

October 20, 2004

Mr. Rod Krich, Vice President  
Licensing, Safety, and Nuclear Engineering  
Louisiana Energy Services  
2600 Virginia Avenue NW, Suite 610  
Washington, DC 20037

SUBJECT: LOUISIANA ENERGY SERVICES - REQUEST FOR ADDITIONAL  
INFORMATION ON DECOMMISSIONING FUNDING PLAN

Dear Mr. Krich:

We completed the technical review of the decommissioning funding plan you proposed in Revision 2 of the Safety Analysis Report transmitted to us on July 30, 2004. Our technical review identified the need for additional information or clarifications as indicated in the enclosure. Please submit responses to the requests for additional information within 30 days of this letter.

If you have any questions, please contact me at 301-415-7299.

Sincerely,

**/RA/**

Timothy C. Johnson, Project Manager  
Gas Centrifuge Facility Licensing Section  
Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 70-3103

cc:	William Szymanski/DOE	Claydean Claiborne/Jal	Rod Krich/LES
	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 Cty	William Floyd/NMED
	James Brown/Eunice	Richard Ratliff/Texas	M. Marriotte/NIRS
	Jerry Clift/Hartsville	CO'Claire/Ohio	Lee Cheney/CNIC
	Derrith Watchman-Moore/NMED	Joseph Malherek/PC	Ron Curry/NMED
	Clay Clarke/NMED	Patricia Madrid/NMAG	Glenn Smith/NMAG
	Lindsay Lovejoy/NIRS		

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**DISTRIBUTION:** Docket: 70-3103

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YFaraz	LClark/OGC	JDavis/DWM	MGalloway
MWong/DWM	SFlanders/DWM	ABradford/DWM	JPark/DWM
KEverly/NSIR	SGagner/OPA	DMcIntyre/OPA RVirgilio/OSTP	
TCombs/OCA	DAYres/Reg II	DSeymour/RegII	JHenson/RegII
RHannah/RegII	KClark/RegII	RTrojanowski/RegII	VMitlyng/RegIII
DHartland/Reg III	WMaier/RegIV	Hearing file	
LES Website - No			

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OFFICE	GCFLS	GCFLS	DWM	NRR	OGC	GCFLS
NAME	TJohnson/os	LMarshall	TFredericks	LPittiglio	LClark	BSmith
DATE	09/16/04	09/16 /04	09/ 29 /04	10/ 04 /04	10/ 7 /04	10/ 20 /04

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## Requests for Additional Information on Decommission Funding Plan, Revision 2

### 1. Tables 10.1 through 10.3

Provide additional detail in the tables to justify the proposed decommissioning cost estimates.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility. Guidance on preparing decommissioning cost estimates are provided in NUREG-1757, Volume 3, "Consolidated NMSS Decommissioning Guidance." Section 4.1 of NUREG-1757, Volume 3, states that a cost estimate for decommissioning would be judged acceptable if it meets nine specific criteria, including:

1. Criterion 2: The cost estimate is based on documented and reasonable assumptions,
2. Criterion 3: The unit cost factors used in the cost estimate are reasonable and consistent with NRC cost estimation reference documents, and
3. Criterion 5: The cost estimate applies a contingency factor of at least 25 percent to the sum of all estimated costs.

In preparing the decommissioning cost estimate, Louisiana Energy Services (LES) modified the tables in NUREG-1757, Appendix A to reflect that their costs were derived from recent Urenco decommissioning experience. It appears LES used an activity based methodology to estimate costs at a less detailed level than the Appendix A tables use. This activity based approach does not provide sufficient detail to allow independent verification of criterion 2 and 3 (described above). Put another way, although LES may use a reasonable basis for their cost estimate (i.e., past decommissioning experience), they have not provided the detail necessary to verify that their cost estimate meets the guidance criteria. Generally speaking, additional labor detail, more information on the decontamination methods (which have not been specified) and the total area/volume of the component to be cleaned, and the specific unit costs for waste packaging, shipping, and disposal costs are needed to determine if LES's cost estimate is adequate.

