



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

March 7, 2008

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

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2007-004

Dear Mr. Smith:

This refers to the inspection conducted on December 10-13, 2007, at the Louisiana Energy Services, L.P., National Enrichment Facility, Cherry Hill, New Jersey offices and subsequent in-office review through January 25, 2008. The purpose of the inspection was to determine that your structural design and related Quality Assurance program activities were in accordance with the codes and standards committed to in the Safety Analysis Report and in the Integrated Safety Analysis. The enclosed report presents the inspection results which were discussed with members of your staff on December 13, 2007 and again on January 25, 2008.

This announced team inspection was 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 inspection consisted of examinations of selected calculations, drawings, procedures and interviews with personnel. Based on the results of this inspection, no findings of significance or violations of regulatory requirements were identified.

In accordance with 10 CFR 2.390 of the 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/readingrm/adams.html>.

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

Sincerely,

/RA/

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

Docket No. 70-3103

License No. SNM-2010

Enclosure: NRC Inspection Report 70-3103/2007-004
w/attachments

cc: w/encl: (See next page)

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DATE	02/27/2008	3/7/2008	3/7/2008				
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Letter to Gregory Smith from Deborah A. Seymour dated March 7, 2008.

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2007-004

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PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket: 70-3103

License: SNM-2010

Report: 70-3103/2007-004

Licensee: Louisiana Energy Services, L.P.

Location: Cherry Hill, New Jersey (design offices)

Inspection Dates: December 10, 2007 through January 25, 2008

Inspectors: Joseph I. Tapia, P.E., Senior Construction Inspector
Division of Construction Inspection (DCI), Region II (RII)

Accompanying
Personnel: R. Jackson, Construction Inspector, DCI, RII
Dr. Asadul H. Chowdhury, Center for Nuclear Waste Regulatory Analysis
Dr. Simon Hsiung, Center for Nuclear Waste Regulatory Analysis
Dr. Tom Wilt, Center for Nuclear Waste Regulatory Analysis

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

EXECUTIVE SUMMARY

Louisiana Energy Services, L.P. National Enrichment Facility (LES NEF)
NRC Inspection Report 70-3103/2007-004

An announced team inspection was conducted at the Nuclear Technology Solutions, LLC (NTS) design office located in Cherry Hill, New Jersey, from December 10-13, 2007. Subsequent in-office reviews were also performed through January 25, 2008. This inspection was conducted to determine whether LES NEF structural design activities were in conformance with the codes and standards committed to by LES NEF in their Safety Analysis Report, as supported by their Integrated Safety Analysis (ISA) Summary. The inspection also served to assess the implementation of their Quality Assurance (QA) program related to design change engineering and document control activities.

The team inspection was conducted by NRC regional inspectors and Center for Nuclear Waste Regulatory Analysis (CNWRA) specialists. The inspection focused on the design of the Separation Building Module (SBM) and used a vertical slice approach to evaluate six areas: settlement and allowable soil-bearing capacity, verification of soil amplification factors, foundation design analysis, structural analysis, structural design, and analysis demonstrating that the seismic design met the target annual performance goal of 1.0×10^{-5} probability of exceedance.

The inspection specifically addressed ISA Item Relied on For Safety (IROFS) 27c. This IROFS delineates the design features of buildings containing uranium hexafluoride (UF_6) process systems for seismic, tornado, tornado missile, high wind, roof snow load, and for roof ponding and site flooding due to local intense precipitation, to ensure UF_6 process systems integrity. This is implemented by designing the building structures to withstand the effects of seismic, tornado, tornado missile, high wind, roof snow load, and local intense precipitation, consistent with the assumptions in the bases for the consequence calculations.

The inspection also served to initiate the technical review of LES NEF License Amendment Request 07-01. This amendment request involved reducing the factor of safety against overturning of structures and sliding of structural foundation slabs for some load combinations and a reduction of the vertical seismic input motion. The impact of these proposed changes on the design of structural and foundation systems was reviewed during this inspection. The response to the request will be addressed in separate correspondence.

The inspection determined that LES NEF had fulfilled the commitments in the Safety Analysis Report and had adequately implemented the QA program requirements. One Inspection Follow-up Item (IFI 70-3103/2007-004-001) was identified which relates to the need to further review settlement calculations for footings and a soil-structure interaction analysis that had not been completed at the time of the inspection.

