

**LOUISIANA  
ENERGY**

1993/06/30

Encl 03

From Binder 3

Post Office Box 1004  
Charlotte, NC 28201-1004

June 30, 1993

NIRS/PC Prefiled Exhibit 132  
Docketed 09/23/05

Mr. John W. N. Hickey, Chief  
Fuel Cycle Safety Branch  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Docket No.: 70-3070  
Louisiana Energy Services  
Claiborne Enrichment Center  
Disposition of Depleted  
Uranium Hexafluoride  
File: 6046-00-2001.01

Dear Mr. Hickey:

This letter is in response to your letter to Louisiana Energy Services (LES) dated June 18, 1993 regarding the disposition of depleted uranium hexafluoride (DUF<sub>6</sub>) produced at the Claiborne Enrichment Center (CEC). In response to your recommendations, LES has made certain changes for the estimate for disposition of DUF<sub>6</sub>. However, as noted in our license application, we reiterate that the disposition of DUF<sub>6</sub>, including disposition at the end-of-facility operation, is an element of authorized operation. It involves neither decommissioning waste nor is it a part of decommissioning activities. In that context, LES has revised its estimate as follows:

- 1) The cost of conversion of DUF<sub>6</sub> to depleted uranium oxide (DU<sub>3</sub>O<sub>8</sub>) is based upon an estimate of \$4.00 per kilogram uranium. This estimate was provided to LES by COGEMA.

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- 2) The cost estimate for disposition of  $DU_3O_8$  has been revised from \$5.50 per ton to \$1.00 per kilogram of  $DU_3O_8$ . This value is based upon your letter and on the value provided in Martin Marietta's report "The Ultimate Disposition of Depleted Uranium", December 1990, p: 17
- 3) The estimated cost of disposition of the  $DUF_6$  will be included as part of the Decommissioning Funding Plan detailed in Exhibit I of the LES License Application. The funding will be maintained in the external trust to cover the amount of  $DUF_6$  stored at the CEC. Therefore, the funding will increase as more  $DUF_6$  is produced at the beginning of enrichment operations and then level off or decrease as tails are removed from the CEC.
- 4) No credit is taken for salvage and resale of aluminum nor any other material associated with CEC decommissioning. LES acknowledges that Regulatory Guide 3.66 "Standard Format and Content for Financial Assurance Mechanisms Required for Decommissioning Under 10 CFR Parts 30, 40, 70 and 72", June 1990, section 1.2.2, recommends that "For those who do account for salvage value, a significant gap in coverage could occur if the expected credits are not fully realized. Therefore, in order to ensure the adequacy of funds for decommissioning, cost estimates should not incorporate any salvage value that may be realized with the sale of potential assets." To ensure timely authorization to build and operate the CEC, LES has deleted salvage and resale of aluminum from its cost estimate.

It should be noted that Urenco experience at the Almelo facility justifies the inclusion of aluminum salvage value for the CEC. Aluminum has been reclaimed from the decommissioning of two pilot plants. Centrifuges and other equipment containing aluminum were dismantled, further cut up into small pieces, decontaminated, and sent off-site to a smelter. Of 798 tons of aluminum delivered to the smelter, 710 tons were suitable for resale. (The remaining slag was disposed of as non-radioactive waste.) The aluminum for resale contained between 2 and 4 ppm uranium. The sale price of the aluminum has generally been between 75% and 85% of the European spot market price. In 1990, in The Netherlands, the price was approximately 2.5 guilders (\$1.39) per kilogram of aluminum.

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It is intended that recovered aluminum from the CEC will be decontaminated, processed through a smelter, and sold as secondary aluminum ingots on the market. Decontamination and smelting is a simple and relatively inexpensive process, the cost of which is not significantly affected by normally changing economic conditions. Hence, the cost of processing the aluminum for sale should not result in a situation in which expected salvage credits are not fully realized.

Additionally, secondary aluminum is consistently sellable in U.S. and worldwide markets. U.S. Department of Interior data shows a steady trend of secondary aluminum taking a larger and larger share of aluminum production, from 4 - 5% in the 1960s to over 15% in the latter 1980s. Additionally, in 1988, U.S. aluminum supply/consumption data shows over two million metric tons of secondary aluminum consumed in the U.S., with over a million tons of this from "old scrap" aluminum. This data, as well as other information in the reference, also demonstrates that allowing for the salvage value of aluminum should not result in a situation in which expected salvage credits are not fully realized. Nevertheless, as noted, LES has decided not to credit salvage value in our decommissioning cost estimate.

Table I (attached) compares LES' current estimate with the estimate contained in my letter to you dated December 14, 1992.

