

March 25, 2004

MEMORANDUM TO: Joseph G. Giitter, Chief  
Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards

THRU: Brian W. Smith, Chief /RA/  
Gas Centrifuge Facility Licensing Section  
Special Projects Branch, FCSS

FROM: Timothy C. Johnson /RA/  
Senior Mechanical Systems Engineer  
Gas Centrifuge Facility Licensing Section  
Special Projects Branch, FCSS

SUBJECT: MARCH 9-10, 2004, MEETING SUMMARY: LOUISIANA ENERGY  
SERVICES' INTEGRATED SAFETY ANALYSIS IN-OFFICE REVIEW

On March 9 - 10, 2004, U.S. Nuclear Regulatory Commission (NRC) staff met with Framatome staff to discuss the Integrated Safety Analysis documentation for the Louisiana Energy Services (LES) gas centrifuge uranium enrichment plant project proposed to be located in Eunice, New Mexico. I am attaching the meeting summary for your use. This summary contains no proprietary or classified information.

Docket: 70-3103

Attachment: Louisiana Energy Services  
Meeting Summary

cc: William Szymanski/DOE	Claydean Claiborne/Jal
Rod Krich/Exelon	Monty Newman/Hobbs
James Curtiss/W&S	Troy Harris/Lovington
Peter Miner/USEC	Betty Richman/Tatum
James Ferland/LES	Glen Hackler/Andrews
Dennis Holmberg/Lea County	William Floyd/New Mexico
James Brown/Eunice	Richard Ratliff/Texas
Michael Marriotte/NIRS	Jerry Clift/Hartsville
CO'Claire/Ohio	Lee Cheney/CNIC
Derrith Watchman-Moore/NM	

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<b>NAME</b>	TCJohnson:os		LGross		WTroskoski		BSmith	
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Summary of Meeting with  
Louisiana Energy Services on Integrated Safety Analysis

Dates: March 9 - 10, 2004

Place: Framatome offices  
Marlborough, MA

Attendees:

D. Brown/NRC	H. Felsher/NRC
T.C. Johnson/NRC	J. Klein/NRC
W. Troskoski/NRC	R. Wescott/NRC
D. Green/Excel	G. Harper/Framatome
M. Kennedy/Framatome	D. Pepe/Framatome

Purpose:

The purpose of this meeting was to review and discuss the unclassified backup documentation prepared for the Louisiana Energy Services (LES) Integrated Safety Analysis (ISA) for its gas centrifuge uranium enrichment plant proposed to be located in Eunice, New Mexico. Framatome is the LES contractor responsible for coordinating the unclassified ISA preparation.

Discussion:

After introductions, Mr. M. Kennedy discussed the general approach LES had taken to prepare its ISA for its proposed gas centrifuge plant in New Mexico (see Attachment 1). LES used a HAZOP process as the ISA Method for all safety disciplines, fire, and external events. He also explained the documentation used for the project and how it related to the application documentation that had been previously prepared for the Hartsville, Tennessee, site. All documentation for the Hartsville site was reviewed to assess what changes would be needed for it to be used for the Eunice site. Documentation on the review process was prepared showing which documents required or did not require changes.

M. Kennedy explained the status of the facility design. He stated that equipment functions are known and described in the application. Process and instrumentation diagrams (P&IDs) are also not expected to change. However, since procurement has not started, details on equipment manufacturer, models, final dimensions, etc., have not yet been determined for final design.

Staff reviewed detailed documentation and calculations in the following areas:

- Uranium and hydrogen fluoride (HF) consequence assessment limits;
- Criticality safety;
- Airborne releases from buildings and the evaporation basin;
- Hazardous and mixed waste generation;
- Gaseous effluent ventilation system;
- Fire safety;
- Emergency response.

**Text removed under 10 CFR 2.390.**

The staff also reviewed the ISA Consequence Assessment for Airborne Releases, which contained appropriate information related to the performance of the consequence assessments,  $UF_6$  source terms, atmospheric dispersion factors, and leak flow path rates for each scenario. The methods and assumptions were extensively based on Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants."

**Text removed under 10 CFR 2.390.**

The staff also conducted discussions with the applicant concerning the proposed quantitative standards for determining the performance criteria specified in 10 CFR 70.61. The proposed values for HF and  $UO_2F_2$ , contained in Table 6.3-5, Enhanced Definition of Consequence Severity Categories, were extrapolated from the Acute Exposure Guideline Levels (AEGL) values in effect at the time of the license application submittal. NUREG-1520, Section 6.4.3.1, Process Chemical Risk and Accident Sequences, notes that acute chemical release limits may not be adjusted by a time-weighted average calculation unless a rational basis is provided in the ISA Summary. The applicant stated that the revised AEGL values for HF and  $UF_6$  (which reacts with water in the atmosphere to produce HF and  $UO_2F_2$ ) and the time-weighted average approach contained in the National Academy of Sciences latest revision to the AEGLs (2004) would be used in determining the consequence levels. LES will provide updated information to reflect the latest information.

