NATIONAL ENRICHMENT FACILITY

10 CFR 30.6
10 CFR 40.5
10 CFR 70.5
10 CFR 2.390

December 30, 2005

NEF#05-035

ATTN: Document Control Desk
Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Louisiana Energy Services, L. P.
National Enrichment Facility
NRC Docket No. 70-3103

Subject: Response to NRC Request for Clarifications on LES Response to NRC Request for Additional Information on Depleted Uranium Disposition Costs and Application for Withholding Information from Public Disclosure

References:

1. Letter NEF#03-003 dated December 12, 2003, from E. J. Ferland (Louisiana Energy Services, L. P.) to Directors, Office of Nuclear Material Safety and Safeguards and the Division of Facilities and Security (NRC) regarding "Applications for a Material License Under 10 CFR 70, Domestic licensing of special nuclear material, 10 CFR 40, Domestic licensing of source material, and 10 CFR 30, Rules of general applicability to domestic licensing of byproduct material, and for a Facility Clearance Under 10 CFR 95, Facility security clearance and safeguarding of national security information and restricted data"

2. Letter NEF#04-002 dated February 27, 2004, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision 1 to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

3. Letter NEF#04-029 dated July 30, 2004, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

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4. Letter NEF#04-037 dated September 30, 2004, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

5. Letter NEF#05-021 dated April 22, 2005, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

6. Letter NEF#05-022 dated April 29, 2005, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

7. Letter NEF#05-025 dated May 25, 2005, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

8. Letter NEF#05-029 dated June 10, 2005, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Revision to Applications for a Material License Under 10 CFR 70, "Domestic licensing of special nuclear material," 10 CFR 40, "Domestic licensing of source material," and 10 CFR 30, "Rules of general applicability to domestic licensing of byproduct material"

9. Letter NEF#05-016 dated March 31, 2005, from R. M. Krich (Louisiana Energy Services, L. P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding " Clarifying Information Related to Depleted UF_6 Disposition Costs and Request for License Condition"

10. Letter NEF#05-028 dated June 6, 2005, from R. M. Krich (Louisiana Energy Services, L.P.) to Director, Office of Nuclear Material Safety and Safeguards (NRC) regarding "Transmittal of Department of Energy Report and Application for Withholding Information from Public Disclosure"

11. Letter dated June 27, 2005 from James W. Clifford (NRC) to Rod Krich (Louisiana Energy Services, L.P.) regarding "Approval of Louisiana Energy Services Request for Withholding Information from Public Disclosure

(Louisiana Energy Services Gas Centrifuge Uranium Enrichment Facility), docket no. 70-3103

12. Letter dated June 22, 2005 from Timothy C. Johnson (NRC) to Rod Krich (Louisiana Energy Services. L.P.) regarding "Louisiana Energy Services – Request for Additional Information on Depleted Uranium Disposition Costs", docket no. 70-3103

13. Letter NEF#05-030 dated August 12, 2005 from R.M.Krich (Louisiana Energy Services, L.P.) to Director, Office of Nuclear Safety and Safeguards (NRC) regarding "Response to NRC Request for Additional Information on Depleted Uranium Disposition Costs and Application for Withholding Information from Public Disclosure"

14. NRC Memorandum from Timothy C. Johnson to James W. Clifford dated September 23, 2005 regarding "August 31, 2005 Telephone Summary Louisiana Energy Services Discussions on Decommissioning Funding"

15. NRC Memorandum from Timothy C. Johnson to James W. Clifford dated November 18, 2005 regarding "November 16, 2005 Telephone Summary: Louisiana Energy Services Discussions on Decommissioning Funding"

By letter dated December 12, 2003 (Reference 1), E. J. Ferland of Louisiana Energy Services (LES), L. P., submitted to the NRC applications for the licenses necessary to authorize construction and operation of a gas centrifuge uranium enrichment facility. Revision 1 to these applications was submitted to the NRC by letter dated February 27, 2004 (Reference 2). Subsequent revisions (i.e., revision 2, revision 3, revision 4, revision 5, revision 6, and revision 7) to these applications were submitted to the NRC by letters dated July 30, 2004 (Reference 3), September 30, 2004 (Reference 4), April 22, 2005 (Reference 5), April 29, 2005 (Reference 6), May 25, 2005 (Reference 7), and June 10, 2005 (Reference 8), respectively. In response to an NRC request, the Reference 9 letter referred to and provided the March 1, 2005 letter from the U. S. Department of Energy (DOE), "Conversion and Disposal of Depleted Uranium Hexafluoride (DUF6) Generated by Louisiana Energy Services, LP (LES)," from Paul M. Golan (DOE) to Rod Krich (LES).

