

October 11, 2005

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
LOUISIANA ENERGY SERVICES, L.P.	)	Docket No. 70-3103
	)	
(National Enrichment Facility)	)	ASLBP No. 04-826-01-ML

NRC STAFF REBUTTAL TESTIMONY REGARDING DECONVERSION

- Q.1. Please state your name, occupation and by whom you are employed.
- A.1. (TJ) Timothy C. Johnson. I am the U.S. Nuclear Regulatory Commission (NRC) Project Manager overseeing the licensing of the proposed Louisiana Energy Services, L.P. (LES) uranium enrichment facility near Eunice, New Mexico. I have been the PM for the project since its inception in January 2002, when LES initiated discussion with NRC for the project.
- A.1. (JP) James Park. I am the NRC Project Manager for the environmental review of the application for construction and operation of the proposed uranium enrichment facility submitted by LES.
- A.1. (DP) Donald E. Palmrose, Ph.D. I am employed by Advanced Systems Technology and Management Incorporated. I am providing this testimony under a technical assistance contract with the NRC.
- A.1. (JM) Jennifer Mayer. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.
- A.1. (CD) Craig Dean. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

Q.2. Have you previously submitted testimony in this proceeding?

A.2. (TJ, JP, DP, JM, CD) Yes, we provided pre-filed direct testimony in this proceeding on September 15, 2005, on behalf of the NRC Staff. In that testimony, we described our individual responsibilities related to the NRC Staff's review of the application by Louisiana Energy Services, L.P. (LES) to construct and operate a uranium enrichment facility in Lea County, New Mexico, to known as the National Enrichment Facility (NEF). Statements of our professional qualifications were attached to that testimony.

Q.3. What was the purpose of your previous testimony?

A.3. (TJ, JP, DP, JM, CD) The purpose of our pre-filed direct testimony was to provide the NRC Staff's views concerning the admitted contentions regarding the plausibility and cost of LES's proposal to deconvert the depleted uranium hexafluoride ( $\text{DUF}_6$ ) produced by the enrichment process to triuranium oxide ( $\text{U}_3\text{O}_8$ ) for disposal.

Q.4. What is the purpose of this testimony?

A.4. (TJ, JM, CD) To provide our views on NIRS/PC's pre-filed testimony of Dr. Arjun Makhijani regarding deconversion.

Q.5. Have you read the direct pre-filed testimony of Dr. Makhijani regarding deconversion? If so, please state your opinion of the testimony.

A.5. (TJ, JM, CD) Yes we have. First, we disagree with Dr. Makhijani's conclusion that LES's estimate of \$2.67 per kgU is not credible because it is less than the cost Urenco is paying for conversion at the Pierrelatte plant in France, or 3 euros per kgU. There are a number of reasons that the cost to LES to construct and operate a deconversion facility could differ from those for the Pierrelatte plant. However, there is no basis on which to make a comparison between the two because the only information which has been provided by Dr. Makhijani is the price Urenco is paying for deconversion. It is not possible to determine the cost of building, licensing or operating a deconversion plant

from the price being charged to a customer. Thus, there is no way to assess the reliability of Dr. Makhijani's assumption that the price charged to Urenco would be equivalent to the costs LES would incur to deconvert  $UF_6$  at a facility constructed and operated in the United States. Absent such information, we believe that the basis for the Pierrelatte price is insufficiently documented to determine a cost estimate for the cost of deconversion.

In contrast, LES has estimated the specific cost elements of construction and operation by using the costs documented in a recent business study developed by Urenco for a proposed deconversion facility to be built in Capenhurst. In addition, LES has accounted for anticipated differences between that facility and the one proposed for LES by adjusting the costs to account for the larger scale of the LES facility and including the costs of "Americanization" to account for matters such as the different regulatory structure in the United States. In our view, this process results in a more realistic and supportable cost estimate than simply assuming that the cost Urenco is paying for deconversion in France would be identical to that LES would be expected to pay in the United States.

Q.6. What is your opinion of Dr. Makhijani's testimony regarding the impact of the cost of neutralization of hydrofluoric acid (HF) produced by the deconversion process?

