



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II**
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

December 19, 2008

Gregory Smith, Chief Operating Officer
and Chief Nuclear Officer
National Enrichment Facility
P.O. Box 1789
Eunice, NM 88231

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2008-004

Dear Mr. Smith:

During the period from August 11 through November 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) conducted inspections associated with the construction activities of the Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF) gas centrifuge project. The purpose of the inspections was to evaluate portions of the licensee's design and document control program and management controls program. The enclosed inspection report, which documents the inspection results, was discussed with you and other members of your staff on August 15 and October 2, 2008.

These routine, announced inspections were an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspections consisted of examinations of selected calculations, drawings, procedures, and interviews with personnel.

Based on the results of this inspection, no violations or deviations were identified.

In addition, we received your reply, dated December 1, 2008, to our Notice of Violation issued in Inspection Report 70-3103/2008-003. The reply met the requirements of 10 CFR 2.201 and your corrective actions will be reviewed during a future inspection.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," this document may be accessed through the NRC's public electronic reading room, Agency-Wide Document Access and Management System (ADAMS) on the Internet at <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

Docket No. 70-3103

License No. SNM-2010

Enclosure: NRC Inspection Report 70-3103/2008-004 w/attachment

cc w/encl: (See next page)

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Deborah A. Seymour, Chief
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cc w/encl: (See next page)

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Letter to Gregory Smith from Deborah A. Seymour dated December 19, 2008

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2008-004

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PUBLIC

**U.S. NUCLEAR REGULATORY COMMISSION
REGION II**

Docket: 70-3103

License: SNM-2010

Report: 70-3103/2008-004

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

Location: Louisiana Energy Services, L.L.C., National Enrichment Facility
Eunice, New Mexico

Inspection Dates: August 11–15, 2008
September 29–October 2, 2008

Inspectors: C. Taylor, Senior (Sr.) Project Inspector, Division of Construction Projects
(DCP)
R. Jackson, Sr. Construction Inspector, Division of Construction Inspection

Accompanying
Personnel: A. Chowdhury, Center for Nuclear Waste Regulatory Analysis (CNWRA)
S. Hsiung, CNWRA
D. Seymour, Branch Chief, DCP

Approved: Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

Enclosure

EXECUTIVE SUMMARY

Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF)
NRC Inspection Report 70-3103/2008-004

This report covers a four-month period of announced inspections by regional inspectors. The inspections involved the observation and evaluation of selected aspects of the licensee's design and document control program, and selected aspects of the licensee's management controls program related to hot acceptance testing readiness. During this inspection period the following inspections were performed: On August 11-15, an inspection was performed in the area of design and document control; and on September 29-October 2, an inspection planning and readiness site visit was performed in the area of hot acceptance testing (HAT).

Design and Document Control

A sample of LES NEF's as-built design of structures where significant changes existed between the license application design and the as-built design were reviewed and found adequately dispositioned. The sample included three nonconformance reports (NCR-097, NCR-127, and NCR-142), one request for information (RFI-508), and two engineered change requests (ECR1914 and ECR-2027) (Section 2).

Management Organization and Controls

Although LES NEF made significant progress in developing and preparing for the Hot Acceptance Test Readiness Review (HATRR), portions of the policies and procedures needed to support the HATRR were not complete and were not formally approved by senior management. The HATRR was subsequently rescheduled for late January 2009 (Section 3).

Attachment:

Persons Contacted

Inspection Procedures

List of Items, Opened, Closed and Discussed

List of Acronyms Used

List of Documents Reviewed

REPORT DETAILS

1.0 Summary of Site Activities

The licensee continued to perform ongoing geotechnical, concrete, structural steel and welding activities at the Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF).

