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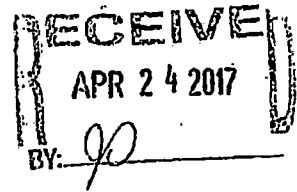
LES-17-00079-NRC

~~Proprietary Information~~  
~~Withhold under 10 CFR 2.390~~

**Enclosure 1**  
**2017 DOE Cost Estimate**



Department of Energy  
Washington, DC 20585



APR 21 2017

1N-17-00050-DOE

Mr. Jay Laughlin  
Chief Nuclear Officer and Head of Operations  
Louisiana Energy Services  
P.O. Box 1789  
Eunice, New Mexico 88231

Dear Mr. Laughlin:

Thank you for your February 24, 2017, letter requesting a revised conversion and disposal cost estimate for Depleted Uranium Hexafluoride (DUF<sub>6</sub>) generated by the URENCO Louisiana Energy Services (LES) centrifuge enrichment facility. The revision updates the previously provided estimate to LES dated May 19, 2016.

The Department has incorporated the LES revised production estimates and included that volume of additional DUF<sub>6</sub> in this updated cost estimate. We have also determined that the total cost of conversion contained in the uncertainty estimates/cost estimate range previously provided is still valid. Since the last estimate provided in the May 19, 2016, letter (b)(4) (2016 dollars)], the range has increased to (b)(4) (2016 dollars). Considering inflation, the updated estimate range is (b)(4) (2017 dollars). This represents the best available cost estimate of the cost range to accept, process and dispose of LES DUF<sub>6</sub> tails. However, as the factors associated with this estimate are dynamic, they are subject to future adjustment.

If you have any questions or require additional information, please contact Mr. Doug Tonkay, Director, Office of Waste Disposal, at (301) 903-7212 or me at (301) 903-7514.

Sincerely,

Mark Senderling  
Deputy Assistant Secretary for  
Waste and Materials Management



LES-17-00079-NRC

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**Enclosure 2**  
**Updated Decommissioning Funding Cost Estimate**

## OVERVIEW

This document presents the cost basis for calculating the estimated sum total for decommissioning funding required for the Centrifuge Assembly Building (CAB), other non-Separations Building Module structures; Separations Building Module (SBM) 1001 (including extension), SBM 1003, 16 cascades of SBM 1005 and depleted uranium tails produced through June, 2018 at the URENCO USA Facility in 2017 dollars.

When License Amendment Request Number 07-004 was approved by the NRC on March 14, 2008, LES received authorization to sequentially fund decommissioning for facility structures as they are placed into service, rather than at the receipt of licensed material as originally considered in the LES License Application. In order to sequentially fund decommissioning for the facilities as they are placed into service, a review of the estimated costs and underlying assumptions was performed in order to determine how to allocate any necessary costs for decommissioning of the respective facilities. Table 12 below (as supported by Tables 1 through 11) and its associated notes reflect Total Decommissioning Costs to account for the decommissioning funds for the CAB, Other Buildings, SBM 1001 (including extension), SBM 1003, 16 cascades of SBM 1005 and depleted uranium tails estimated to be produced through June, 2018.

It has been determined since the previous submittals (Refs. 1 and 3) that the CAB will sufficiently house the decommissioning efforts and, therefore, the costs for a separate building that were included in the earlier submittals have been removed. The decontamination equipment can be retrofitted to use for both centrifuge types (i.e., TC-12 and TC-21) in SBM 1001, SBM 1003 and SBM 1005. Incremental capital costs to accommodate both centrifuge types have been included. Earlier submissions assumed costs for removal and disposal of liners and earthen covers of the Treated Effluent Evaporative Basin (TEEB). Current project plans do not include the construction of a TEEB. All radioactive liquid effluents will be treated through the Liquid Effluent Collection and Treatment System (LECTS). Baseline costs have been inflated 13.98% by using the change in the CPI-U index from the 2009 average to the 2017 April ending value. This funding estimate submission includes the decommissioning funding required as of June, 2017 to include the CAB, other non-Separations Building Module structures, SBM 1001, SBM 1003, 16 cascades of SBM 1005 and depleted uranium tails produced through June, 2018. Note that the submission provides the decommissioning funding estimate to include all cascades of Assay 1005 and four cascades in Assay 1006 that will be placed in service before December 31, 2018. License Amendment Request Number 15-10 was approved June 8, 2016 to allow LES to provision decommissioning funding on a cascade basis. The requirement to submit for NRC review, 6 months prior to feed inlet is not applicable as current funding covers all planned centrifuges to be taken operational in SBM 1005. Decommissioning funding including the first four cascades of Assay 1006 is estimated at a value of (b)(4).

