



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

March 2, 2009

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

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2008-005

Dear Mr. Smith:

This refers to the hot acceptance testing readiness review team inspection conducted by the U.S. Nuclear Regulatory Commission (NRC) from January 12-15 to January 26-29, 2009, at the Louisiana Energy Services, National Enrichment Facility (LES NEF) in Eunice, New Mexico. The purpose of the inspection was to determine whether activities associated with the testing of uranium enrichment equipment could be conducted safely and in accordance with NRC requirements and your license requirements. The inspection included a review of your proposed activities of management organization and controls, operational safety, fire protection, radiation protection, waste management, environmental protection, maintenance and surveillance, training and qualification, transportation, plant modifications, and electrical components and systems, to ensure that your test facility was ready to operate safely and in compliance with your license.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of a selective examination of procedures, representative records, calculations, and drawings; a review of the new equipment installed for the process; interviews with personnel; and observations of activities in progress.

Based on the results of this inspection, no violations or deviations were identified. Within the areas assessed during this inspection, the NRC concluded that LES NEF constructed adequate facilities and implemented adequate programs to receive the limited quantity of natural uranium in the form of uranyl hexafluoride (UF₆) and conduct the planned hot acceptance test in the Centrifuge Test Facility (CTF) in the Centrifuge Assembly Building (CAB). This conclusion was discussed with you during a telephone call on February 11, 2009.

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 by Alan Blamey Acting For/

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

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

Enclosure: NRC Inspection Report 70-3103/2008-005 w/attachment

cc w/encl: (See next page)

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Letter to Gregory Smith from Deborah A. Seymour dated March 2, 2009

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2008-005

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PUBLIC

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

Docket: 70-3103

License: SNM-2010

Report: 70-3103/2008-005

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

Location: Eunice, New Mexico

Inspection Dates: January 12-15, 2009 (Phase 1)
January 26-29, 2009 (Phase 2)

Inspectors: W. Gloersen, Team Leader (Phase 1), Division of Construction Projects, (DCP)
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Accompanying Personnel: B. Smith, Chief, Uranium Enrichment Branch, Division of Fuel Cycle Safety and Safeguards (FCSS), Office of Nuclear Materials Safety and Safeguards (NMSS) (Phase 2)
R. Wescott, Senior Fire Protection Engineer, FCSS, NMSS

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 70-3103/2008-005

This report is a summary of the readiness review team inspection of the licensee's proposed hot acceptance test (HAT) of uranium enrichment equipment in the Centrifuge Test Facility (CTF). The HAT readiness review (HATRR) inspection was conducted during the weeks of January 12-15 and January 26-29, 2009, with specialized inspectors from the NRC Region II (RII) office and the office of Nuclear Materials Safety and Safeguards (NMSS). The results of the HATRR inspection are contained in the report details section of this report. The report details section was prepared to exclude the use of information the licensee identified as proprietary. The inspection was conducted through a review of selected records, procedures, interviews with personnel, and direct observation of equipment testing and work activities in the following areas: management organization and controls, operational safety, fire protection, radiation protection, waste management, environmental protection, maintenance and surveillance, training and qualification, transportation, plant modifications, and electrical components and systems. The inspectors concluded that the licensee implemented adequate safety programs which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

Management Organization and Controls

The licensee adequately identified issues as required by Sections 1, Organization, Section 5, Instructions, Procedures and Drawings, and Section 16, Corrective Action, of LES NEF's quality assurance program description (QAPD). The inspectors concluded that the licensee implemented an adequate management structure and program controls. No significant safety concerns were identified (Section 2).

Operational Safety

The licensee adequately implemented testing procedures for the proposed HAT including guidance for ensuring operability and responding to an actuation of items relied on for safety (IROFS). System design and operating parameters of the test equipment would preclude an inadvertent criticality from occurring. The inspectors concluded that the licensee implemented an adequate operational safety program. No significant safety concerns were identified (Section 3).

Fire Protection

The licensee adequately implemented fire protection requirements specified in the Safety Analysis Report. The inspectors concluded that the licensee implemented an adequate fire protection program. No significant safety concerns were identified (Section 4).

Radiation Protection

The licensee implemented its radiation protection program in accordance with the license and regulatory requirements. The inspectors concluded that the licensee implemented an adequate radiation protection program. No significant safety concerns were identified (Section 5).

Waste Management

The licensee maintained adequate provisions for the safe storage, handling, inspection and control of radioactive waste materials that might be generated as a result of HAT activities. No significant safety concerns were identified (Section 6).

Effluent Control and Environmental Protection

The licensee established effluent release and environmental monitoring programs to adequately support HAT activities. Airborne effluent monitoring equipment was available and calibrated in accordance with approved procedures. No significant safety concerns were identified (Section 7).

Maintenance and Surveillance

The licensee's maintenance program was in accordance with Section 11.2 of the LES NEF Safety Analysis Report. The inspectors concluded that the licensee implemented an adequate maintenance program. No significant safety concerns were identified (Section 8).

Training and Qualifications

The licensee adequately implemented license requirements regarding the training of HAT operators. The operators were knowledgeable of procedure requirements and equipment operation. No significant safety concerns were identified (Section 9).

Transportation

Logistics personnel with responsibilities in the receipt and shipment of licensed radioactive material were adequately trained to support HAT activities. LES NEF had implemented adequate receipt, package preparation, and transport programs to receive the limited quantity of uranium hexafluoride. No significant safety concerns were identified (Section 10).

Plant Modifications

The licensee had established a permanent plant modification (PPM) program to support the HAT. The PPM program was conducted in accordance with approved procedures. No significant safety concerns were identified (Section 11).