2.0 Design and Document Control (Inspection Procedure (IP) 88107)

a. Scope and Observations

On August 11 through 15, 2008, Center for Nuclear Waste Regulatory Analysis (CNWRA) staff initiated the identification, review, site inspection, and assessment of the as-built design of LES NEF's structures where significant changes existed between the license application design and the as-built design. The changes were documented in various nonconformance reports (NCRs), engineering change requests (ECRs), and requests for information (RFIs).

During the inspection, special emphasis was given to the as-built designs of the Separation Building Module 1001 (SBM) and the Cylinder Receipt and Dispatch Building 1100 (CRDB). The inspection focused on assessing the effects of significant changes as documented in several NCRs, RFIs, and ECRs for the SBM and the CRDB. The disposition of the NCRs, RFIs, and ECRs used two approaches: (a) "use-as-is" and analyzing the as-built design to demonstrate that the as-built structure has adequate capacity to perform its intended function, and (b) repairing or revising the design of the as-built structure to bring it to the quality and condition of the license application design. This as-built design inspection assessed both types of dispositions.

SBM 1001 Wall on the 15 Line Between Column Lines A and E is Out-of-Tolerance (NCR-097 and NCR-142)

The licensee identified that the concrete wall on line 15 between columns lines A and E was out-of-tolerance with the specifications of American Concrete Institute (ACI) 117, Section 4-Cast-In-Place concrete for buildings, 4.1-Vertical alignment for heights less than 100 feet (') lines, surfaces, and rises ± 1 inches ("), and 4.2-Lateral alignment, members ± 1 " (Washington Group International (WGI) 2008a). The thickness of the wall was also out of tolerance, per ACI 117, that stated, "for wall thickness of 12" or less, the tolerance is $+\frac{3}{8}$ " to $-\frac{1}{4}$ " and for wall thickness of more than 12", but not over 3', the tolerance is $+\frac{1}{2}$ " to $-\frac{3}{8}$ " (WGI, 2008b).

The licensee's disposition was "use-as-is." Calculation 114489-C-1006-Revision 04 (Nuclear Technology Solutions, L.L.C., 2008a) provided revised results of an analysis based on eccentric application of the axial load (because of out of tolerance alignment) and reduced thickness for the as-built wall. The objective of this revised analysis was to qualify the as-built wall of reduced thickness as adequate to support the additional moment due to the eccentric application of the axial load. The staff reviewed this analysis and found that the as-built wall had adequate capacity to carry the design load.

Reinforcing Steel Splice Length for Slab on Grade in Mini Hall 1 of SBM 1001 Does Not Meet the Minimum Splice Length (NCR-127)

The licensee identified that rebar installed in mini-hall 1 slab on grade placements 1-2-3-4-6-10 had a splice length shorter than that shown on the “Rebar Splice Length Chart” on Drawing 114489-0000-C-CON-002-01-5 (WGI, 2008c) and did not meet the specifications of drawing 114489-0000-C-CON-003-01-4. The typical slab on grade construction joint—two layer reinforcing steel detail stated “match slab bottom reinforcing size/splice length typical.” Furthermore, the construction joint detail in drawing 114490-0000-C-CON-003-01 required the continuity of top and bottom rebars through the construction joint.

The licensee’s disposition was “use-as-is.” The rebar in question in concrete placements 1-2-3-4-6-10 acts to connect each section of the slab at the designated construction joints. The rebar dowels connecting each section of the concrete slab act only in shear and tension to the extent that each section of the slab remains connected. The top and bottom bars did not continue through each section of the slabs; the top and bottom bars would act to resist moment in the slab. Although the chart shown on drawing 114489-0000-C-CON-002-01-5 specified a minimum length for a splice for a rebar that was longer than the as-built condition, the specified minimum development length of the rebar was shorter than the as-built condition. Since the rebar dowels would reach their intended strength at the development length, the as-built dowels with a longer splice length would resist any intended tension forces developed in the slab. Calculation 114489-C-1011-Revision 02 (Nuclear Technology Solutions, L.L.C., 2008b) assessed the effect of discontinuous top and bottom rebars through the construction joints. The staff reviewed this analysis and found that the as-built condition was acceptable.