Attachments:

1. Supplemental Information
2. Summary of In-Office Review at Cherry Hill, New Jersey
Design of the Cascade Halls 1 and 2 Module of the National Enrichment Facility
Louisiana Energy Services, Eunice New Mexico, December 10-13, 2007

REPORT DETAILS

1.0 DESIGN AND DOCUMENTATION CONTROL

a. Scope and Observations

The scope of this inspection included design and design change activities and quality assurance plan implementation. The inspection included a review of the technical basis for License Amendment Request 07-01 dated October 2, 2007, and also verified that the technical design provisions of Item Relied On For Safety (IROFS) 27c were satisfied. This IROFS delineates the design features of buildings containing uranium hexafluoride (UF₆) process systems for seismic, tornado, tornado missile, high wind, roof snow load, and for roof ponding and site flooding due to local intense precipitation, to ensure UF₆ process systems integrity. This was implemented by LES NEF designing the building structures to withstand the effects of seismic, tornado, tornado missile, high wind, roof snow load, and local intense precipitation, consistent with the assumptions in the bases for the consequence calculations.

The inspection focused on the structural design of the Separation Building Module (SBM) and used a vertical slice approach. The items reviewed included the following:

- Settlement and allowable soil-bearing capacity determination.
- Verification of the soil amplification factors.
- Foundation design analysis.
- Structural analysis.
- Structural design.
- Analysis demonstrating that the seismic design meets the target annual performance goal of 1.0×10^{-5} probability of exceedance.

The following attributes were verified during the inspection of each of these items:

- Design inputs were controlled and included documentation, review and approval.
- Deviations from the requirements were documented and approved.
- All assumptions were documented.
- The process for translating design inputs into plant design, fabrication, construction, testing, inspection, and examination requirements was in accordance with the Quality Assurance (QA) plan commitments and requirements.
- The design analysis process was adequately documented and was in accordance with the QA plan.
- Design verifications, reviews and approvals were documented and in accordance with the QA plan.
- Design changes were programmatically controlled in accordance with the QA plan and were subject to design control measures commensurate with those applied to the original design.
- Internal and external design interfaces were identified, procedurally controlled, and documented in accordance with the QA plan.

In addition to the design review, the inspection also included design change activities and QA plan implementation. Appropriate QA implementing procedures were reviewed. Selected configuration change packages, condition reports, field change requests, and nonconformance reports were reviewed to verify that the design control program was adequately implemented and included effective steps that identified design input controls, processes, analyses, verifications, change controls, and interface controls. The bases for qualification of the computer software used to perform finite element analysis were also reviewed.

The licensee's structural design and document control activities were conducted in accordance with the Nuclear Regulatory Commission (NRC) approved QA program requirements, and with the codes and standards committed to in the Safety Analysis Report, as supported by the Integrated Safety Analysis (ISA) Summary. The reviewed design calculations contained sufficiently detailed design information regarding purpose, method, design inputs and assumptions used during design analyses. The calculations sufficiently identified the engineering requirements defined in design documents and the design basis of the facility. Design inputs and design constraints were identified in the analyses and were reflected in output documents such as drawings and specifications. Specific details regarding the design review portion of the inspection are delineated in Attachment 2 to this inspection report (Summary of In-Office Review at Cherry Hill, New Jersey, Design of the Cascade halls 1 and 2 Module of the National Enrichment Facility, Louisiana Energy Services, Eunice New Mexico, December 10-13, 2007). Please note that this report was revised to eliminate security related information.

One Inspection Follow-up Item (IFI 70-3103/2007-004-001), "Review of Settlement and Soil/Structure Interaction Analyses," was identified to verify the adequacy of calculations that were not completed at the time of the inspection.

The results of the review regarding License Amendment Request 07-01 will be documented under separate correspondence.

b. Conclusions

Based on this review, the inspectors concluded that the technical design provisions of IROFS 27c were satisfied. The inspectors also concluded that LES NEF was adequately implementing Basic Requirement 3 "Design Control," and Supplement 3S-1, "Supplementary Requirements for Design Control," of ASME NQA-1-1994, "Quality Assurance Program Requirements for Nuclear Facilities," including supplements as revised by the ASME NQA-1a-1995 Addenda, as required by their QAPD. This finding included the finite element analysis computer software controls. QA records reviewed furnished evidence of the quality of activities affecting design change control. No items of safety significance were identified.