Electrical Components and Systems

The design and installation of components related to electrical IROFS was adequate and provided reasonable assurance that LES NEF could safely conduct the planned HAT in the CTF. The licensee adequately identified adverse conditions as required by Section 16, Corrective Action, of LES NEF's QAPD. The licensee also met the requirements of Section 2, Quality Assurance Program, Section 10, Inspection, Section 11, Test Control, and Section 17, Quality Assurance Records, of the QAPD. No significance safety concerns were identified (Section 12).

Attachment:

1. Persons Contacted
2. Inspection Procedures
3. List of Items, Opened, Closed and Discussed
4. List of Acronyms Used
5. List of Documents Reviewed

REPORT DETAILS

1. **Summary of Site Activities**

The Centrifuge Assembly Building (CAB) was under construction at the time of this inspection. The Centrifuge Test Facility (CTF) was nearly complete, with applicable utilities, services, controls, and instrumentation installed. Receipt of natural uranium bearing material had not commenced. During this inspection, the licensee was also conducting construction activities at the Louisiana Energy Services, LLC., National Enrichment Facility (LES NEF) site.

2. **Management Organization and Controls (Inspection Procedure (IP) 88005)**

a. Scope and Observations

The inspectors reviewed the management organization and control program to determine the licensee's readiness to conduct hot acceptance test (HAT) activities. The inspectors specifically reviewed the organization structure pertaining to testing activities, management and administrative practices for operational safety, procedure controls, problem identification and resolution, and plant safety committees.

Operation Organization Structure

The inspectors performed a records review to verify that the operation organization's personnel responsibilities and functions were in accordance with the Safety Analysis Report (SAR). Specifically, the inspectors reviewed a sample of hot acceptance test readiness review (HATRR) related job position descriptions and training records for the shift manager and shift operations manager to ensure the training and experience requirements in the SAR were met. The inspectors verified by discussion with the licensee staff and review of LES NEF procedure HR-3-3000-01, LES Organizational Changes, Personnel Changes, and LES Organizational Chart Control, Revision 0, that the licensee had an adequate process to address organizational changes, structural changes, and/or changes in personnel responsibilities and functions. The inspectors verified that the licensee performed selected activities in accordance with Section 1, Organization, of LES NEF's Quality Assurance Program Description (QAPD).

Management and Administrative Practices for Operational Safety

The inspectors reviewed procedures SA-3-1000-01, Plant Safety, Revision 0, and OP-3-100-01, Conduct of Operations, Revision 2, and interviewed LES NEF operations personnel to assess their knowledge of plant safety to determine if plant safety principles were established and held high priority in daily activities. The inspectors reviewed Self Assessment 2008-001, and noted that during this assessment, Condition Report (CR) 2008-287 was initiated. This CR addressed the issue regarding the lack of safety responsibility discussions in the licensee's procedures. The inspectors verified that appropriate corrective actions were taken with regard to this issue.

The inspectors discussed items relied on for safety (IROFS) oversight management with licensee staff, emergent maintenance work activities oversight, and reviewed procedures WC-2-1000-01 Work Control Program, Revision 1 and CA-3-1000-01, and Performance

Improvement Program and Non-Conformance Reports, Revision 7, to determine whether the licensee had a process to address IROFS and management measure failures. The inspectors noted that the licensee's procedures addressed compensatory measures for maintenance activities on IROFS, or items that may affect the function of IROFS that do not have redundant functions available. The procedures provided guidance for documentation of failed IROFS and the management measures affected, in accordance with 10 Code of Federal Regulations (CFR) 70.62 (a). The inspectors verified that the licensee performed activities in accordance with Section 16, Corrective Action, of LES NEF's QAPD.

Procedure Control

The inspectors reviewed a sample of procedures related to the HAT and interviewed selected personnel to determine whether procedures were approved in accordance with the licensee's requirement. In particular, the inspectors reviewed AD-3-1000-01, Requirements for Procedures, Revision 4, and the approval forms for the following procedures: OP-3-2000-09, Loss of Electrical Power, Revision 0, and OP-2000-01, Hazardous Release Response, Revision 0. The inspectors verified that the licensee performed activities in accordance with Section 5, Procedures, of LES NEF's QAPD.

Problem Identification and Resolution

The inspectors reviewed several CRs related to management organization and control and interviewed personnel to determine whether their assessment of potential impacts was adequate. The inspectors noted that the licensee segregated the list of CRs generated as a result of the licensee's Self Assessment 2008-001 for the HATRR to two categories: CRs applicable to the HATRR, and CRs not applicable to the HATRR. The inspectors reviewed a sample of CRs applicable to the HATRR to ensure they were closed adequately. The inspectors also reviewed a sample of CRs that the licensee determined were not applicable, and reviewed the licensee's evaluation and justification. The inspectors verified that the corrective actions were adequate and were in accordance with Section 16, Corrective Actions, of the QAPD.

Plant Safety Committees

The inspectors assessed whether the onsite safety committee was appointed and formed as required by the SAR and the licensee's procedure AD-3-1000-05, Safety Review Committee, Revision 1. The inspectors performed a records review of the safety review committee minutes which included actions to be taken related to the HATRR and verified that recommended actions were adequately addressed.

b. Conclusions

The licensee adequately identified issues as required by Sections 1, Organization, Section 5, Instructions, Procedures and Drawings, and Section 16, Corrective Action, of LES NEF's QAPD. The inspectors concluded that the licensee implemented an adequate management structure and program controls which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

3. Operational Safety (IP 88020)

a. Scope and Observations

The inspectors reviewed test activity procedures that addressed start-up, operation, and shutdown of the HAT operation as well as abnormal/alarm response. The inspectors also reviewed administrative procedures related to conduct of operations, equipment control, and watch standing practices. The inspectors verified that the activities documented by Section 11.4 of the SAR were adequately covered.

The inspectors verified that procedures provided appropriate guidance for ensuring operability and response to an actuation of IROFS C15 and C16. IROFS C15 and C16 are associated with electrical set points for the CTF and mitigate overheating of the cylinder vessels. The inspectors also verified that the IROFS were properly installed, tested, and were capable of performing their intended safety functions when the licensee declared them operable on January 29, 2009.