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**Table 1 Planning and Preparation**

Activity	Costs (\$000)	Labor Shift-worker (multi-functional) (Man-days)	Labor Project Management (Man-days)	Labor HP&S (Man-days)	Activity Duration (Months)
Project Plan & Schedule	(b)(4)				
Site Characterization Plan					
Site Characterization					
Decommissioning Plan					
NRC Review Period					
Site Services Specifications					
Project Procedures					
<b>TOTAL</b>					

Note:

1. 100% of planning and preparation costs assumed to be utilized for the CAB and Other Buildings and Separations Building Module (SBM) 1001. SBM 1003 and SBM 1005 planning costs remain consistent with SBM 1001 costs.

**Table 2 Restoration of Contaminated Areas on Facility Grounds (Work Days)**

Activity	Labor Category	Labor Category	Labor Category	Labor Category	Labor Category	Labor Category
Backfill and Restore Site (Note 1)	N/A	N/A	N/A	N/A	N/A	N/A

Note:

1. Previous submissions assumed costs for removal and disposal of liners and earthen covers of the Treated Effluent Evaporative Basin (TEEB). Current project plans do not include the construction of a TEEB. All radioactive liquid effluents will be treated through the Liquid Effluent Collection and Treatment System (LECTS). Based on URENCO experience, other areas outside of the plant buildings are not expected to be contaminated.

**Table 3 Final Radiation Survey**

Activity	Costs (\$000)	Labor Shift-worker (multi-functional) (Man-days)	Labor Project Management (Man-days)	Labor HP&S (Man-days)	Activity Duration (Months)
Prepare Survey Plans and Grid Areas	(b)(4)				
Collect Survey Readings and Analyze Data					
Sample Analysis					
Final Status Survey Report and NRC Review					
Confirmatory Survey and Report					
Terminate Site License					
<b>TOTAL</b>					

Notes:

1. The (b)(4) cost assigned to the preparation of the final radiation survey includes a cost of (b)(4) to conduct the sampling and perform the sample analysis by a contractor. The sampling labor cost component (b)(4) was estimated assuming (b)(4) (HP&S man-hour rate) for an estimated (b)(4) with an average sample duration of (b)(4) sample. The analysis cost component (b)(4) for the (b)(4) samples was estimated using a conservative (b)(4) based on actual 2004 value of (b)(4) lab analysis costs escalated at (b)(4). Because of the modeling for this activity, this sample analysis cost is expressed in terms of equivalent man-hours at the Project Management man-hour rate.
2. Some activities will be conducted in parallel during a 36 month radiation survey period for SBM 1001. Subsequent SBM's have assumed consistent treatment and timing.

**Table 4 Site Stabilization and Long-Term Surveillance (Work Days)**

Activity	Labor Category	Labor Category	Labor Category	Labor Category	Labor Category	Labor Category
(Note 1)	N/A	N/A	N/A	N/A	N/A	N/A

Note:

- URENCO experience with decommissioning gas centrifuge uranium enrichment plants has been that there is no resultant ground contamination. As a result, site stabilization and long-term surveillance will not be required and associated decommissioning provisions are not provided.

**Table 5 Total Work Days by Labor Category (Based on a 7.5 hr Working Day)**

Task	Shift-worker (multi-functional)	Craftsman	Supervision	Project Management	HP&S	Cleaner
Planning and Preparation (see Table 1)	(b)(4)					
Decontamination and/or Dismantling of Radioactive Facility Components (Note 1)						
Restoration of Contaminated Areas on Facility Grounds (Note 2) (see Table 2)						
Final Radiation Survey (see Table 3)						
Site Stabilization and Long-Term Surveillance (see Table 4)						

Notes:

- The values shown are inclusive of the Separations Building Module 1001 input derived using the total costs in Table 8 and dividing by the cost per day for each labor category
- Cost estimate is activity-based

**Table 6 Worker Unit Cost Schedule**

Labor Cost Component	Shift-worker (multi-functional)	Craftsman	Supervision	Project Management	HP&S	Cleaner
Salary & Fringe (\$/hr)	(b)(4)					
Shift Charge (\$/hr)						
Total (\$/hr)						
Total (\$/yr)						
Total Cost Per Work Day (\$/day) (Note 1)						

Note:

- Based on (b)(4) work days/yr at (b)(4)