- a. Additional Labor Detail: Labor hours by category were not estimated for planning and preparation, restoration of contaminated areas of facility grounds, or the final radiation survey. In addition, labor detail for the project management and HP&S/Chem labor categories were not broken out by component. Without this detail, the total labor costs cannot be calculated, and thus, the impact on the cost of using a third party contractor to conduct decommissioning also cannot be calculated. That is, it is impossible to calculate the magnitude of adding contractor overhead and profit.
- b. Decontamination or dismantling of radioactive facility components: LES has not specified decontamination methods. Instead, LES notes that "Urenco plant experience in Europe has demonstrated that conventional decontamination techniques are effective for all plant items." However, without additional detail on the decontamination methods, we cannot verify if appropriate unit costs and labor rates were used, if all potential contaminated areas and equipment were included, if the costs include cleaning

materials, and if disposal of these materials were included. Further, while tables 10.1-1(a)-(f) sometimes provide information on the total dimensions of each type of component, this information is also frequently missing. Total dimensions are multiplied by unit costs of the decontamination method to determine the total decontamination costs. Total dimensions should be provided for all facility components expected to be contaminated (in some cases this information may be classified).

- c. Packaging and shipping of radioactive wastes: Because packaging and shipping costs were included in the waste disposal costs, we cannot verify that adequate labor, containers, and transport rates were used, that an adequate number of containers were used, or that differences in shipping distance do not matter. This information should be provided for both the tails disposition costs as well as the disposal costs for wastes generated during decommissioning.
2. Section 10.1.3.2, p. 10.1-2 and Section 10.3, pp. 10.3-1 through 10.3-3

Either revise or justify why the cost estimate for depleted uranium conversion is sufficient assuming no salvage value of any material produced given the fact that such costs are included in the cost estimate of the Lawrence Livermore National Laboratory (LLNL) report. Additionally, revise or justify the cost estimate to account for potential disposal costs for any materials that cannot be sold.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

In section 10.1.3.2 of the Safety Analysis Report (SAR) states that, "Credit is not taken for any salvage value that might be realized from the sale of potential assets (e.g., recovered material or decontaminated equipment) during or after decommissioning." However, in the LLNL report referenced, which provides one of the cost estimates for conversion, the  $DUF_6$  conversion cost includes revenues generated from selling a byproduct of the conversion process, anhydrous hydrogen fluoride (AHF). Once these revenues are removed, the LLNL cost of conversion increases by approximately \$0.95/kgU. After adjusting for this cost difference, the LLNL total cost estimate becomes approximately \$6.00/kgU. This estimate is higher than the \$5.50 estimate used by LES to calculate the cost of tails disposition.

Further, the LLNL report acknowledges that if the calcium fluoride ( $CaF_2$ ) and AHF cannot be sold, which the authors describe as an unlikely scenario, then the byproducts will need to be disposed of as low-level radioactive waste (LLW), because the  $CaF_2$  contains a small amount of uranium. This process would present significant costs which are not accounted for in the SAR.

3. Section 10.3, pp. 10.3-1 through 10.3-3

Revise the cost estimates for depleted uranium conversion to include appropriate transportation costs applicable to the actual distances from the Eunice site to the proposed processing sites, or provide additional justification why the increased distance would not cause a substantial increase in cost.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

With regard to the transport costs, the LLNL study assumes a transport distance of 1,000 kilometers. However, the proposed facility may be substantially farther than 1,000 kilometers from conversion and disposal facilities. Specifically, the proposed facility may be:

- a. 1,636 kilometers from a disposal site in South Clive, Utah;
- b. 1,670 kilometers from a proposed conversion site in Paducah, Kentucky; and
- c. 2,243 kilometers from a proposed conversion site in Portsmouth, Ohio.

While the LLNL report states that transportation costs are not sensitive to distance traveled, this conclusion was based on a determination that loading, shipping, and unloading costs make up less than 25 percent of those costs. Absent any explanation of what comprises the remaining 75 percent of the costs, it is not obvious that the shipping costs will not be substantial.

4. Section 10.1.3.2, p. 10.1-2 and Section 10.3, pp. 10.3-1 through 10.3-3

Revise the cost estimates to include costs applicable to use of a third-party contractor for performing the decommissioning operations or provide justification for not including such costs.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

In section 10.1.3.2, LES indicates that it intends to serve as the Decommissioning Operations Contractor, rather than hiring a third party to conduct decommissioning activities. Although LES asserts that it will secure contract services as necessary, LES will have direct control and oversight of all decommissioning activities. This assumption may underestimate the cost of decommissioning the proposed facility. It appears that contractual services for a third-party decommissioning agent are not accounted for in the cost estimate. Such third-party costs should be accounted for in the Decommissioning Cost Estimate (NUREG-1757, Volume 3, pages 4-1 and A-26) in the event that LES is unable to perform the decommissioning and a third-party contractor is needed to complete the work.