2.0 EXIT MEETING

The preliminary inspection results were presented to the licensee on December 13, 2007. At the conclusion of the in-office review on January 25, 2008, the lead inspector 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

LES NEF:

D. Cooksey, Separation Building Module 1 Design Lead
S. Cowne, Licensing Manager
T. Harney, Licensing Engineer
S. Hunt, Civil/Structural Engineer
D. Neve, Plant Engineering Manager
W. Padgett, Licensing Engineer
D. Poole, Manager Technical Support
M. Scanlan, Infrastructure Project Manager
B. Schmidt, Seismic Lead
R. Schrauder, Design Manager
D. Sexton, Deputy Vice President Engineering
C. Tracy, Configuration Management Coordinator
E. Weiner, Quality Assurance
D. Werder, Civil/Structural Engineer

Other Personnel:

R. Avrich, Project Quality Assurance Manager, Nuclear Technology Solutions, LLP (NTS)
S. Boakye, Geotechnical Engineer, NTS
C. Cronan, Vice President/Director of Nuclear Engineering, Shaw Stone & Webster
B. Ebbeson, Division Manager–Structural, NTS
M. Gilman, Quality Assurance Director, Shaw Stone & Webster
N. Karanjia, Senior Structural Engineer, NTS
K. Korcz, Licensing Item Relied On For Safety (IROFS) Manager, NTS
R. Page, Quality Assurance, NTS
S. Tsombaris, Project Engineer, NTS
P. Visalli, Project Manager, NTS

2. Inspection Procedure Used

IP 88107 Quality Assurance: Design and Documentation Control

3. List of Items Opened, Closed, and Discussed

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
2007-004-001	Open	Inspector Follow-up Item (IFI): Review of Settlement and Soil/Structure Interaction Analyses (Section 1.b.)

4. List of Acronyms Used

ADAMS	Agency-Wide Document Access and Management System
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CNWRA	Center For Nuclear Waste Regulatory Analysis
IFI	Inspection Follow-up Item
IP	Inspection Procedure
IROFS	Item Relied on for Safety
ISA	Integrated Safety Analysis
LES NEF	Louisiana Energy Services L. P., National Enrichment Facility
NQA-1	1994 Quality Assurance Program Requirements for Nuclear Facilities
NRC	Nuclear Regulatory Commission
NTS	Nuclear Technology Solutions, LLP
No.	Number
PE	Professional Engineer
PP	Project Procedure
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QL	Quality Level
SBM	Separation Building Module
UF ₆	Uranium Hexafluoride

5. Documents Reviewed

Procedures

CA-101, "Corrective Action Program," Revision 4
 EG-101, "Configuration Change," Revision 3
 EG-101-101, "Owner Acceptance Review of Design Deliverables," Revision 3
 EG-101-102, "Processing Field Change Requests (CRs and Requests for Information (RFIs)," Revision 0
 EG-101-103, "Processing Nonconformance Reports (NCRs) Issued by WGI", Revision 1
 LS-104, "10 CFR 70.72(c) Evaluations for Proposed Changes," Revision 2
 LS-106, "Maintenance of License Basis Documents," Revision 1

Configuration Changes:

CC-EG-2006-0015
 CC-EG-2007-0022
 CC-EG-2007-0041
 CC-EG-2007-0050

Condition Reports:

CR 2006-0042
 CR 2007-0021
 CR 2007-0022

CR 2007-0067

Field Change Requests:

FCR 28683-083
FCR 28683-086
FCR 28683-094
FCR 28683-114
FCR 28683-124
FCR 28683-140
FCR 28683-161
FCR 28683-169
FCR 28683-175
FCR 28683-198
FCR 28683-257
FCR 28683-268

Nonconformance Reports:

NCR No. 28683-009
NCR No. 28683-014
NCR No. 28683-017
NCR No. 28683-020
NCR No. 28683-022
NCR No. 28683-029
NCR No. 28683-030
NCR No. 28683-031
NCR No. 28683-033
NCR No. 28683-034
NCR No. 28683-035
NCR No. 28683-037
NCR No. 28683-038
NCR No. 28683-042

Miscellaneous:

Shaw Stone & Webster Nuclear Quality Standard QS 2.7, "Computer Software," Revision E
Shaw Stone & Webster QA Audit of the Georgia Institute of Technology Case Center,
February 9, 2006
Shaw Stone & Webster QA Audit of the Georgia Institute of Technology Case Center,
April 4, 2006