Designed CRDB Bunker Area Steel Beam is not Adequate to Carry Design Load (ECR-1914)

Description of Proposed Change: In the CRDB Bunker Area, a beam above Room 142 t was supposed to support the weight of the wall between second floor Rooms 242 and 243. The beam that is currently shown on drawing 114489-1100-C-STL-002-01-0 was not adequate to carry the weight of the concrete wall above if the wall was poured to the roof line prior to the floor concrete curing and attaining its strength (Washington Group International, 2008d).

Disposition: Change the original beam to a heavier one. Calculation 114489-C-1107-Revision 02 (Nuclear Technology Solutions, L.L.C., 2008c) provided revised results of design analysis performed based on the heavier beam size. The staff reviewed the revised design and found that the changed beam had adequate capacity to carry the weight of the concrete wall above if the wall was poured to the roof line prior to the floor concrete curing and attaining its strength.

Loads and Seismic Requirements Needed for New Steel Members Added to SBM Roof to Design Steel Connections (RFI-508)

Description of Proposed Change: With the addition of rooftop condensing units on the SBM roof, an Engineering and Design Change Request (E & DCR-C0237B) was issued adding additional steel members to carry the load of the piers on the roof and the load of the condensing units (WGI, 2008e).

Disposition: New steel members were added to support the condensing units on the SBM roof. The steel beams were located to get full bearing on upper flute and shimming where required. Calculation 114489-C-1009-Revision 04 (Nuclear Technology Solutions, L.L.C., 2008d) provided revised results. The staff reviewed the revised design calculations made to qualify roof purlins and roof girders for the final condensing units load and found them satisfactory.

Original Design and Analysis Missed the CRDB Building and Crane Columns at Line 33.3 at Column Lines P and S (ECR-2027)

Description of Proposed Change: Drawing NCS-110-C-CON-002-04 did not depict building and crane columns at intersections of CRDB line 33.3 with column lines P and S (WGI, 2008f). An assessment was needed to verify whether or not these columns were required to support CRDB loads.

Disposition: New center footing for the CRDB north wall will be added to support the building and crane column loads. The relevant footing plan was updated accordingly. Attachment 11 of Calculation ARC-711, Revision 02 (Archon Engineering, 2008) provided the analysis for this new footing and the columns. The staff reviewed this analysis and found that the new center footing and columns addition had adequate capacity to carry the design loads and resist uplift, sliding, and overturning.

b. Conclusion

A sample of LES NEF's as-built design of structures where significant changes existed between the license application design and the as-built design were reviewed and found adequately dispositioned. The sample included: NCR-097, NCR-127, and NCR-142; RFI-508; and ECR-1914 and ECR-2027.

3.0 Management Organization and Controls (IP 88005)

Scope, Observations and Conclusions

Although LES NEF made significant progress in developing and preparing for the Hot Acceptance Test Readiness Review (HATR), portions of the policies and procedures needed to support the HATR were not complete and were not formally approved by senior management. The HATR was subsequently rescheduled for late January 2009.

3.0 Exit Meeting

The preliminary inspection results were presented to the licensee on the following dates: August 12, and October 2, 2008. The lead inspectors described the areas inspected and discussed the inspection results in detail with licensee staff. The licensee acknowledged the findings during each meeting and no dissenting comments were received. Although proprietary documents and processes were reviewed during this inspection, the proprietary nature of these documents or processes was not included in this report.