**Table 7 Total Labor Costs by Major Decommissioning Task (\$000)**

Task	Shift-worker (multi- functional)	Craftsman	Supervision	Project Management	HP&S	Cleaner	Total Costs (\$000s)
Planning and Preparation (see Table 1)	(b)(4)						
Decontamination and/or Dismantling of Radioactive Facility Components							
Restoration of Contaminated Areas on Facility Grounds (Note 1) (see Table 2)							
Final Radiation Survey (see Table 3)							
Site Stabilization and Long-Term Surveillance (see Table 4)							

Note:

1. Cost estimate is activity-based.

**Table 8 Packaging, Shipping, and Disposal of Radioactive Wastes (Excluding Labor Costs)**

a) Waste Disposal Costs (includes packaging and shipping costs)

Waste Type	Disposal Volume M <sup>3</sup> (ft <sup>3</sup> )	Unit Cost (\$/ft <sup>3</sup> )	No. of drums	Total Disposal Costs (\$000s)
Other Buildings:	(b)(4)			
Miscellaneous low level waste				
Separation Module 1001:				
Solidified Liquid Wastes				
Centrifuge Components, Piping and Other Parts				
Aluminum				
<b>TOTAL</b>				

b) Processing costs including melting

Materials	Disposal Weight (MT)	Unit Cost (\$/kg)	Total Processing Costs (\$000s)
Aluminum	(b)(4)		
Other materials			
<b>TOTAL</b>			

**Table 9 Equipment & Supply Costs (Excluding Containers)**

(a) Equipment	Quantity	Unit Cost (\$/unit)	Total Cost Equipment (\$000)
<b>Plant Equipment</b>	(b)(4)		
Basic decontamination equipment			
Decontamination line equipment			
Evaporation installation			
Radiation and control equipment			
Electrical and Instrumentation			
Electrical system			
Instrumentation			
Design and Engineering			
Plant and equipment			
Electrical and Instrumentation			
Maintenance of Equipment			
Maintenance of facility equipment			
Other Buildings			
Dismantling/Cleaning Tools, Equipment and Consumables			
<b>TOTAL (Note 2)</b>			

Note:

- Allocation based on URENCO decommissioning experience.
- Original submission included costs for separate decommissioning building for a total of (b)(4). Building costs have been removed due to the use of the CAB for decommissioning activities.

(b) Supply (Note 1)	Quantity	Unit Cost	Total Cost Supply (\$000)
Electricity, kWh	(b)(4)		
Gas, ft <sup>3</sup>			
Water, ft <sup>3</sup>			
Materials			
<b>TOTAL</b>			

Note:

- Allocation based on URENCO decommissioning experience.

**Table 10 Laboratory Costs (Internal)**

Activity	Quantity	Unit Cost (\$)	Total Costs (\$000)
Analyze Sampling Material Melts (Note 1)	(b)(4)		
<b>TOTAL</b>			

Note:

1. Sample analysis costs are for aluminum only. The unit cost for this sampling is the cost of performing the analysis using onsite laboratory equipment, and assumes 8 samples for each of the estimated (b)(4) batch melts. Costs associated with other sampling and analyses are included in Table 3, Final Radiation Survey. (b)(4)

**Table 11 Period Dependent Costs**

Cost Item	Total Cost (\$000)
License Fees	(b)(4)
Insurance	
Taxes	
Decommission Facility	
<b>TOTAL</b>	

Note:

1. Period Dependent Costs include management, insurance, taxes, and other costs for the period beginning with the termination of operations of Separations Building Module 1001 and the remaining plant facilities. This assumes (b)(4) per year for each of the (b)(4) total year decommissioning period (4)

### Table 12 - Total Decommissioning Costs

(Note 7)

[illegible]

Notes:

1. The (b)(4) includes planning, site characterization, Decommissioning Plan preparation and NRC review for the CAB and Other Buildings and Separations Building Modules. SBM 1003 and prorated SBM 1005 costs are consistent with SBM 1001 costs.
2. Earlier submissions assumed costs for removal and disposal of liners and earthen covers of the Treated Effluent Evaporative Basin (TEEB). Current project plans do not include the construction of a TEEB. All radioactive liquid effluents will be treated through the Liquid Effluent Collection and Treatment System (LECTS).
3. The Final Radiation Survey, NRC review, confirmatory surveys and license termination for the entire plant are included in this total.
4. Site stabilization and long-term surveillance will not be required.
5. Waste processing costs are based on (b)(4) Waste processing costs for SBM 1003 and prorated SBM 1005 are (b)(4) over SBM 1001 levels based on the ratio of total TC21 centrifuge length in SBM 1003 and SBM 1005 to TC12 length in SBM 1001.
6. (b)(4)  
(b)(4)
7. Approximately (b)(4) of the decommissioning costs for the CAB, Other Buildings, and SBM 1001, 1003 and prorated 1005 are attributed to the dismantling, decontamination, processing and disposal of centrifuges and other equipment in SBM 1001, SBM 1003 and SBM 1005, which are considered classified. Given the classified nature of these buildings, the data presented in these Tables have been structured to meet the applicable NUREG-1757 recommendations, to the extent practicable. However, specific information such as numbers of components and unit rates has been intentionally excluded to protect the classified nature of the data. The remaining (b)(4) of the decommissioning costs are for the remaining systems and components in the CAB and Other Buildings.
8. The (b)(4) for Other Buildings includes the decontamination and dismantling of contaminated equipment in the Blending and Liquid Sampling Area, Centrifuge Test and Post Mortem Facilities and Gaseous Effluent Vent System. The (b)(4) for SBM 1001 (b)(4) for SBM 1003 and (b)(4) for SBM 1005 include decontamination and dismantling of the centrifuges, components and other equipment. SBM 1003 and prorated SBM 1005 costs are (b)(4) The adjustments column reflects (b)(4) of decontamination and dismantling costs associated with LECTS components.
9. Obtained a letter from the Department of Energy confirming 2017 cost to deconvert and dispose of depleted uranium tails. Estimated the amount of depleted uranium produced through June, 2018 at approximately (b)(4) DU assuming operational tails assay in line with contractual obligations and operational planning. DOE has provided a 2017 disposal value for DUF6 of (b)(4) when converted equals (b)(4) DU. Additionally, the DOE has communicated that transportation from LES to the deconversion site is not included in the rate and a (b)(4) per kg rate (2015 dollars) has been added and inflated by (b)(4) to include inflation to 2017 dollars. The combined 2017 DOE rate plus transportation is (b)(4) per kg. The tails decommissioning value also includes a (b)(4) per kg DU contingency as specified by the settlement agreement with the State of New Mexico and has been excluded from the (b)(4) contingency.
10. Combined total for both decommissioning and tails disposition.
11. As communicated in the last submission, this update continues inclusion of overhead and profit margin for third parties in the rates embedded in the individual line items. The updated rates used in the estimate were based on (b)(4), third party US suppliers in 2009 or escalated using the Gross Domestic Product Implicit Price Deflator from 2002 to 2009 (i.e., (b)(4)) and the average Consumer Price Index (CPI-U) for 2009-April 2017 (an additional 13.98%).
12. (b)(4)  
(b)(4)
13. Supply costs include electricity, gas, water, and materials for decommissioning.

14. Laboratory costs are attributable to analysis of batch samples which are for aluminum only per Note 1 for Table 10.

15. Period dependent costs include management, insurance, taxes and other costs for the period beginning with the termination of operations of the CAB and Other Buildings, as well as SBM 1001, SBM 1003 and SBM 1005.

16. Transportation cost is an estimate to remove (b)(4) product cylinders from the LES site in the event of decommissioning. Based on current operational estimates, there will be a maximum of (b)(4) product cylinders onsite between 7/1/17 and 6/30/18. The assumed freight rate is (b)(4) based on a blended average of base transportation charge to fuel fabrication sites plus additional fuel and driver detention surcharges.

LES-17-00079-NRC

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(b)(4)

**Enclosure 3**  
**Surety Bond Rider**









LES-17-00079-NRC

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**Enclosure 4**  
**Draft** (b)(4) **Letter of Credit**



LES-17-00079-NRC

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**Enclosure 5**  
**Draft Amended Standby Trust Agreement**



**Schedule A**

**Costs of Decommissioning**

This Agreement demonstrates financial assurance for the following cost estimates or prescribed amounts for the following licensed activities:

<b>U.S. NUCLEAR REGULATORY COMMISSION LICENSE NO.</b>	<b>NAME AND ADDRESS OF LICENSEE</b>	<b>ADDRESS OF LICENSED ACTIVITY</b>	<b>COST ESTIMATES FOR REGULATORY ASSURANCE DEMONSTRATED BY THIS AGREEMENT</b>
SNM-2010	Louisiana Energy Services, LLC P.O. Box 1789 Eunice, NM 88231	URENCO USA formerly known as National Enrichment Facility located Five miles east of Eunice, New Mexico On Highway 176 in Lea County, New Mexico	(b)(4)

The cost estimates listed here were last adjusted as of XXXXX, 2017.