It should also be noted that LES has recently sent a letter to the U.S. Department of Energy (DOE) indicating that LES would be interested in cooperating with the DOE and the United States Enrichment Corporation (USEC) in coordinating disposition of  $DUF_6$ . This would be in the interest of all parties since we understand the NRC will be regulating the  $DUF_6$  generated by the USEC in a manner similar to the regulation of  $DUF_6$  generated by LES. Since LES must compete with the USEC in the SWU market, it is important that LES not be at a competitive disadvantage in the cost of  $DUF_6$  disposition. This applies not just to actual dispositioning, but to the costs associated with the external trust as well.

The decommissioning funding plan as well as the cost estimate for  $DUF_6$  disposition are detailed in the LES License Application, Exhibit I, the LES Safety Analysis Report (SAR), section 11.8, and the LES Environmental Report (ER) section 4.4. The cost estimates in the License Application, Safety Analysis Report and Environmental Report will be updated in the near future to reflect the information contained in this letter.

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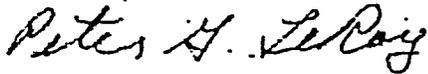
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As stated currently in the License Application, Exhibit I, LES will review and adjust as necessary the decommissioning cost estimate and decommissioning funding at least once every five years. At such times, or more often if appropriate, LES will also review the cost basis of depleted uranium hexafluoride disposition.

Please call me at (704) 382-2834 if there are any questions concerning this.

Sincerely,



Peter G. LeRoy  
Licensing Manager

PGL/N91.693

Enclosures

cc: (w/ enclosures)

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## Table Comparison of Decommissioning and DUF<sub>6</sub> Disposition Costs

<u>Cost Category</u>	<u>(Dec 14, 1992) Estimate (\$1996)</u>	<u>Revised (June __, 1993) Estimate (\$1996)</u>
<b>DECONTAMINATION AND DECOMMISSIONING (D&amp;D) (ONE TIME COSTS)</b>		
D&D Facility Capital	\$ 6.8	\$ 6.8
D&D Facility Labor	1.4	1.4
UF <sub>6</sub> System Cleaning	1.1	1.1
Plant/System Dismantling	6.8	6.8
Decontamination	13.7	13.7
Aluminum Salvage Value	(7.9)	---
Waste Disposal	1.4	1.4
Hazardous & Mixed Waste Disposal	0.1	0.1
D&D Facility Decontamination	0.5	0.5
Final Radiation Survey	<u>1.0</u>	<u>1.0</u>
<b>D&amp;D Subtotal</b>	<b>\$ 24.9</b>	<b>\$ 32.8</b>
<b>DUF<sub>6</sub> DISPOSITION COSTS (PER YEAR)</b>		
DUF <sub>6</sub> Transportation	\$ 0.8 /yr	\$ 0.8 /yr
DUF <sub>6</sub> Conversion	12.0 /yr	12.0 /yr
Depleted Uranium Disposal (as DU <sub>3</sub> O <sub>8</sub> ) <sup>2</sup>	<u>0.021 /yr</u>	<u>3.375 /yr</u>
DUF <sub>6</sub> Disposition Subtotal (1 yr)	\$ 12.821 /yr	\$ 16.175 /yr
DUF <sub>6</sub> Disposition Subtotal (30 yrs)	\$ 384.6	\$ 485.25
<b><u>TOTAL, DECOMMISSIONING AND DUF<sub>6</sub> DISPOSITION COST</u></b>	<b>\$ <u>409.5</u></b>	<b>\$ <u>518.05</u></b>

- Notes: 1) All figures shown are millions of dollars.  
2) See Table 2 for DU<sub>3</sub>O<sub>8</sub> disposition cost estimate basis.

## Table 2 DU<sub>3</sub>O<sub>8</sub> Disposition Estimated Costs

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The CEC when operating at nominal capacity of 1.5 million SWU per year will produce approximately 300 48G cylinders of depleted UF<sub>6</sub> per year. Each cylinder of depleted UF<sub>6</sub> will result in approximately 11 tons (22,000 pounds) of depleted U<sub>3</sub>O<sub>8</sub> when converted. Therefore, the CEC will produce approximately:

$$300 \text{ cylinders/year} \times 11 \text{ tons DU}_3\text{O}_8/\text{cylinder} = 3300 \text{ tons DU}_3\text{O}_8/\text{year}$$

The NRC has indicated a reasonable estimate of disposition of DU<sub>3</sub>O<sub>8</sub> is approximately \$1.00 per kilogram of U<sub>3</sub>O<sub>8</sub> (reference NRC letter to LES dated June 18, 1993). Therefore, the cost (\$1993) of dispositioning 3300 tons of DU<sub>3</sub>O<sub>8</sub> per year will be:

$$3300 \text{ tons DU}_3\text{O}_8 \times 909 \text{ kg/ton} \times \$1.00 \text{ per kg} = \$3,000,000 (\$1993)$$

escalating this at 4% per year to \$1996:

$$\$3,000,000 (\$1993) \times (1.04)^3 = \$3,374,592 (\$1996)$$

Therefore, **\$3,375,000 per year** will be used for the purpose of estimating the dispositioning costs for DU<sub>3</sub>O<sub>8</sub>.