SUPPLEMENTAL INFORMATION

1. List of Persons Contacted

Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF):

R. Butz, Design Engineer
S. Cowne, Licensing Manager
T. Eason, Director, Commissioning and Acceptance
T. Harney, Licensing Engineer
D. Lakin, Performance Assessment
P. Law, Design Engineering Supervisor
D. J. Mathis, Licensing Engineer
P. McCasland, Licensing Engineer
D. Neve, Engineering Manager
E. Parkes, Construction Hoffman, Construction
J. Potrier, Construction
K. Prasad, Design Management
B. Robinson, Field Engineering Manager
R. Schrauder, Design Manager
G. Schultz, Project Manager for Items Relied On for Safety
D. Sexton, Vice President Engineering
G. Smith, LES Chief Operating Officer and Chief Nuclear Officer
E. Weiner, QA Engineer
E. Wenzinger, Licensing Engineer
D. VanDewalle, Director Support Services

Other Personnel

Individuals for Washington Group International (WGI)

2. Inspection Procedures Used

IP 88107 Quality Assurance: Design and Document Control
IP 88005 Management Organization and Controls

3. List of Items Opened, Closed, and Discussed

None

4. List of Acronyms Used

ADAMS	Agency-Wide Document Access and Management System
ACI	American Concrete Institute
ASCE	American Society of Civil Engineers
CFR	Code of Federal Regulations
CRDB	Cylinder Receipt and Dispatch Building 1100
ECR	Engineered Change Request
HAT	Hot Acceptance Testing
IP	Inspection Procedure
IR	Inspection Report

NCR	Nonconformance Report
LES NEF	Louisiana Energy Services, L.L.C., National Enrichment Facility
NRC	Nuclear Regulatory Commission
NTS	Nuclear Technology Solutions
RFI	Request for Information
SBM	Separations Building Module 1001
WGI	Washington Group International

5. Documents Reviewed

Briefing Documentation

LES NEF Readiness for Hot Acceptance Testing, September 29, 2008.

Procedures

Procedure SU-3-2000-02, Hot Acceptance Testing Readiness Review Affirmation Process, Revision 0e

Calculations

Archon Engineering, Cylinder Receipt and Dispatch Building (CRDB) Foundation and Footing Design, Calculation ARC-711, Revision 02, Columbia, Missouri, Archon Engineering, 2008

Nuclear Technology Solutions, L.L.C., Finite Element Analysis of the Separation Building Modules (SBM) – Bldgs. 1001 & 1003, Calculation 114489-C-1006-Rev. 04, Cherry Hill, New Jersey: Nuclear Technology Solutions, L.L.C., 2008a

Nuclear Technology Solutions, L.L.C., Design of Cascade Hall Slabs-On-Grade (Buildings 1001 & 1003), Calculation 114489-C-1011-Rev. 02, Cherry Hill, New Jersey: Nuclear Technology Solutions, L.L.C., 2008b

Nuclear Technology Solutions, L.L.C., Design of Steel Framing for the Second Floor & Mezzanine of the Cylinder Receipt and Dispatch Building Bunker Area (Building No. 1100 – between 5 & 24.5 – Lines), Calculation 114489-C-1107-Rev. 02, Cherry Hill, New Jersey: Nuclear Technology Solutions, L.L.C., 2008c

Nuclear Technology Solutions, L.L.C., Design of Roof Slab & Steel Framing for the SBM 1001, 1003, & 1005, Calculation 114489-C-1009-Rev. 04, Cherry Hill, New Jersey: Nuclear Technology Solutions, L.L.C., 2008d

Nonconformance Reports

Washington Group International, Nonconformance Report No. (28683)–097, Eunice, New Mexico: Washington Group International, 2008a

Washington Group International, Nonconformance Report No. (28683)–142, Eunice, New Mexico: Washington Group International, 2008b

Washington Group International, Nonconformance Report No. (28683)–127, Eunice,
New Mexico: Washington Group International, 2008c

Engineered Change Request

Washington Group International, Engineering Change Request No. 1914, Eunice,
New Mexico: Washington Group International, 2008d

Washington Group International, Request for Information No. 508, Eunice,
New Mexico: Washington Group International, 2008e

Washington Group International, Engineering Change Request No. 2027, Eunice,
New Mexico: Washington Group International, 2008f