The inspectors noted that the HAT operation was limited to a small quantity of natural uranium to preclude the creation of a nuclear criticality safety hazard. The inspectors verified that the licensee had adequate administrative controls in place to prevent exceeding that limit and noted that the system design and operating parameters of the test equipment would also preclude an inadvertent criticality.

b. Conclusions

The licensee adequately implemented testing procedures for the proposed HAT, including guidance for ensuring operability and responding to an actuation of IROFS C15 and C16. System design and operating parameters of the test equipment would preclude an inadvertent criticality from occurring. The inspectors concluded that the licensee implemented an adequate operational safety program which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

4. Fire Protection (IP 88055)

a. Scope and Observations

The inspectors toured the CAB and reviewed the Fire Hazard Analysis (FHA) to assess the installation of active and passive fire protection equipment, and to verify their operational lineup and readiness. The inspectors also reviewed the inspection, testing, and maintenance (ITM) of fire protection systems to verify that they were in accordance with the NEF SAR requirements. The fire protection systems reviewed included sprinkler systems, fire pumps and water distribution systems, fire alarms and detection devices, hydrants, and fire barriers.

Control of Ignition Sources

The inspectors reviewed FP-3-1000-03, Hot Work and Ignition Source Control, Revision 1. The inspectors noted that the procedure did not explicitly give the fire watch stop work authority or require that fire extinguishing equipment be readily available to the fire watch. The inspectors also noted that the procedure did not incorporate all of the applicable provisions of section 5.4.2 of the National Fire Protection Association (NFPA)

51b (2009) concerning conditions that must exist before a hot work permit is issued. As a result, the licensee revised FP-3-1000-03, Revision 2, dated January 29, 2009 to incorporate the NFPA 51b provisions for fire watch. The licensee also revised Section 5.4.9 of FP-3-1000-03 to incorporate an attachment which listed the conditions from Section 5.4.2 of NFPA 51b. These revisions were found to be in compliance with NFPA 51b (2009).

IROFS 39b and Control of Transient Combustibles

The inspectors reviewed the boundary definition package for IROFS 39b, Operator Training, NEF-BD-39b, Limit Exposure by Requiring Evacuation of Area on Fire Event, Revision 1; LES NEF procedure EG-3-3100-02, IROFS Boundary Definitions; and LES NEF procedure FP-3-1000-02, Flammable and Combustible Materials Control, Revision 0.

Based on this review, and after discussions with the inspectors, the licensee revised the Integrated Safety Analysis (ISA) Summary to change the failure index of IROFS 39b, and to add an additional IROFS, IROFS 36i, Limit Transient Combustible Loading in Centrifuge Test Facility. IROFS 36i controlled combustible materials for the purpose of assuring low consequence to workers. The licensee also committed to add a posting requirement as an enhancement to IROFS 36i to increase the reliability of the IROFS. The licensee stated that the surveillance would be performed weekly as required by NEF-BD-36i. No safety issues were identified.

The inspectors determined that the revised IROFS 39b and IROFS 36i were acceptable to ensure compliance with 10 CRF 70.61 performance requirements for accident sequence FF-WORKER EVAC-CAB.

Fire Detection Systems

The inspectors walked down the fire detection system and noted that the system was properly installed and detection devices were not obstructed. The inspectors verified that the fire alarm panel had a dual power supply consisting of normal and backup power. The inspectors also verified that the system was capable to monitor the operation of the fire pumps and that it was able to shutdown the ventilation systems in the event of a fire. No safety issues were identified.

Water-based Fire Suppression Systems

The inspectors walked-down the sprinkler system and toured the fire pump house. The inspectors noted that sprinkler heads were not obstructed by major overhead equipment. The inspectors verified the hydraulic design of the system and that the fire water supply was capable of supplying the required water demand for the system. The inspectors also verified that either fire pump could take suction from both storage tanks and discharge water through either leg of the underground piping loop to ensure that 100% of the required flow rate and pressure was available in the event of failure of one of the water tanks or fire pumps. The inspectors also verified that the fire pumps were separated from each other by a fire-rated barrier construction as required by the NEF SAR. No safety issues were identified.

Manual Firefighting Equipment and Capability

The inspectors verified that portable fire extinguishers were provided per NFPA 10, and access to the fire extinguishers was unobstructed by plant equipment or other work related activities. The inspectors noted that the general condition of fire extinguishers was satisfactory. The inspectors also verified that standpipe systems were installed at their designated locations in accordance with NEF SAR requirements and that pump capability was operable and capable of supplying the water flow and pressure demand required. No safety issues were identified.

The inspectors reviewed the fire pre-plan for the CAB. The inspectors verified that the fire pre-plan contained sufficient information to support the response of the facility's fire brigade and offsite fire department.

ITM of Fire Protection Systems

The inspectors reviewed the results of the integrated fire protection system tests performed by the licensee. The licensee performed the integrated tests to demonstrate that the suppression and detection systems were capable to perform their intended function. The inspectors also reviewed records for the inspection and testing of the fire water storage tanks, hydrostatic tests of the fire suppression system, fire pumps flow test, fire hydrant flow tests, and fire alarm system acceptance tests. No safety issues were identified.

The inspectors verified that the licensee had an ITM program in place to ensure that fire protection equipment remained operable. The inspectors walked down fire barriers and noted that all penetrations were properly sealed. The inspectors also noted that the ITM program for the fire alarm and fire suppression systems included the requirements of NFPA 72 and NFPA 25, respectively.

b. Conclusions

The licensee adequately implemented fire protection requirements specified in the Safety Analysis Report. The inspectors concluded that the licensee implemented an adequate fire protection program which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

5. Radiation Protection (IP 88030)

a. Scope and Observations

The inspectors conducted interviews and reviewed licensee procedures and documentation to determine the licensee's readiness in the radiation protection program area to support the HAT.