5. Section 10.3, p. 10.3-3

Provide a contingency factor of 25 percent for tails disposition.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

LES is applying a 25 percent contingency factor to all decommissioning costs except those associated with tails disposition. LES explains that the 25 percent contingency factor was not applied to the costs associated with tails disposition because tails disposition contingency costs are built into the LLNL cost estimate which provides for a 20 percent contingency factor for conversion plant process and manufacturing facility and balance of plant capital costs and a 30 percent contingency factor for process and manufacturing equipment. In addition, LES points to the margin between the value LES is proposing and the most recent U.S. Department of Energy/Uranium Disposition Services (DOE/UDS) estimates.

The contingency factors cited by LES are applied to the LLNL capital costs (associated with buildings and some equipment). There are no contingencies applied to the technical development, regulatory compliance, operations and maintenance, transportation, or preparation and disposal costs, which account for a substantial portion of the overall costs. A contingency factor should apply to all of these types of costs.

6. Section 10.3, General

Update the costs estimates from 2002 costs to 2004 costs.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

LES based in costs for decommissioning and waste disposition on 2002 costs. These costs should be updated to account for escalation, current foreign currency conversion rates, etc., as appropriate to reflect current costs.

7. Table 10.1-4

Provide justification for the unit costs for earthen cover removal and disposal.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

Table 10.1-4 indicates that 33,000 ft<sup>3</sup> of the earthen cover will be removed and disposed. Table 10.1-14 indicates the total cost of this activity is \$1 million. The resulting unit cost of removal and disposal appears to be \$30.30/ft<sup>3</sup>. However, in Table 10.1-10 (packaging, shipping, and disposal of radioactive wastes, the unit cost for packaging, shipping, and disposal of other wastes ranges from \$100/ft<sup>3</sup> to \$150/ft<sup>3</sup>. Additional justification for each of these unit costs is needed to explain the apparent discrepancy.

8. Table 10.1-12

Provide additional supporting detail for the sampling costs.

Under 10 CFR 70.25, an applicant for a uranium enrichment facility is required to prepare a decommissioning funding plan. The decommissioning funding plan includes a site-specific cost estimate for decommissioning and a financial assurance mechanism ensuring that funds will be available to decommission the facility.

The sampling costs included in Table 10.1-12 indicates 931 samples will be analyzed at a unit cost of \$934 each. No supporting detail was provided to explain how that number of samples was derived or what the unit cost includes (e.g., Does it include the sample collection equipment, transport of samples to the lab, and analysis?). Additional supporting detail should be provided.

9. Section 10.2, pp. 10.2-1 and 10.2-2

Provide an unexecuted copy of the surety bond and standby trust, with all applicable attachments and schedules.

Under 10 CFR 70.25, a decommissioning fund plan must contain a decommissioning financial assurance mechanism.

In the response to U.S. Nuclear Regulatory Commission Requests for Additional Information (RAIs), LES provided sample language for a surety bond. The unexecuted copy of the surety bond is consistent with the recommended wording in NUREG-1757, Volume 3, Appendix A. However, it does not appear that this language was incorporated into Revision 2 of the SAR. In addition, LES did not submit an unexecuted copy of a proposed standby trust agreement or an unexecuted copy of the broker/agent's power of attorney, as recommended by NUREG-1757, Volume 3, pages 4-24 and A-90. The submitted unexecuted surety bond requires that funds paid under the bond must be deposited into a standby trust fund, but the licensee's submission does not include an unexecuted standby trust agreement. Therefore, funds cannot be withdrawn under the payment surety bond until a standby trust has been established. This delay may prevent decommissioning from taking place in a timely manner. Moreover, if it is not possible to establish a trust fund at the time the bond is drawn upon (e.g., if the licensee no longer exists), funds drawn from the bond may be unavailable to pay for decommissioning activities. Therefore, LES should submit an unexecuted copy of the standby trust agreement and related documents, as recommended in NUREG-1757, Volume 3, pages 4-24 and A-90.