On May 31, 2005, the NRC conducted an in-office review of the information supporting the cost figures in the March 31, 2005 DOE letter. During this in-office review, the DOE agreed to provide the NRC with the report from its consultant LMI Government Consulting that supports the information in the March 31, 2005 DOE letter, "An Analysis of DOE's Cost to Dispose of DUF_6 (Depleted Uranium Hexafluoride)," report DE523T1, dated December 2004. Accordingly, this report was transmitted to the NRC by letter dated June 6, 2005 (Reference 10). The June 6, 2005 transmittal included an application to withhold from public disclosure the LMI report as confidential (i.e. proprietary) pursuant to 10 CFR 2.390. "Public inspections, exemptions, requests for withholding," paragraph (a)(4). This application was approved by the NRC as documented in its letter dated June 27, 2005 (Reference 11). Subsequently, NRC letter dated July 22, 2005 (Reference 12), transmitted an additional request for additional information or clarifications. The response to this request was submitted to the NRC by LES letter dated

August 12, 2005 (Reference 13). Subsequently, two telephone conferences were conducted on August 31, 2005 and November 16, 2005 during which further clarifications were requested (References 14 and 15). The clarifications requested are provided in the enclosure to this letter. The clarifications in the enclosure are related to the information in the proprietary LMI Report and are also considered proprietary. Therefore, we request that the enclosure be withheld from public disclosure. The affidavit supporting this request will be submitted at a later date.

If you have any questions or need additional information, please contact me at 630-657-2813.

Respectfully,

R. M. Krich
Vice President – Licensing, Safety, and Nuclear Engineering

Enclosure: Louisiana Energy Services, L.P. Response to the NRC Request Clarifications on LES Response to NRC Request for Additional Information on U.S. Department of Energy Depleted Uranium Disposition Cost Estimate (Proprietary)

cc: T.C. Johnson, NRC Project Manager

Enclosure

Louisiana Energy Services, L. P.
Response to the NRC Request for Clarifications on LES Response to NRC Request for Additional Information
on U.S. Department of Energy Depleted Uranium Disposition Cost Estimate (Proprietary)

Proprietary Information

Louisiana Energy Services, L. P.
Response to NRC Request for Clarifications on LES Response to NRC Request for Additional Information on U.S. Department of Energy Depleted Uranium Disposition Cost Estimate

Question: For RAI 2, NRC and ICF staff requested additional detail on the basis for the transportation and disposal costs. Specifically, the response to the RAI did not adequately document the source of the costs so they can be independently verified. It is unclear if the transportation costs include packing and loading and it is unclear if shipments from New Mexico to DOE consider that shipments from LES will be made in UF6 cylinders. Also, documentation for the disposal cost of CaF2 needs to be provided and LES should clarify if the disposal costs for U3O8 and CaF2 are assumed to be the same.

Response: The question addresses three different categories of transportation and disposal costs. The first category pertains to transportation and disposal of DU3O8 from both the Paducah and Portsmouth plants. These are reflected as components of the $1.45/kg DUF6 figure annual operations costs shown in Table 2-2 (Paducah) of the LMI report, and the $1.76/kg DUF6 figure shown in Table 2-5 (Portsmouth) of the same report. The $1.45/kg DUF6 figure is derived from the $26 million annual operations cost shown in Table 2-1. This annual cost includes all waste disposal activities ($6 million per year), including waste preparation, waste sampling and characterization, waste loading onto railcars, transportation via rail from Paducah to Envirocare of Utah, and final disposal of waste cylinders. Similarly, the $1.76/kg DUF6 figure in Table 2-5 is derived from the $23.8 million annual operations cost shown in Table 2-4. This annual cost includes $4.2 million per year for the same waste disposal activities at Portsmouth.

The source of the transportation and disposal costs for DU3O8 is the Operations Manager for UDS. During its review of the Performance Baseline for the DUF6 project in 2004, LMI spent time interviewing the Operations Manager about the Operations costs. These discussions included the basis and rationale for transportation and disposal of DU3O8 at Envirocare of Utah. The UDS Operations Manager stated he received budgetary transportation and disposal quotations from local railroads and Envirocare for preparation of the CD-2 baseline estimate.