The inspectors had discussions with licensee representatives and reviewed radiation protection procedures for the use of thermo-luminescent detectors (TLDs) and the bioassay program. The inspectors also reviewed the frequencies for both programs to determine if they were in compliance with the regulations, and that controls were in place to maintain occupational doses As Low As Reasonably Achievable (ALARA).

The licensee indicated that a base-line urine sample would be collected from the workers prior to the start of the HAT, and another sample at the completion of the test. Additional samples would be taken in the event of an unusual condition (e.g., a release or a spill of material) during the HAT. TLDs will be supplied by Global Dosimetry and issued quarterly. Based on interviews and procedural reviews, the inspectors verified that the licensee's monitoring program for internal and external exposure was in place and consistent with the requirements in the regulations.

The inspectors reviewed procedures for the respiratory protection program to verify that the training was adequate and to assure that respiratory equipment would be obtained by certified users only. Through discussions with licensee's representatives, the inspectors verified that the operators would not be required to use respirators for the connection and disconnection of the uranium hexafluoride (UF₆) piping for the HAT. The licensee stated that, based on operating experience in Europe, the fact that the system operates under a vacuum, and the use of a localized flexible exhaust hose connected to the CTF working area, that there would be very low probability of material release. However, in the event of a spill or release during the test, activities would be delayed until the spill or release was properly mitigated by the emergency response team. The inspectors determined that the emergency response team was properly fit-tested for respirators in accordance with the licensee's procedures.

Although the licensee was not in possession of UF₆ at the time of the inspection, the postings required by 10 CFR 20.1902 and the entry and exit boundaries of the controlled area of the CTF were established. Also, postings required by 10 CFR 19.11 were in sufficient places to permit individuals engaged in licensed activities to observe them. The inspectors verified that the licensee installed and calibrated a hand and foot monitor at the entry to the controlled area of the CTF.

The licensee's ALARA program and applicable procedures were reviewed to determine that the program and ALARA goals were developed for implementation in accordance with license requirements. LES NEF managers involved in the HAT were interviewed to determine if they had an adequate understanding of the ALARA concepts. The inspectors reviewed consequence analysis calculations for chemical and radiological exposures for breaching of a sample bottle and a P-10 sample bottle for the local worker and workers elsewhere in the CTF. Based on the calculations, it was determined that the scenario involving the breaching of the sample bottles resulted in a low consequence event. The inspectors reviewed the calculations and did not identify any significant issues.

b. Conclusions

The licensee implemented its radiation protection program in accordance with the license and regulatory requirements. The inspectors concluded that the licensee implemented an adequate radiation protection program which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

6. Waste Management (IP 88035)

a. Scope and Observations

The inspectors observed the areas selected by the licensee for the storage and handling of radioactive waste material in support of the HAT activities. Licensee personnel stated that they anticipated that only small quantities of radioactive waste material would be generated during the HAT phase of the project. Any radioactive waste generated would consist primarily of protective gloves and consumable items used while collecting samples and operating HAT components. Radioactive waste would consist of low-level contamination. Based upon discussions with licensee personnel the inspectors verified that adequate provisions were made to properly post, label, and store radioactive materials.

The inspectors reviewed approved waste management program procedures and verified that they met regulatory requirements and were sufficient in scope to address the HAT activities. Procedures were adequate to address the packaging, storage, inspection of radioactive material storage locations, and the integrity of waste packaging. Through discussions with waste management personnel the inspectors determined that personnel were knowledgeable of the requirements associated with the storage and control of radioactive waste material and routine inspection requirements for storage locations.

The inspectors reviewed processes established by the licensee associated with the generation and tracking of the radioactive waste materials that might be generated as a result of HAT activities. The inspectors verified that processes were available to maintain adequate radioactive waste and radioactive material inventory and tracking records. Responsible personnel were knowledgeable of program requirements for tracking radioactive waste material that might be produced as a result of HAT activities.

Through a review of procedures, the inspectors verified that the responsibilities and roles of waste management personnel and organizations with radioactive waste management program responsibilities were adequately described to support HAT activities.

b. Conclusions

The licensee maintained adequate provisions for the safe storage, handling, inspection and control of radioactive waste materials that might be generated as a result of HAT activities.

7. Effluent Control and Environmental Protection (IP 88045)

a. Scope and Observations

Airborne effluent from the CAB facility is processed by the special ventilation unit. Effluent releases from the special ventilation unit are monitored by a stack alpha monitor and hydrogen fluoride (HF) systems. During the inspection the licensee completed final installation and testing of the HF and alpha detector systems. The inspectors reviewed work documents associated with the installation of stack sampling lines and the filtration housing. The inspectors observed the physical condition of the special ventilation unit and noted that a section of bellows had a small tear, approximately one inch in length.

Additionally flanges and joint sections on interconnecting ventilation duct work had indications of air in-leakage. Based on discussions with responsible personnel, the inspectors determined that the licensee was aware of the damaged bellows and that repairs were scheduled. The inspectors subsequently observed the physical condition of the special ventilation unit and associated ventilation duct work and noted that repairs were in progress. Final post maintenance testing of the special ventilation unit was subsequently completed.

The inspectors reviewed procedures associated with the calibration and functional testing of the stack effluent alpha, and HF detectors. The inspectors observed pre-job briefings and initial field work associated with the testing and calibration of the HF monitoring system. The inspectors noted that the licensee had not obtained a current copy of the certification record for the HF calibration standard. The certification paperwork was subsequently received from the vendor. No safety concerns were identified.

