

October 19, 2005

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD October 19, 2005 (1:22pm)

In the Matter of:

Louisiana Energy Services, L.P.

(National Enrichment Facility)

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Docket No. 70-3103-ML

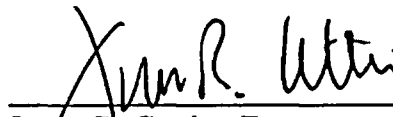
ASLBP No. 04-826-01-ML

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

**OUTLINE SUMMARIES OF LOUISIANA ENERGY SERVICES, L.P.  
REGARDING THE ISSUES TO BE  
CONSIDERED IN THE UPCOMING EVIDENTIARY HEARING**

In accordance with Section III of the Atomic Safety and Licensing Board's Memorandum and Order (Ruling on In Limine Motions and Motion to Dismiss) of October 4, 2005, attached are Louisiana Energy Services, L.P.'s outline summaries regarding the four issues to be considered at the upcoming evidentiary hearing.

Respectfully submitted,



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Dated at Washington, District of Columbia  
this 19th day of October 2005

## DECONVERSION

**I. PLAUSIBILITY OF PRIVATE SECTOR DECONVERSION OF  $\text{DUF}_6$  to  $\text{DU}_3\text{O}_8$** **NIRS/PC Argument (as set forth in Contention NIRS/PC EC-3/TC-1, Basis B)**

LES has not presented "a sound, reliable, or plausible strategy" for private sector disposal of  $\text{DUF}_6$  insofar as LES's statement (in its license application) that it has had discussions with Cogema concerning a private deconversion facility is "without substance."

**LES Response:**

- **LES Expert: Rod Krich**
- **Key LES Exhibits: 88, 90, 91, 94, and 95**
- **Substance of LES Testimony:**
  - The January 21, 2005 Memorandum of Understanding ("MOU") (LES Exh. 88) between LES and AREVA Enterprises (which represents COGEMA) clearly reflects discussions of "substance" between LES and COGEMA.
  - Specifically, the MOU contemplates construction of a private deconversion facility in the U.S. that would deploy AREVA Group technology and be sized to support the deconversion requirements of the National Enrichment Facility. The MOU includes a timeline for expected activities and operations.
  - The deconversion of  $\text{DUF}_6$  to  $\text{DU}_3\text{O}_8$  involves a well known chemical process that COGEMA has successfully deployed in Europe for over two decades at its "W" plant in Pierrelatte, France. Also, COGEMA is supporting Urenco's efforts to design, license, and construct a deconversion facility at Urenco's Capenhurst, UK enrichment facility site.
  - An NRC-approved "siting process" is not necessary to demonstrate the *technical* plausibility of the COGEMA deconversion process. The siting of a deconversion facility would be part of separate licensing action before either the NRC or an Agreement State.

## II. ESTIMATED COST OF PRIVATE SECTOR DECONVERSION OF DUF<sub>6</sub> to DU<sub>3</sub>O<sub>8</sub>

### NIRS/PC Arguments (as set forth Contention NIRS/PC EC-5/TC-2, second paragraph, and Contention NIRS/PC EC-6/TC-3, Bases E and G:

LES's cost estimate (\$2.69/kgU) for the private sector deconversion of DUF<sub>6</sub> from the NEF lacks "factual bases or documented support." Further, no deconversion facility exists, nor is one likely to be built, to suit LES's timing and throughput requirements. Finally, uranium contamination in CaF<sub>2</sub> produced from HF neutralization would require that CaF<sub>2</sub> be disposed of as low-level radioactive waste.

### LES Response:

- **LES Experts:** Rod Krich, Leslie Compton, Paul Harding, and Paul Schneider
- **Key LES Exhibits:** 16-17, 76-78, 83, 89-97, 115
- **Substance of LES Testimony:**
  - LES's cost estimate for private sector deconversion of DUF<sub>6</sub> to DU<sub>3</sub>O<sub>8</sub> has a clear basis in fact, and, where applicable, is based on reasonable and documented assumptions.
  - LES's cost estimate is based on a proprietary Urenco business study (LES Exh. 91) of a proposed 3,500 Metric Tons (MT) U/year deconversion plant for Urenco's Capenhurst, UK site that will use the COGEMA deconversion process to produce U<sub>3</sub>O<sub>8</sub> and aqueous HF co-product. The Urenco business study is based on a Cogema response to a Urenco request for proposal (LES Exh. 90)
  - LES made appropriate adjustments to the Urenco cost information as follows:
    - LES modified the Urenco business study cost figures to reflect a 7,000 MT U/year capacity by (1) adding funds to reflect the increased capital and construction costs of a larger capacity plant (based on information from COGEMA itself that reflects the shared nature of certain systems), and (2) by conservatively doubling Urenco's estimated operating costs (*i.e.*, LES "scaled" up, not down, as NIRS/PC wrongly suggest).
    - LES converted the Urenco-supplied cost information from euros (€) to dollars, using the November 5, 2004 exchange rate of \$1.291 to €1.00.
    - LES added \$5 million in "Americanization" costs to account for potential costs associated with regulatory approval in the U.S. (\$3 million) and

converting European equipment standards to American standards (\$2 million), based on engineering judgment and NEF-related experience.