The second category of the transportation and disposal question pertains to DUF6 transportation from New Mexico to the conversion facilities. LMI's rationale for DUF6 transportation costs was discussed in the previous response submittal, and is merely an interpolation of the transportation costs from Paducah to Envirocare based on mileage. LMI made no assumptions about packing and loading the DUF6 at the New Mexico plant.and estimate only the transportation costs; thus, the estimated costs assume fully loaded cylinders placed on railcars in New Mexico. LMI also made no assumptions about UF6 cylinders other than the cylinders should be similar to those used at Portsmouth and Paducah to transport DU3O8 to Envirocare (i.e., DOT 48Y cylinders). Table 2-2 in the LMI report shows a line item of $0.09/kg to transport DUF6 from New Mexico to

Paducah. As discussed in the previous response, this is based on an estimated $670,000 per year to transport 7400 MT DUF6 from New Mexico to Paducah. The similar line item in Table 2-5 is slightly higher due to slightly higher rail costs from New Mexico to Portsmouth.

The third category of the transportation and disposal question pertains to CaF2. Table 2-2 in the LMI report shows a line item of $0.37/kg DUF6 for the transport and disposal of the assumed contaminated by-product calcium fluoride(CaF2). The transportation and disposal costs for CaF2 are based on the UDS risk assessment prepared in 2004, and assume a worst-case scenario that CaF2 needs to be disposed as low level radioactive waste. Disposal unit costs are assumed similar between DU3O8 and CaF2.

A check verifies that the $0.37/kg DUF6 is valid. This is premised on total transportation and disposal costs of $11.5 million per year for CaF2, based on the UDS risk assessment. This cost also reflects total CaF2 by-product produced annually at both Paducah and Portsmouth. Since total DUF6 throughput at both plants is 31,500 MT/year, the $0.37/kg is obtained by dividing $11.5 million by 31,500 MT/year.

The same rationale follows for the $11.5 million CaF2 costs. According to the UDS Operations Manager, the Paducah plant will yield 22,000 MT CaF2 based on 18,000 MT DUF6, for a ratio of 1.22. This same ratio would apply at Portsmouth. Since unit transportation and disposal costs are similar between DU3O8 and CaF2, the waste activities associated with CaF2 can be approximated by multiplying the waste costs in Table 2-1 and 2-4 by 1.22. Thus, ($6 million + $4.2 million) x 1.22 =$12.4 million. This is good agreement with the $11.5 million predicted in the risk analysis.

Question: In the response for RAI 3, it is unclear why the FY08 costs had been de-escalated. NRC and ICF staff requested additional information on the rationale for this procedure. The response also indicated that the disposal activity line item includes waste sampling and characterization, waste preparation and loading into containers, loading containers onto railcars, and transportation and disposal at Envirocare. However, the only unit costs provided are the disposal fees. NRC and ICF staff requested that the other unit costs also be provided.

Response: The LMI estimate of Operations costs was based on the UDS CD-2 estimate of Operations costs. The UDS estimate was in escalated dollars, and LMI selected FY08 because that represents full, steady-state production. Since the LMI estimate was prepared in FY04 real dollars, we de-escalated the UDS estimate accordingly.

Tables 2-1 and 2-4 in the LMI report include a line item entitled "disposal activities," which encompasses all activities related to DU3O8 handling, preparation, loading, transportation, and disposal. The translation of the annual costs for each activity into unit costs was not necessary for our analysis; however, the following table may be helpful using Paducah as a base case.

Disposal Activity	Annual Cost, $M	$/kg*
Transportation	1.7	0.096
Disposal	3.6	0.20
Sampling & Characterization, Waste Preparation	0.7	0.039
Total	6.0	0.335

*Based on 18,000 MT per year DUF6.

Question: In the response for RAI 4, it is again unclear why the FY08 costs had been de-escalated. In addition, NRC and ICF staff requested that a citation for the referenced DOE guidelines for the escalation indices be provided.

Response: The LMI estimate of Operations costs was based on the UDS CD-2 estimate of Operations costs. The UDS estimate was in escalated dollars, and we selected FY08 because that represented full, steady-state production. Since the LMI estimate was prepared in FY04 real dollars, we de-escalated the UDS estimate.