The licensee recently completed an evaluation that demonstrated that filtration of the CAB exhaust was not required to meet regulatory exposure limits for members of the public. The inspectors reviewed configuration change (CC) CC-EG-2008-0198. Analyses for postulated events were performed with no credit for filtration for mitigating potential offsite releases. Based on these evaluations, the licensee determined that in place testing of exhaust filters was not required, and revised the licensing base change document to eliminate the required testing of the CAB facility exhaust filters. The inspectors reviewed the evaluation package and concluded that the evaluation needed additional detail and clarity. The licensee initiated CR 2009-377 in response to the inspector's conclusions. The inspectors noted that CAB special filter unit was a quality level 3 component that was not an IROFS. The inspectors also noted that the CAB special filter unit was tested for balancing and air flow in accordance with the licensee's approved test plan. Based on discussions with licensee personnel, the licensee stated that the evaluation would be revised to clearly state the purpose and objective of the evaluation and to address inspectors' comments. No safety concerns were identified.

The licensee established a contract to use the services of an approved analytical radiochemical services company during construction activities are in progress at the site. This laboratory would be used to analyze any liquid or gaseous effluent releases during HAT activities. The licensee does not plan to generate any liquid effluent during HAT activities. As a contingency, a 750 gallon liquid hold-up tank was installed. The capacity of this tank was sufficient to contain liquid waste volumes that could potentially be generated during HAT activities. The major projected source of liquid waste was associated with equipment decontamination activities.

Environmental sampling and monitoring stations were established as part of the pre-operational environmental monitoring program. Based on discussions with cognizant licensee personnel, the inspectors verified that the location and types of environmental monitoring stations in service were adequate to support HAT activities.

b. Conclusions

The licensee established effluent release and environmental monitoring programs to adequately support HAT activities. Airborne effluent monitoring equipment was available and calibrated in accordance with approved procedures.

8. Maintenance and Surveillance (IP 88025)

a. Scope and Observations

The inspectors reviewed procedures used to implement the program requirements described in Section 11.2 of the NEF SAR, including a work control process to perform corrective, preventive, and functional-test maintenance activities. The inspectors verified that the work control process established the necessary reviews to maintain configuration control (i.e. like-kind replacement), to ensure safe work practices, and to perform post-maintenance testing.

The inspectors reviewed a work package related to the calibration and functional test of IROFS C16. The inspectors noted that the package contained requirements for measuring and test equipment (M&TE); safe work practices permits, foreign material exclusion, and worksite hazard assessment. The inspectors also noted that the licensee had a screening committee to ensure that work packages received an adequate safety review. No safety issues were identified.

The inspectors verified that the licensee established a periodic testing schedule to ensure the reliability and availability of IROFS C15 and C16. The testing schedule included, in part, the surveillance procedure number, the group responsible for the activities, and equipment functional location. The inspectors also verified that the licensee had a program to ensure that non-safety maintenance activities did not adversely impact the safety operation of IROFS. No safety issues were identified.

The inspectors reviewed procedures associated with the M&TE program and discussed the control of M&TE with cognizant personnel. The inspectors reviewed calibration records for selected pressure gauges associated with HAT activities. The inspectors found that M&TE calibration records were current and that responsible personnel were knowledgeable of their responsibilities and the importance of maintaining proper control of M&TE on HAT components.

The inspectors reviewed selected M&TE on systems that were turned over to the licensee from construction. The inspectors noted that the CAB air compressor system was turned over to the licensee. Licensee personnel stated that the air compressor system would not provide any safety related function in support of HAT activities. Based on inspection of the air compressor system, the inspectors noted the presence of several M&TE items. These items consisted of pressure gauges and pressure switches. These items were tagged with component identification information and calibration stickers in accordance with approved procedures. Calibration records were reviewed for selected air compressor M&TE items. No safety issues were identified.

Based on discussions with licensee personnel, the inspectors noted that M&TE procedures and program development was still in progress. The main M&TE facility would be established at a later date prior to initial operation of the facility. The inspectors verified that the current M&TE program was adequate to support HAT activities. No safety issues were identified.

b. Conclusions

The licensee's maintenance program was in accordance with Section 11.2 of the LES NEF's SAR. The inspectors concluded that the licensee implemented an adequate maintenance program which provided reasonable assurance that LES NEF could safely conduct the planned HAT.

9. **Training and Qualifications (IP 88010)**

a. Scope and Observations

The inspectors reviewed procedures implementing operator training program requirements and verified that the procedures adequately addressed identification of training requirements; on-the-job training and task performance evaluation; training feedback and evaluation; and, maintenance of employee training records.

The inspectors reviewed training records and observed HAT operators perform a dry-run on portions of the system testing procedure. The inspectors verified the licensee was adequately implementing license requirements regarding the training of HAT operators and that the operators were knowledgeable of procedure requirements and equipment operation. In addition, the inspectors verified that adequate training was provided to operators and other staff for IROFS 39a, 39b, 39c, and 39d related to administratively limiting exposure by requiring worker action to evacuate the HAT area to ensure consequences of inhalation of uranium bearing material and HF was low.

The inspectors also verified that when design changes or facility modifications were implemented, configuration control procedures required that an evaluation be performed to determine if updates to training materials needed to be made.

b. Conclusions

The licensee adequately implemented license requirements regarding the training of HAT operators. The operators were knowledgeable of procedure requirements and equipment operation. LES NEF implemented an adequate operator training program which provided reasonable assurance that the LES NEF could safely conduct the planned HAT.

10. **Transportation (IP 86740)**

a. Scope and Observations

The inspectors reviewed the licensee's receipt and shipping program for radioactive materials to determine whether the licensee had established and was maintaining an effective management-controlled program. The inspectors verified the program control to ensure radiological and nuclear safety in the receipt, packaging, delivery to a carrier and, the private carriage of licensed radioactive materials. The inspectors also verified the licensee's transportation program could support the planned HAT activities. The licensee's receipt and shipping program was also evaluated to determine compliance with the applicable Nuclear Regulatory Commission (NRC) 10 CFR Parts 20 and 71 and Department of Transportation (DOT) (49 CFR Parts 171-178) transport regulations.