- LES assumed, based on engineering judgment and NEF-related experience, that the D&D costs for any future deconversion facility would be on the order of 10 percent of the total capital cost of that facility.
- Consistent with NUREG-1757, LES assumed no credit for sale of HF or CaF<sub>2</sub>. LES instead accounted for potential costs associated with the neutralization of HF co-product to CaF<sub>2</sub> and disposal of the CaF<sub>2</sub> as solid industrial waste.
  - LES assumed HF neutralization/CaF<sub>2</sub> pre-disposal storage costs to be no greater than the costs associated with the handling and storage of HF prior to its sale, and, therefore, to be subsumed in cost estimate provided by COGEMA/Urenco. LES confirmed this assumption with an independent third party with relevant experience (LES Exh. 115).
  - Based on the experience of COGEMA and others (LES Exhs. 17-18, 76; Staff Exhs. 40-42), LES expects that any uranium that might be found in HF/CaF<sub>2</sub> would be in trace quantities (< 1 ppm). This would allow for the disposal of CaF<sub>2</sub> as industrial solid waste. NRC and Agreement States can authorize, and have authorized, the release of materials (including CaF<sub>2</sub>) with volumetrically distributed residual radioactive material, on a case-specific basis (LES Exhs. 77-78; Staff Ex. 40).
  - LES determined the cost of disposal of CaF<sub>2</sub> as solid industrial waste to be about \$1.55/ft<sub>3</sub>, or \$0.02/kgU, based on its evaluation of possible disposal of CaF<sub>2</sub> at the Lea County landfill (LES Exh. 97).

### III. RELIEF REQUESTED

LES requests that the Board find as follows: (1) LES's proposed "private sector" strategy to deconvert DUF<sub>6</sub> to DU<sub>3</sub>O<sub>8</sub> for purposes of its ultimate near-surface disposal is a "plausible strategy" within the meaning of the Commission's hearing order; (2) LES has presented, based on that strategy, a reasonable and appropriately documented cost estimate for the deconversion component of its private sector DU dispositioning strategy; and (3) LES's overall cost estimate for private sector dispositioning of DU is reasonable and complies with applicable NRC regulations and guidance.

## TRANSPORTATION

**I. ESTIMATED COST OF TRANSPORTATION OF DEPLETED URANIUM****NIRS/PC Argument (as set forth Contention NIRS/PC EC-5/TC-2, second paragraph)**

LES's cost estimate (\$0.85/kgU) for the transportation of depleted uranium from the NEF lacks "factual bases or documented support." It is not possible to examine the validity of assumptions made in arriving at the transportation cost estimate. LES's cost estimate does not account for both "legs of the journey," *i.e.*, transport of  $\text{DUF}_6$  from the enrichment facility to the deconversion facility, and the transport of  $\text{DU}_3\text{O}_8$  from the deconversion facility to the disposal site.

**LES Response:**

- **LES Expert: Rod Krich**
- **Key LES Exhibits: 96, 98-100, 110**
- **Substance of LES Testimony:**
  - LES's transportation cost estimate of \$0.85/kgU is based on cost information provided by TLI, a company that specializes in the domestic and international transport of radioactive waste, including  $\text{UF}_6$  and uranium oxides.
  - TLI provided LES with two sets of cost estimates that reflect slight differences in the costs of transporting  $\text{DUF}_6$  and  $\text{DU}_3\text{O}_8$ . The TLI cost estimates and certain related assumptions are documented in two e-mails from the Chief Executive Officer of TLI.
  - Among other things, TLI explained that variation in the distance that material must be moved has a minimal effect on overall transportation costs.
  - LES used the cost information obtained from TLI to compute a "cradle-to-grave" unit cost for the disposal of each kilogram of DU generated by NEF operations, *i.e.*, one which encompasses the total cost of transporting each kilogram of DU to be generated by the NEF, both in its pre-deconversion  $\text{DUF}_6$  form and in its post-deconversion  $\text{DU}_3\text{O}_8$  form.

