchased Material, Equipment and Services" was identified. Non-cited Violation (NCV) 070-03103/2015-006-001, "Failure to Ensure that Procured Engineering Services Conformed to the Procurement Documents" was identified for failure to ensure that the structural calculations for the foundations (444758-1005-C-CAL-008, Rev. 2) and the concrete tilt-up shear wall panels (444758-1005-C-CAL-012, Rev. 1) of the IROFS27e UF₆ Building of the SBM 1005 facility conformed to the requirements of IBC2003 and the ACI 318-02, as required by the LES SBM 1005 Design Specification (LES-S-S-00006, SBM-1005 Design Specification Rev. 3). The inspectors determined that this finding was more than minor because it represented

a failure to adequately implement a QA process and quality oversight function that, if left uncorrected, could adversely affect the quality of QL-1 components (Section 6.5d of the NRC Enforcement Policy). Because this violation is of very low safety significance and has been entered into the LES corrective action program as ER 2015-123, it is being treated as a non-cited violation consistent with Section 2.3 of the Enforcement Policy.

2. Exit Meeting

The lead inspector discussed the inspection results in detail with the licensee's staff on January 27, 2015.

Attachment

Key Points of Contact

List of Items Closed and Discussed

Inspections Procedures Used

Acronyms

Documents Reviewed

SUPPLEMENTARY INFORMATION

1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
M. Wiemers	Head of Engineering
S. Scott	Plant Engineering
J. Rickman	Licensing Specialist

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>ITEM NUMBER</u>	<u>STATUS</u>	<u>DESCRIPTION</u>
070-3103/2013-006-001	Closed	Unresolved Item (URI): Licensee Review of Vendor Calculations
070-3103/2015-006-001	Opened/Closed	Non-Cited Violation (NCV): Failure to Ensure that Procured Engineering Services Conformed to the Procurement Documents

3. INSPECTION PROCEDURE USED

IP 88132 Structural Concrete Activities

4. ACRONYMS

ADAMS	Agency-Wide Document Access and Management System
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
IP	Inspection Procedure
LES	Louisiana Energy Services
No.	Number
NRC	Nuclear Regulatory Commission
Rev.	Revision
SBM	Separation Building Module
UF ₆	Uranium Hexafluoride
URI	Unresolved Item
UUSA	URENCO USA

5. DOCUMENTS REVIEWED

Procedures:

EG-2-2000-01, "Configuration Management," Rev. 6

EG-3-1100-01, "Engineering Organization Roles and Responsibilities," Rev. 8

EG-3-1400-01, "Qualification and Training of Individuals to Perform Engineering Duties," Rev. 9

EG-3-2100-01, "Configuration Change," Rev. 19

EG-3-2100-02, "Owner Acceptance Review of Design Deliverables," Rev. 17

EG-3-4200-03, "Preparation and Control of Engineering Calculations," Rev. 14

Specifications:

LES-S-S-00006, "SBM-1005 Design Specification," Rev. 3

Calculations:

444758-1005-C-CAL-008, "Foundation Design," Rev. 2

444758-1005-C-CAL-102, "Concrete Tilt-up Shearwall Panel Design," Rev. 1

Other Documents:

NEF-BD-27e, "Design Features of SBM and CRDB Structures," Rev. 4.

114489-SDC-001-2, "Structural Design Criteria"

EG-4-2100-05, "Seismic Design Reference Manual," Rev. 4

Contract No. LES-SC-4296 between Louisiana Energy Services, LLC and Parsons Commercial Technology Group, Inc. for the Detailed Design of the Separation Building Module (SBM) 1005 dated May 24, 2011.

UUSA Response to Question Regarding Load Combinations B.8 and B.9 of NTS SDC Audit No. 2012-A-10-003 Rev. 1, Parsons Commercial Technology Group

Event Reports:

ER-2013-1239

ER-2015-123