The inspectors reviewed the radiation protection procedure RP-3-5000-01, Radioactive Material Shipment Surveys, Revision 0, and determined that the procedure was written for a receipt survey of shipments at the Centrifuge Receipt and Dispatch Building (CRDB), which was still under construction, and not for the CAB. In response, the licensee generated CR 2009-0076, to revise the procedure to clarify other areas where it would be acceptable to perform shipment surveys. The inspectors also reviewed applicable logistics procedures (LO) as noted in the attachment to this inspection report. Specifically, the inspectors reviewed procedure LO-3-2000-03, Receipt to UF₆ for HAT, Revision 0, and performed a walk-down of the procedure with licensee representatives. The inspectors noted the following observations: (1) the staging area for off-loading the 30B cylinder was not clearly specified; (2) a pre-established route for transporting the 30B cylinder from the vehicle security checkpoint to the staging area was not clearly specified; and (3) construction vehicular traffic controls before the transport of the 30B cylinder to the staging area were not established. Additionally, the inspectors reviewed procedure LO-3-2000-03 against the operating requirements specified in Chapter 7 of the UX-30 Consolidated SAR, Revision 0. The inspectors noted several inspection requirements that were specified in the UX-30 SAR that were not specified in LO-3-2000-03. The licensee generated CR-2009-0076 and CR-2009-0096 to track the action to revise the appropriate procedures incorporating the observations noted above.

The inspectors verified that the licensee had an approved quality assurance program required for use of NRC-approved packaging. The licensee received Quality Assurance Program Approval for Radioactive Material Packages No. 0940, Revision 0, from the NRC on January 12, 2009. This approval satisfied the requirements of 10 CFR 71.17(b) and 71.101(c). The inspectors also verified that the licensee was a registered user of the UX-30 over pack that will be used to receive and ultimately ship back the 30B cylinder containing the UF₆ to the supplier. In a letter dated January 15, 2009, the NRC registered LES NEF as a user of the UX-30 package, Certificate of Compliance Number 9196 in accordance with 10 CFR 71.17.

The inspectors also verified that the licensee's logistics staff that had the responsibility for the receipt, package preparation, and transport of UF₆, had received proper and adequate training and that the training was appropriately documented in accordance with 49 CFR 172.200 – 172.704. The inspectors observed that the Logistics Services Manager and staff had received the following training from an offsite vendor: (1) Advanced 49 CFR 172 International Maritime Dangerous Goods training; (2) radioactive materials training; and (3) security awareness training.

b. Conclusions

Logistics personnel with responsibilities in the receipt and shipment of licensed radioactive were adequately trained to support HAT activities. LES NEF implemented adequate receipt, package preparation, and transport programs to receive the limited quantity of UF₆. No significant safety issues were identified.

11. Plant Modifications (IP 88070)**a. Scope and Observations**

The inspectors reviewed the licensee's plant modifications process to determine LES NEF's readiness to conduct hot acceptance testing. The inspectors reviewed selected configuration change packages to verify that plant modifications were reviewed and implemented in accordance with the licensee's change request and permanent plant modification (PPM) program. The following configuration change (CC) packages were reviewed:

CC-EG-2008-0339 – This change request was implemented to remove wording from the Integrated Safety Analysis (ISA) Summary regarding the appropriate personal protective equipment (PPE) for disconnection of the UF₆ process system. The inspectors reviewed the change request and discussed the change with licensee's representatives and determined that PPE would not be required for the connection and disconnection of the UF₆ process system in the CTF for the HAT. The licensee stated that, based on operating experience in Europe, the fact that the system operates under a vacuum, and the use of a localized flexible exhaust hose connected to the CTF working area, that there would be very low probability of material release.

CC-EG-2008-0117 – This change request was implemented for the initial issuance of procedure RP-3-3000-10, DAC hour Tracking, Revision 0. The procedure provided the process for radiation protection to track derived air concentration-hours. The inspectors reviewed the change request and the procedure and determined that the procedure was approved by the appropriate manager, issued for distribution, and processed through Document Control by the procedure approval form and the validation checklist in accordance with procedure AD-3-1000-01 Revision 4. The inspectors did not identify any significant safety issues with the CC packages reviewed.

The inspectors evaluated the deletion of IROFS 3 and C18, associated with automatic trip of vacuum pumps. The inspectors verified that the deletion was acceptable, posed no safety risk to applicable portions of the process, and was in accordance with 10 CFR 70.72.

b. Conclusions

The licensee had established a PPM program to support LES NEF HAT. The PPM program was conducted in accordance with approved procedures. No safety concerns were identified.

12. Electrical Components and Systems (IP 88138)**a. Scope and Observations**

The inspectors conducted an electrical components and systems inspection to assess the licensee's readiness for the HAT. The inspectors specifically verified the design and installation of components related to IROFS C15 and C16.

The inspectors reviewed work activities including installation, testing, and inspection of components pertaining to IROFS C15 and C16 to verify the activities were adequate.

The inspectors verified these activities were in accordance with the design specifications and Section 10, Inspection, and Section 11, Test Control, of LES NEF's QAPD. The inspectors performed a walk-down of the system, reviewed records pertaining to the installation and testing, compared the design drawings to the as-installed components, and held discussions with licensee personnel.

The inspectors reviewed the setpoint calculations to determine if the selected alarm setpoints were adequate. The setpoint methodology were compared to the method detailed in the American Nuclear Standard Institute (ANSI) ANSI/ISA-S67.04 - Part I - 1994, Setpoints for Nuclear Safety-Related Instrumentation," and the NRC's Regulatory Guide (RG) 1.105, Setpoints for Safety-Related Instrumentation, as specified in LES NEF's SAR. The inspectors reviewed the licensee's surveillance records to verify that the thermocouple and resistance temperature detector (RTD) sensors performed at the stated design setpoints.