Documentation of chemically hazardous and mixed chemical and radioactive waste generation were reviewed. LES is preparing a Resource, Conservation, and Recovery Act (RCRA) small generator permit application. Under this application, chemically hazardous and mixed wastes cannot be stored on-site for more than 90 days. NRC staff was concerned that all chemically hazardous and mixed waste have a reasonable assurance of being properly treated and disposed of. The LES generation estimates are based on experience for similar facilities at the Urenco facilities in Europe. Mixed wastes are expected with the U.S. Environmental Protection Agency RCRA hazardous chemical designations D001, D002, D003, F001, F003, and F005. Information was also provided on potential treatment and disposal services for mixed wastes that are properly permitted by the U.S. Environmental Protection Agency or its authorized States and licensed under NRC or its Agreement State requirements (see Attachment 2). Five facilities were identified as possible treatment and disposal options for these wastes. This information satisfied NRC staff's concerns in this area.

Staff reviewed the determination of aircraft hazards and the margin in these calculations for potential growth in flights from the Eunice airport, the nearest airport to the proposed site, 15 miles away. The aircraft hazard analysis used methods based on NRC guidance in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility." Based on Federal Aviation Administration data, about 480 flights per year use the Eunice airport. Based on NUREG-1520, 22,500 flights per year would be needed to trigger more detailed review of accident hazards at the facility from local flight activity. Therefore, there appears to be sufficient margin in the number of flights to allow for possible future growth in flight activity at the Eunice airport.

Staff reviewed the Hazard and Risk Determination Analyses and the four bounding documents that were used as part of the ISA process for nuclear criticality safety, which were:

- "Criticality Safety Assessment for the Main Separation Plant," UPD/0200530 (11/12/03);

- "Criticality Safety Evaluation of Evacuating an Assay Unit into a Single Tails Cylinder," UPD/0202631 (11/05/02);
- "Preliminary Criticality Safety Assessment for the LES-2 Technical Services Building (TSB)," UPD/0202783 (10/31/02); and
- "Determination of Critical and Safe Parameters of Generic Uranyl Fluoride Systems of 5% and 6% U-235 Enrichment," UPD/9903096

In addition to the four documents reviewed above and additional documents provided by Framatome, and discussions with applicant personnel, LES contractor staff understands NRC's nuclear criticality safety regulatory requirements better and NRC understands LES' approach for nuclear criticality safety better.

In the areas of radiological protection, emergency planning, and decommissioning, staff reviewed the following documents and calculations:

- "Gaseous Effluent Ventilation System HAZOP and Risk Determination Analysis"
- "Contamination Workshop and Decontamination System HAZOP and Risk Determination Analysis;"
- "Chemical Laboratory System HAZOP and Risk Determination Analysis";
- "ISA Consequence Assessments for Airborne Releases;"
- "Potential Doses Due to Effluent Discharges from the NEF, New Mexico Site Exfiltration Estimate;" and
- "Liquid Effluent Collection and Treatment System Estimated Uranic Discharge Treated Effluent Evaporative Basin."

The staff reviewed the ISA Consequence Assessment for Airborne Releases, which included the applicant's approach and assumptions for calculations of both on-site and off-site radiological and chemical concentrations and exposures. The approach and assumptions were found to be conservative and based largely on NRC regulations. In particular, staff reviewed backup documentation on airborne releases from exfiltration of buildings. These calculations were based on American Society of Heating, Refrigerating, and Air Conditioning Engineers methods for determining leakage from buildings under various pressure difference scenarios. LES calculations considered conservative pressure differentials caused by wind effects and computed air leakage from buildings containing radioactive materials. These computations have a reasonable basis and use standard calculation methods.

In the environmental area, staff reviewed several calculations, including:

- "ISA Consequence Assessments for Airborne Releases," 32-2400503-0;
- "LES-2 Building Volumes and Profiles," 32-2400504-0;
- "LES-2 UF<sub>6</sub> Release Estimates," 32-2400505-0;
- "Potential Doses Due to Effluent Discharges from the NEF, New Mexico Site," 32-2400513-00;
- "Exfiltration Estimate," L4-50-01-CALC;
- "Conceptual Calculation: Liquid Effluent Collection and Treatment System Estimated Uranic Discharge," L4-53-45-CALC; and
- "Calculation: Treated Effluent Evaporative Basin," L4-53-56-CALC

After reviewing "ISA Consequence Assessments for Airborne Releases," staff requested be submitted to NRC specific sections of the calculation that included: (1) a detailed description of

the chemical and radiological consequence assessment method used by LES; and (2) a summary of source terms for various areas throughout the plant. At the close of the review, Framatome staff agreed to seek LES approval to grant staff's request.

During review of "Calculation: Treated Effluent Evaporative Basin," staff compared data for local evaporation rates (in inches per year) and Treated Effluent Evaporative Basin (TEEB) surface area (in square feet), each of which were design parameters for the TEEB. A preliminary calculation by staff indicates that the volume of evaporated water would exceed the volume of treated and untreated wastewater normally discharged into the basin. As a result, staff are concerned that LES' s assumption that the TEEB would be dry 10 percent of the time is probably too low. Staff will continue to evaluate the source term for fugitive emissions from the TEEB.

**Text removed under 10 CFR 2.390.**

Action Items:

None.

Attachments:

1. Framatome meeting handouts
2. EPA list of currently operating mixed waste facilities