The requested citation is http://oecm.energy.gov/Portals/2/2004Rates.pdf. This provides the escalation rate assumptions for DOE projects, updated January 2004. Since we are de-escalating the Operations costs, LMI used the factors shown in the column entitled "O&M." This citation may be accessed from the OECM website http://oecm.energy.gov, Special Interest Areas –Cost Engineering.

Question: For RAI 5, NRC and ICF staff requested clarification on whether there are any differences in the unit costs for transportation and disposal of UF6, U3O8, and CaF2, and an explanation for any differences. This data is needed to assist in independently checking the cost basis.

Response: LMI does not expect significant differences in the transportation and disposal unit costs among the three products. Please note that UF6 has no disposal costs. From Table 2-2 in the LMI report, CaF2 disposal (which captures all activities surrounding CaF2 – waste sampling, preparation, transportation, and disposal) is priced at $0.37/kg based on UDS cost estimate in its risk analysis. From a previous response in this submittal, the unit cost for DU3O8 disposal activities is $0.335/kg. The numbers are close, and certainly within the accuracy of this study.

Question: For RAI 8, ICF staff indicated that it was unable to duplicate the calculations for annual costs for decontamination and decommissioning NICC and ICF staff requested that the values be rechecked.

Response: The values given in the response to RAI 8 transmitted by the August 12, 2005 LES letter reflect average values over the range of scenarios presented in the LMI report. If "Scenario 2" in the LMI report is used to calculate the annual costs, using the equation in the response to RAI 8 with the figures F= $22,593,970, i = 3.5%, and n = 35 years, then A = $338,872/year. The annual through-put of 13,500,000 kg UF6 yields an

annual decontamination and decommissioning (D&D) cost of about $0.03/kg UF6 ($0.044/kg U) instead of the average values of $0.04/kg UF6 ($0.06/kg U) given in the August 12, 2005 response to RAI 8. Accordingly, the annual D&D cost given in Table 2-5 of the LMI report, $0.18/kg UF6, is overestimated by about $0.15/kg UF6 ($0.22/kgU).

Question: For RAI 10, NRC and ICF staff requested that LES provide the source for the statement that a 20 percent contingency factor was included in the construction cost estimate for the DOE facility.

Response: The 20 percent contingency included in the construction cost estimate is in error. The LMI construction cost estimate is based on the UDS CD-2 cost estimate, which includes a contingency of about 15 percent.

Question: What approach was used for dealing with empty cylinders? What are the costs for cylinder washing?

Response: Empty cylinders are re-used at the deconversion facilities to load byproduct U3O8 for eventual shipment and disposal at Envirocare. There is an almost 1:1 correspondence between empty DUF6 cylinders and loaded U3O8 cylinders.

According to the UDS Operations Manager, there is no cylinder washing. There is a stabilization process whereby liquid KOH solution is put inside empty DUF6 cylinders to stabilize residual heel material (small quantities of UF6, technicium, and thorium). The cylinder is then placed back in the yard to decay for 30-60 days prior to being loaded with U3O8. The Operations Manager states this operation has minimal cost, and is captured under a cylinder stabilization activity within the normal plant operations costs.

Question: What density was used for U3O8, and how was this used in the calculations?

Response: According to UDS, using Paducah as a reference case:

Total DUF6 throughput = 18,000 MT/year
Total U3O8 byproduct = 14,300 MT/year
Total U3O8 waste volume = 210,000 cf/year
Therefore, density U3O8 = 68 kg/cf (~150 lb/cf)

Total waste volume shipped to Envirocare = approx. 214,000 cf/year (includes cylinders)

The density does not come into play for purposes of the estimate. Disposal costs are based on volume of material disposed, and this is based on the cylinders, which are 4' diameter by 12' long. Therefore, each cylinder represents about 150 cf. Simple math shows that it will take about 1400 cylinders to transport the expected annual volume of U3O8 from the Paducah facility.

The disposal cost ($16.87/cf) multiplied by 214,000 cf/year yields an annual disposal cost for Paducah of $3.6 million, which when divided by the annual throughput of 18,000 MT/year yields a unit cost of $0.20/kg DUF6 (see response above to RAI 3).

Question: What are the costs for debt service?

Response: UDS will bill DOE for its costs, and DOE pays UDS within 30 days.