The inspectors also reviewed several CRs related to IROFS C15 and C16 and interviewed personnel to determine whether their assessment of potential impacts was adequate. The inspectors determined that the corrective actions were adequate and in accordance with Section 16, Corrective Actions, of the QAPD.

The inspectors assessed the qualifications of personnel who performed installation and testing activities pertaining to the selected IROFS to verify they were qualified in accordance with Section 2, Quality Assurance Program, of the QAPD. The inspectors performed a records review to verify that appropriate LES NEF and technical personnel received the training necessary to properly install and test the IROFS. The inspectors also verified that the Quality Control (QC) personnel who performed QC inspections were up to date with their training.

The inspectors also reviewed licensee and contractor requirements covering the span of records for the selected IROFS and determined that the records were prepared accurately in accordance with Section 17, Quality Assurance Records, of the QAPD.

b. Conclusions

The design and installation of components related to IROFS C15 and C16 was adequate and provided reasonable assurance that LES NEF could safely conduct the planned HAT in the CTF. The licensee adequately identified adverse conditions as required by Section 16, Corrective Action, of LES NEF's QAPD. The licensee also met the requirements of Section 2, Quality Assurance Program, Section 10, Inspection, Section 11, Test Control, and Section 17, Quality Assurance Records, of the QAPD. No issues of significance were identified during this inspection.

13. Exit Meeting

The HATRR inspection scope and results were summarized on January 15 and 29, 2009, with those persons indicated in the Attachment. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes was not included in this report. The licensee acknowledged the observations and findings during the exit meetings noted above and during a subsequent teleconference on February 11, 2009. No dissenting comments were received from the licensee.

ATTACHMENT

1. PERSONS CONTACTED

Licensee Personnel:

G. Argue, Maintenance Supervisor
R. Bare, Programs and Performance Manager
T. Batcheller, Materials Accounting Specialist
M. Boden, Assistant Construction Project Manager
R. Butz, IROFS Engineer
R. Cogar, Information Services Manager
S. Coleman, Security Manager (acting)
S. Cowne, Quality and Regulatory Affairs Director
D. Dotson, Licensing Manager
D. Forbis, Maintenance Manager
J. Geiger, Operations/ETUS Team Leader
E. Gschwender, Project Manager-Procedures
T. Harney, Licensing/Design Engineer
J. Hummer, Safeguards Manager (acting)
M. Keller, Shift Manager
D. Lakin, Performance Assessment and Feedback Manager
C. Markert, Shift Operations Manager
P. McCasland, Licensing Engineer
J. Mathis, Engineer
D. Miller, Project Manager
D. Neve, Engineering Manager
W. Padgett, Licensing Engineer
D. Poirier, Vice President, Construction
D. Powell, Fire Protection Officer
J. Reed, Vice President, Operations
B. Robinson, Field Engineering Manager
G. Smith, LES Chief Operating Officer and Chief Nuclear Officer
A. Sorrell, Plant Support Director
P. Van Der heide, Compliance Manager
D. Vandewalle, Support Services Director
R. Vento, HSE Consultant
L. Varela, Materials Measurement Specialist
E. Wenzinger, Senior Licensing Engineer
N. Wetherell, Technical Services Director
R. Whiteley, Environmental Compliance Supervisor
G. Woods, Material Control Specialist
T. Woods, Logistics Services Manager

2. Inspection Procedures Used

IP 86740	Inspection of Transportation Activities
IP 88005	Management Organization and Controls
IP 88010	Operator Training/Retraining
IP 88020	Operational Safety
IP 88025	Maintenance and Surveillance of Safety Controls
IP 88030	Radiation Protection
IP 88035	Radioactive Waste Management
IP 88045	Effluent Control and Environmental Protection
IP 88055	Fire Protection
IP 88070	Permanent Plant Modifications
IP 88138	Electrical Components and Systems

3. List of Items Opened, Closed, and Discussed

No items were opened, closed or discussed.

4. List of Acronyms Used

ANSI	American Nuclear Standard Institute
ADAMS	Agency-Wide Document Access and Management System
ALARA	As Low As Reasonably Achievable
CAB	Centrifuge Assembly Building
CC	Configuration Change
CFR	Code of Federal Regulations
CR	Condition Report
CRDB	Cylinder Receipt and Dispatch Building
CTF	Centrifuge Test Facility
DOT	Department of Transportation
FHA	Fire Hazard Analysis
HAT	Hot Acceptance Test
HATRR	Hot Acceptance Testing Readiness Review
HF	Hydrofluoric (acid)
IMDG	International Maritime Dangerous Goods
IP	Inspection Procedure
IR	Inspection Report
IROFS	Item Relied on for Safety
ISA	Integrated Safety Analysis
ITM	Inspection, Testing, and Maintenance
LES	Louisiana Energy Services, L.L.C.
LO	Logistics Procedure
M & TE	Maintenance and Testing Equipment
NCR	Nonconformance Report
NFPA	National Fire Protection Association
NEF	National Enrichment Facility
NMSS	Nuclear Materials Safety and Safeguard
No	Number
NQA-1	Quality Assurance Program Requirements for Nuclear Facilities
NRC	Nuclear Regulatory Commission
PPE	Personal Protective Equipment

PPM	Permanent Plant Modification
QAPD	Quality Assurance Project Description
QC	Quality Control
RII	Region II
SAR	Safety Analysis Report
TLD	Thermo-Luminescent Detectors
UF ₆	Uranium Hexafluoride