- TLI subsequently confirmed the validity of LES's interpretation and use of the cost figures provided by TLI, and indicated that it would be inappropriate to "add" the figures in the manner suggested by NIRS/PC.
- LES's cost estimate has a reasonable basis insofar as it is derived from cost information provided by a reputable and experienced third party vendor of transportation services. That basis has been adequately documented.

## **II. RELIEF REQUESTED**

LES requests that the Board find as follows: (1) LES has presented reasonable and appropriately documented cost estimate for the transportation component of its private sector DU dispositioning strategy; and (2) LES's overall cost estimate for private sector dispositioning of DU is reasonable and complies with applicable NRC regulations and guidance.

## DISPOSAL

I. PLAUSIBILITY OF NEAR-SURFACE DISPOSAL OF DEPLETED URANIUMNIRS/PC Argument (as set forth in Contention NIRS/PC EC-6/TC-3, Basis I)

The "engineered trench" method of waste disposal proposed by LES is not likely to be acceptable if  $\text{DUF}_6$  is not considered low-level waste. The radiological properties of DU make DU most directly analogous to transuranic ("TRU") or greater-than-Class C ("GTCC") waste, and require that it be disposed of in a "deep geologic repository" or a facility comparable to the DOE's Waste Isolation Pilot Plant ("WIPP").

LES Response:

- LES Experts: Rod Krich and Tom Potter
- Key LES Exhibits: 16-18, 101-104, 109, 111-114, 116
- Substance of LES Testimony:
  - The feed, product, and byproduct streams at the NEF all will be in the form of  $\text{UF}_6$ . LES will deconvert the  $\text{DUF}_6$  byproduct stream to  $\text{DU}_3\text{O}_8$  for purposes of disposal.
  - The Commission has held in this proceeding that DU is appropriately classified as low-level radioactive waste ("LLRW").
  - Under 10 C.F.R. 61.55(a)(6),  $\text{DU}_3\text{O}_8$  is Class A low-level waste. As such, it is eligible for near-surface disposal, provided that the disposal facility receiving the waste meets the performance objectives and applicable technical standards in 10 C.F.R. Part 61. This is the conclusion reached by the NRC Staff.
  - As both the NRC and DOE have recognized, the impacts of disposal of LLRW at a *particular* near-surface disposal facility are assessed at the time of initial license approval of those disposal facilities, or as a part of any subsequent amendments to the license.

- The disposal of  $\text{DU}_3\text{O}_8$  as Class A low-level waste (and in the volumes expected to be generated by the NEF) in a near-surface disposal facility is technically plausible, *i.e.*, more than "mere speculation."
  - For example, in the case of Envirocare, the licensee and the cognizant regulatory agency, the Utah Division of Radiation Control, have confirmed that Envirocare is authorized to accept  $\text{DU}_3\text{O}_8$  for disposal at its Clive, Utah facility subject to no uranium-specific volume restrictions, and that Envirocare has previously disposed of  $\text{DU}_3\text{O}_8$  in its Class A disposal cell (LES Exhs. 103, 104; Staff Exh. 44)
  - As evidenced by its own generic analyses, and its identification of the Envirocare and the Nevada Test Site (a DOE facility) as its primary and secondary sites for the near-surface disposal of DU, the DOE has independently concluded that shallow land disposal of its own (and larger) inventory of DU is plausible (LES Exhs. 16-18, 113).
- Dr. Makhijani's comparison of DU to TRU or GTCC waste is misleading insofar as DU and typical TRU wastes are fundamentally different materials that require different disposal methods.

## II. ESTIMATED COST OF NEAR-SURFACE DISPOSAL OF $\text{DU}_3\text{O}_8$

### NIRS/PC Arguments (as set forth Contention NIRS/PC EC-5/TC-2, second paragraph,

LES's cost estimate (\$1.14/kgU) for the private sector disposal of  $\text{DU}_3\text{O}_8$  from the NEF lacks "factual bases or documented support."

#### LES Response:

- LES Expert: Rod Krich
- Key LES Exhibits: 84-87, 105-109
- Substance of LES Testimony:
  - The specific bases and assumptions underlying LES's estimated disposal cost of \$1.14/kgU for  $\text{DU}_3\text{O}_8$  have been fully documented through clarifying information packages submitted to the NRC Staff, and approved as reasonable by the Staff in its SER.
  - LES's cost estimate reflects information from WCS and Envirocare (LES Exhs. 105-107) and is reasonable insofar as it is based on information obtained from commercial sources with relevant cost information and/or experience.



- LES's cost estimate is reasonable, and even conservative, when compared to other relevant "benchmarks" or data points, including the disposal cost estimates contained in the DOE/LMI report (Exhs. 86-87) and on the DOE DUF<sub>6</sub> Management website (Exh. 108). The testimony of LES expert Thomas LaGuardia and the NRC Staff's experts, who possess knowledge of typical shallow land disposal costs (particularly at Envirocare) also support this conclusion.

