

April 5, 2002

MEMORANDUM TO: Eric J. Leeds, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards

THRU: Joseph G. Giitter, Chief
Enrichment Section **/RA/**
Special Projects Branch, FCSS

FROM: Timothy C. Johnson **/RA/**
Senior Mechanical Systems Engineer
Enrichment Section
Special Projects Branch, FCSS

SUBJECT: MARCH 19, 2002, MEETING SUMMARY: LOUISIANA ENERGY
SERVICES PRE-APPLICATION MEETING

On March 19, 2002, U.S. Nuclear Regulatory Commission (NRC) staff met with staff from Louisiana Energy Services (LES) to discuss LES plans for submitting a gas centrifuge enrichment facility license application and topics for future pre-application reviews. I am attaching the meeting summary for your use. This summary contains no proprietary or classified information.

Docket No: 70-3103

Attachment: Louisiana Energy Services Pre-Application Meeting Summary

cc: William Szymanski/DOE

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OFC	SPB*		SPB*	2E	SPB*	
NAME	TCJohnson:dw		DHoadley		JGiitter	
DATE	3 / 26 /02		4 / 04 /02		4 / 05 /02	

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Louisiana Energy Services Pre-Application Meeting

Date: March 19, 2002

Place: U.S. Nuclear Regulatory Commission (NRC) offices, Rockville, MD

Attendees: See Attachment 1

Purpose:

The purpose of this meeting was to discuss with Louisiana Energy Services (LES) staff its plans to submit a license application for a gas centrifuge enrichment facility and topics for future pre-application review meetings. The meeting agenda is provided in Attachment 2. Meeting handouts are provided in Attachment 3.

Discussion:

Following introduction of individuals attending the meeting, LES staff indicated that there was a market need for low cost, reliable enrichment capacity within the U.S. Based on LES experience in using gas centrifuge enrichment in Europe, it believes it is well-placed to provide its most advanced centrifuge technology. It, therefore, wants to license and construct at least a 3-million Separative Work Unit (SWU) plant and begin production in 2007. The plant would consist of six 500,000 SWU cascades.

The LES partnership is made up of limited and general partners currently consisting of Urenco, Exelon, Duke Power, Louisiana Power and Light, and Fluor Daniel. The partnership intends to use Urenco gas centrifuge technology that is currently operating at three plants in The Netherlands, United Kingdom, and Germany. Urenco currently has a capacity of about 5-million SWU (about 15 percent of the world enrichment market) and provides enrichment services in Western Europe, the U.S., and Asia. LES staff indicated Urenco has a large future order book, and in 2001 its revenues were approximately \$423 million.

LES staff indicated that it would use the sixth-generation Urenco gas centrifuge system that is of all composite construction. This system would provide high reliability, low energy consumption, low investment costs, and high efficiency. The operating philosophy would be to operate each gas centrifuge machine without maintenance. Upon failure it would be permanently isolated from the cascade.

LES staff said that to go forward with the project, LES would need an assured licensing process that is short and predictable. It would also need customer commitment, access to a US depleted uranium tails disposition route, and a site on an existing nuclear facility site. LES staff indicated that the site could be any nuclear facility site and would not be restricted to any specific facility type. The siting process is due to begin shortly with a goal of site selection in the second quarter of calendar year (CY) 2002. LES staff plans to submit to the NRC a license application and an environmental report in the fourth quarter of CY2002. LES staff projected license approval in the second or third quarter of CY2004 with construction beginning in third or fourth quarter CY2004. The first 500,000 SWU cascade is planned to be on-line by the end of CY2006. Full capacity is projected to be in 2010 or 2011 depending on market demand.

LES staff then discussed their plans for the enrichment plant. They indicated that the facility would have a feed station, the cascade section, enriched product and tails withdrawal stations, and a sampling station. The feed and withdrawal operations would take place at sub-atmospheric conditions to maintain the UF₆ in only gaseous and solid forms. In response to customer needs, sampling would involve heating UF₆ containers to a liquid form. However, the sampling station would be isolated from the production plant and no transport or lifting of UF₆ cylinders with liquids would be permitted. Rail transporters in the feed and withdrawal stations are used so that no craning is required.

Prior to introducing UF₆ into the cascade, the feed would be processed in purification stations to remove air and light gases with sublimers and chemical trapping systems.

The cascades are designed to produce a single product assay at any one time. Customer specifications are achieved directly from the cascade or by blending. The plant is designed so that the centrifuges and cascade piping are located in a cascade hall where no routine access is required. Cascade controls and services are provided in a process service corridor. Centrifuges would be assembled on-site from kits received from Europe.

LES staff provided the following operational information for a 3-million SWU plant:

1. 8,600 tonnes of feed required per year;
2. 7,800 tonnes of depleted uranium produced per year;
3. 800 tonnes of enriched product produced per year;
4. plant would take delivery of 700 48Y feed cylinders per year;
5. plant would dispatch 350 30B cylinders per year;
6. plant would require a dual 18 MVA electrical supply; and
7. plant would produce 12 tonnes of unprocessed low-level waste per year.

LES staff discussed the key differences between the new enrichment plant and the original LES plant proposed for the Homer, Louisiana, site. The following are some of the major differences:

Site Selection: The site selection criteria is principally the same and will address low seismic hazard, no previous contamination, moderate climate, and redundant high quality electrical supplies. Unlike the Homer site, LES intends to construct the new plant on an existing nuclear site. The sites could include existing fuel cycle facility sites or nuclear power plant sites.

Plant Specifications: The proposed plant will have a total capacity of 3 million SWU versus 1.5 million SWU for the Homer plant and the assay level will be 6 percent enrichment versus 5 percent for the Homer plant. In the new plant, blending and sampling will be performed in a separate building from the rest of the enrichment operations.

Feed System: The proposed plant will use a subatmospheric sublimation process rather than heating UF₆ to a liquid for the feed system. The feed purification desublimer capacity will be reduced to 50 kg from 500 kg in the Homer plant and temperature will be reduced from 50 C to ambient. All Freon materials will be eliminated from heating and cooling systems. These new processes increase operational safety.

Centrifuges: The same centrifuge type will be used in the new plant as was proposed in the Homer plant. The number of machines per cascade will be greater and the number of cascades per assay unit will be reduced.

Withdrawal: The proposed plant will eliminate the second pumping stage with withdrawal performed at -25 C. Cascades will now share low pressure pumps and the product vent desublimers will have a reduced capacity and use no Freon coolant.

Gaseous Effluents: A system similar to the Homer plant will be used.

Criticality: A criticality alarm system, not required in the Homer plant, will be used.

Controls: A state-of-the-art control system will be used. This is a significant upgrade from the Homer design.

LES staff indicated that the applicant will be Louisiana Energy Services and a U.S. organization is being formed. The current licensing interface with the applicant will be Rod Krich from Exelon. LES staff stated that it plans to use the most recent 10 CFR Part 70 guidance for preparing the application and the required integrated safety assessment. LES staff indicated that a new standard review plan for a uranium enrichment plant would not be needed. In the application, LES will identify unchanged information from the previously accepted Homer plant.

LES staff identified the following areas for pre-application discussions:

1. General policy issues including environmental review criteria;
2. Codes and standards;
3. Security;
4. Restricted data;
5. Control systems;
6. Conduct of operations;
7. Site characterization; and
8. Quality assurance.

Action Items:

None

Attachments: 1. Attendee list
2. Meeting agenda
3. Meeting handouts