**Schedule B**

**Payments Constituting the Fund**

PROPERTY AND AMOUNTS (b)(4)

AS EVIDENCED BY (b)(4) Surety Bond No. (b)(4) in the amount of (b)(4) and (b)(4) LOC  
No. XXXX in the amount of (b)(4)



LES-17-00079-NRC

~~Proprietary Information~~  
~~Withhold under 10 CFR 2.390~~

**Enclosure 6**  
**Draft Certification of Financial Assurance**

## DRAFT CERTIFICATION OF FINANCIAL ASSURANCE

Principal: Louisiana Energy Services, LLC  
275 Highway 176  
P. O. Box 1789  
Eunice, NM 88231  
License Number SNM-2010

Issued to: U.S. Nuclear Regulatory Commission

I certify that Louisiana Energy Services, LLC is licensed to possess the following types of Source and/or Special Nuclear Material and/or By-product Material licensed under 10 CFR Parts 30, 31, 32, 33, 34, 35, 36, 39, 40 and 70 in the following types and amounts:

Type of Material	Amount of Material
Uranium (natural and depleted) and daughter products	(b)(4)
Uranium enriched in isotope U-235 and uranium daughters	
Americium-241 (sealed)	
Americium-241 (unsealed)	
Barium-133 (sealed)	
Californium-252 (sealed)	
Cesium-137 (sealed)	
Cesium-137 (unsealed)	
Cesium-139 (sealed)	
Cesium-139 (unsealed)	
Cobalt-60 (sealed)	
Cobalt-60 (unsealed)	
Europium-152 (sealed)	
Polonium-210 (sealed)	
Polonium-210 (unsealed)	
Strontium-90 (sealed)	
Strontium-90 (unsealed)	
Technetium-99	is
Technetium-99 (sealed)	
Thorium-230 (sealed)	
Thorium-230 (unsealed)	
Uranium-232 (sealed)	
Uranium-232 (unsealed)	
Uranium-233 (sealed)	
Uranium-233 (unsealed)	
Uranium-234 (sealed)	
Uranium-234 (unsealed)	
Uranium-235 (sealed)	
Uranium-235 (unsealed)	

Uranium-236 (sealed)	1.00 X 10 <sup>1</sup> µCi
Uranium-236 (unsealed)	1.00 X 10 <sup>1</sup> µCi
Uranium-238 (sealed)	1.00 X 10 <sup>1</sup> µCi
Uranium-238 (unsealed)	1.00 X 10 <sup>1</sup> µCi

I also certify that financial assurance in the amount of (b)(4) has been obtained for the purpose of decommissioning as prescribed by 10 CFR Part 70.

Stephen Cowne  
Chief Nuclear Officer and Compliance Manager


Corporate Seal and Date

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Withhold under 10 CFR 2.390

**Enclosure 7**  
**AFFIDAVIT**

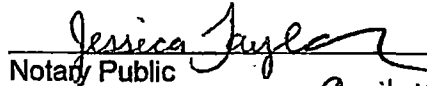
I, Stephen Cowne, Chief Nuclear Officer and Compliance Manager for Louisiana Energy Services, LLC (LES) at the URENCO USA Facility, make the following representations that to the best of my knowledge and belief:

1. LES wishes to have withheld from public disclosure the following documents:
  - Enclosures 1 through 6 to LES-17-00079-NRC – Annual Decommissioning Cost Estimate and Proposed Financial Assurance Instruments
2. The information contained in this correspondence and enclosures is proprietary information related to commercial and financial aspects of the URENCO USA Facility, including the business strategy of LES. LES requests that this information be exempt from disclosure pursuant to the provisions in 10 CFR Part 2.390(a)(4).
3. Public disclosure of the information in this submittal has the potential to result in substantial harm to the competitive position of LES, provide valuable business information to competitors of LES which they could duplicate without having to expend their own resources to develop, and reduce or foreclose the availability of profit opportunities.
4. The information stated in this affidavit has been submitted in accordance with the applicable parts of 10 CFR 2.390 and the guidance contained in NUREG-1556, Vol. 20, Appendix C.4.

  
Stephen Cowne  
Chief Nuclear Officer and Compliance Manager  
Louisiana Energy Services, LLC  
URENCO USA Facility

6/27/17  
Date

I certify the above named person appeared before me and executed this document on this 27<sup>th</sup> day of June, 2017.

  
Notary Public  
My commission expires: April 18, 2021