5. **Documents Reviewed**

LES NEF Procedures

AD-3-1000-01, Requirements for Procedures, Revision 4
 AD-3-1000-05, Safety Review Committee, Revision 1,
 CA-3-1000-01, Performance Improvement Program and Non-conformance Reports,
 Revision 7
 ETUS-SP-001, HAT Maintenance Work Control
 FP-1-1000-01, Fire Loss Prevention
 FP-2-1000-01, Fire Protection Program Requirements
 FP-3-1000-01, Fire System and Features Testing and Inspection
 FP-3-1000-02, Flammable and Combustible Materials Control
 FP-3-1000-02, Transient Combustibles Permit
 FP-3-1000-03, Hot Work and Ignition Source Control, Revision 1 and 2
 FP-3-1000-03 F 1, Hot Work Permit
 FP-3-1000-04, Fire System or Feature Impairments
 FP-3-1000-04 F 1, Impairment Reporting Record
 FP-4-1000-01, Fire Protection Safety Inspection
 FP-5-1000-01, Pre-Fire Plan Manual
 FP-2008-058, Fire Water Pressure Test Acceptance Record
 FPE-REV-001-00, Fire Hazard analysis for the National Enrichment Facility
 HR-3-3000-01, LES Organizational Changes, Personnel Changes, and LES
 Organizational Chart Control, Revision 0
 LO-3-2000-03, Receipt of UF₆ for HAT, Revision 0
 LO-3-2000-08, Sample Packaging and Transport for HAT, Revision 0
 LO-3-3000-01, Transport Planning, Revision 0
 LO-3-4000-03, External Cylinder Inspection, Revision 0
 LS-3-1000-04, 10 CFR 70.72 (c) Evaluations for Proposed Changes, Revision 4
 MA-3-3484-01, IROFSC15 CTF Heater/Chiller High Temperature Trip – Thermocouple
 Surveillance, Revision 1
 MA-3-3484-02, IROFSC16 CTF Heater/Chiller High Temperature Trip – RTD
 Surveillance, Revision 1
 MA-2-1000-01, Conduct of Maintenance
 MA-2-1000-02, Preventive Maintenance Program
 MA-2-1000-03, Surveillance Program
 MA-3-1000-02, Calibration and Control of Measuring and Test Equipment
 MA-3-1000-07, PM Initial Task Development
 MA-3-1000-08, Surveillance Implementation and Change Process
 OP-3-100-01, Conduct of Operations, Revision 2
 OP-3-2000-09, Loss of Electrical Power, Revision 0
 OP-2000-01, Hazardous Release Response, Revision 0
 ORM -480-3, Centrifuge Test Facility Feed and Take-Off Heater Trip, Revision 1

RP-3-5000-01, Radioactive Material Shipment Surveys, Revision 0
 SA-3-1000-01, Plant Safety, Revision 0
 SAT-09-001, CAB and Fire Water Pump House Fire Protection Integrated System Test
 SU-3-2000-02, Hot Acceptance Testing Readiness Affirmation Process, Revision 0
 WC-2-1000-01, Work Control Program, Revision 1
 WC-2-1000-01, Work Control Program,
 WC-3-1000-01, Notification Initiation and Processing,
 WC-3-1000-02, Work Package Development, Issuance, and Closure,
 WC-4-1000-02, Conduct of Pre-Job and Post-Job Briefs
 WC-4-1000-03, Job Hazard Analysis,

Calculations

- CALC-F-00001-R0, Fire Hazards Analysis Combustible Loading Calculation
- FIR-08-005, Fire Protection & Detection Systems for Support of the CAB-1300, and related Task Instructions
- Fire Protection Water System Hydraulic Analysis
- ETC4000680, ISA Consequences of UF Releases to GEVS from the Hot Acceptance Test Facility, Issue 5 (Commercial in Confidence Document)
- LES-K-0009, Centrifuge Test Facility – Heater/Chiller High Temperature Trip, Thermocouple (IROFS C15), Revision 1
- LES-K-0010, Centrifuge Test Facility – Heater/Chiller High Temperature Trip, RTD (IROFS C16), Revision 0

LES Condition Reports

2008-0287
 2008-0299
 2008-0435
 2008-0795
 2008-0994
 2008-1088
 2008-1399
 2008-3594
 2008-3654
 2009-0029
 2009-0048
 2009-0073
 2009-0074
 2009-0081
 2009-0083
 2009-0087
 2009-0176

Safety Analysis Reports

UX-30 Consolidated SAR, Revision 0, May 2005.

Drawings:

9065200C, IROFS C15 and C16 Power/Control Panel Support Fabrication and Mounting Details, Revision 1
9065349E, Typical Control/Power Box Layouts for IROFS C15 and C16, Revision 4
9065350E, Wiring Diagram for IROFS C15 and IROFS C16, Revision 5
9065353E, Schematic Diagram IROFS C15 and IROFS C16, Revision 5
9085957C, IROFS C15 and C16 Power/Control Box Conduit Penetration Details, Revision 0
LES-1300-C-CON-001-01, CAB, IROFS C15 and C16 Power/Control Panel Support Anchor Bolt Details, Revision 0

Miscellaneous:

ECR-2593, IROFS C15/C16 Electrical
LES-PO-1865 Receipt inspection report #1865-01-4356
70.72 Change #CC2008-0163
Self Assessment 2008-001, LES Management Organization and Control
Self Assessment 2008-003, LES Permanent Plant Modifications and 10 CFR 70.72 Process
70.72 CC-EG-2008-0198, CAB Removal of Testing Requirements for Exhaust Filtration System

Work Orders:

WO 3000480
WO 3000482

Work Plans:

1300-0000-HY-029, Installation of IROFS 15 and 16 in the Centrifuge Assembly Building
1300-0000-HY-030, Installation of IROFS 15 and 16 in the Centrifuge Assembly Building
Torquing of Mounting Rings
1300-0000-HY-0033, IROFS C15 Thermocouple Construction Test in the Centrifuge Assembly Building
1300-0000-HY-0034, IROFS C15 Thermocouple Construction Test in the Centrifuge Assembly Building
1300-0000-HY-0035, IROFSC16 RTD Construction Test in the Centrifuge Assembly Building
1300-0000-HY-0036, IROFSC16 RTD Construction Test in the Centrifuge Assembly Building