III. **RELIEF REQUESTED BY LES WITH RESPECT TO DISPOSAL STRATEGY AND COST ISSUES**

LES requests that the Board find as follows: (1) LES's proposed "private sector" strategy to dispose of DU as Class A low-level waste in a near-surface disposal facility constitutes a "plausible strategy" within the meaning of the Commission's hearing order; (2) LES has presented, based on that strategy, a reasonable and appropriately documented cost estimate for the disposal component of its private sector DU dispositioning strategy; and (3) LES's overall cost estimate for private sector dispositioning of DU is reasonable and complies with applicable NRC regulations and guidance.

## CONTINGENCY FACTOR

**I. THE CONTINGENCY FACTOR APPLIED BY LES TO ITS COST ESTIMATE****NIRS/PC Argument (as set forth in Contention NIRS/PC EC-5/TC-2, Basis 1)**

The contingency factor applied by LES to its overall DU dispositioning cost estimate is too low. The triennial cost adjustment process is intended only for minor modifications to the decommissioning cost estimate, such as adjustments made to reflect changing inflation rates. It is not meant to account for major cost adjustments.

**LES Response:**

- **LES Experts:** Rod Krich, Thomas LaGuardia
- **Key LES Exhibits:** 82-84
- **Substance of LES Testimony:**
  - A contingency factor is meant to account for differences between the base cost and unforeseen costs. The base cost estimate defines the project scope and accounts for the known and reasonably anticipated costs of decommissioning. A contingency factor is intended to account for any unforeseen costs within the defined project scope, *i.e.*, events that may occur in the field during implementation of the work, and which are not accounted for in the base cost estimate.
  - LES has committed to apply a 25 percent contingency in response to an NRC Staff request for additional information.
  - The addition of a 25 percent contingency to LES's overall cost estimate is consistent with NRC guidance in NUREG-1757, and provides an adequate level of assurance with respect to unforeseen cost increases that are within the defined scope of the identified dispositioning activities.
  - Historical experience indicates that 25 percent is an appropriate contingency even for decommissioning projects (*e.g.*, power reactor decommissioning) that involve activities substantially more complex than those associated with the dispositioning of DU.

- The dispositioning activities required for the NEF include transportation, deconversion, and disposal of DU. These activities are straightforward. Transportation of radioactive materials has been done routinely and safely in the U.S. for decades. Deconversion is based on a well understood chemical process that has been successfully used in Europe for two decades. Shallow land disposal of low-level radioactive waste is also an accepted practice that is performed on a routine basis.
- The triennial update is intended to account for changes in costs as they occur. Pursuant to 10 C.F.R. § 70.25(e), an applicant is required to adjust cost estimates and associated funding levels at least every three (3) years. LES, however, has committed to update its DU dispositioning cost estimate on an annual forward-looking basis.
- The triennial update is intended to account for changes in costs "regardless of cause," so as to ensure that the level of financial assurance maintained by the licensee is appropriate.

## **II. RELIEF REQUESTED**

LES requests that the Board find that the 25% contingency factor applied by LES to its overall cost estimate for private sector dispositioning of DU is consistent with applicable NRC guidance and adequate to account for potential cost increases caused by unforeseen cost increases within the defined project scope.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

|                                 |   |                        |
|---------------------------------|---|------------------------|
| In the Matter of:               | ) | Docket No. 70-3103-ML  |
|                                 | ) |                        |
| Louisiana Energy Services, L.P. | ) | ASLBP No. 04-826-01-ML |
|                                 | ) |                        |
| (National Enrichment Facility)  | ) |                        |

CERTIFICATE OF SERVICE

I hereby certify that copies of the "OUTLINE SUMMARIES OF LOUISIANA ENERGY SERVICES, L.P. REGARDING THE ISSUES TO BE CONSIDERED IN THE UPCOMING EVIDENTIARY HEARING" in the captioned proceeding has been served on the following by e-mail service, designated by \*\*, on October 19, 2005 as shown below. Additional service has been made by deposit in the United States mail, first class, this 19th day of October 2005.

Chairman Nils J. Diaz  
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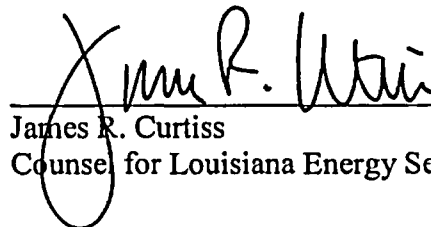
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