A.6. (TJ, JM, CD) We disagree with Dr. Makhijani's claim that the LES cost estimate does not account for the cost of neutralization of the HF. Dr. Makhijani states that the Pierrelatte plant currently reuses or sells the HF produced by the deconversion process and reuse or sale of HF is also assumed for the proposed Capenhurst facility. LES, on the other hand, proposes to neutralize the HF produced to produce  $CaF_2$  for disposal. Dr. Makhijani claims that this neutralization step has not been accounted for in LES's cost estimate and the estimated cost of deconversion is therefore too low.

We disagree. First, Dr. Makhijani overlooks the fact that when the HF is sold on the open market it results in revenues to the deconversion facility which offset the costs of the facility. Because LES is not proposing to sell HF, it is not accounting for any revenues in its cost estimate. In addition, LES has explained that in order to sell HF a deconversion facility must incur additional costs for equipment to store the product before commercial sale. LES did not include any additional costs to account for neutralization to the costs obtained from the Urenco business study because these costs would be offset by the elimination of equipment for storing HF prior to commercial sale. Staff exhibit 39. Thus, Dr. Makhijani is not correct in stating that this difference has not been taken into account. With regard to the notation in the Urenco business study that the effective provision would be increased, LES Exhibit 91 at 9/15, it is our understanding that this refers to the cost of adding the cost of neutralization to the capacity to store HF for sale; in other words, maintaining both process lines rather than just one.

Q.7. What about Dr. Makhijani's claim that the cost of HF neutralization is significantly higher than the cost of selling HF?

A.7. (TJ, JM, CD) This claim is not supported by the evidence cited. Dr. Makhijani relies upon a statement in the 1997 cost analysis report for long-term management of depleted uranium hexafluoride prepared by the Lawrence Livermore National Laboratory for the Department of Energy (LLNL report) that "neutralization of HF produced by conversion processes results in higher estimated costs than production and sale of AHF." NIRS Exhibit 56 at p 49. However, the quoted conclusion summarizes the result after both costs and revenues are considered. The difference Dr. Makijani points to primarily reflects the fact that if AHF is not sold, there will be a loss of revenue and therefore a higher cost to the company. In fact, an examination of the costs in the LLNL

report indicate that when revenues from byproduct sales are removed, the cost associated with anhydrous HF production is nearly the same as the cost of HF neutralization. NIRS Exhibit 56, Table 4.8, p 52. As shown in the relevant portions of that Table reproduced below, there is less than a three percent disagreement between these two costs.

	AHF production	HF Neutralization
Cost with Byproduct Sales (\$)	266,950,000	325,230,000
Byproduct Sales Credit (\$)	77,320,000	11,020,000
Cost without Byproduct Sales Credit (\$)	344,270,000	336,250,000

Q.8. What about Dr. Makhijani's claim that the  $\text{CaF}_2$  produced by the deconversion process must be disposed of at a low-level waste facility because the option of using a landfill was not evaluated in the Staff's Environmental Impact Statement?

A.8. (TJ, JP, DP) It is our understanding that the adequacy of the Staff's environmental review is not at issue here so we will not address the details of how our environmental review was conducted. However, as a general matter the Staff's review under NEPA is only to assess the environmental impacts of the proposed action. While the Staff makes assumptions in the course of its review, many of which are for the purpose of ensuring that the most conservative review is conducted, it does not make decisions as to how the proposed action will be carried out. Thus, Dr. Makhijani is wrong in claiming that the Staff has determined the only acceptable method of disposal because the Staff does not make disposal decisions for applicants or other entities.

Q.9. Does this conclude your testimony?

A.9. (TJ, JP, DP, JM, CD) Yes.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF REBUTTAL TESTIMONY REGARDING DECONVERSION" in the above-captioned proceedings have been served on the following by deposit in the United States mail; through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (\*), and by electronic mail as indicated by a double asterisk (\*\*) on this 11<sup>th</sup> day of October, 2005.

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**Louisiana Energy Services, L.P., Docket No. 70-3103-ML**  
**October 2005 Evidentiary Hearing on Contested Issues**  
**Hearing Exhibits**

<b>Party Exh. #</b>	<b>Witness/ Panel</b>	<b>Description</b>
Staff 36	Deconversion	NUREG-1790, "Final Environmental Impact Statement for the Proposed National Enrichment Facility in Lea County, New Mexico" (June 2005), Chapters 2 and 4 ("Alternatives" and "Environmental Impacts")
Staff 37	Deconversion	NUREG-1827, "Safety Evaluation Report for the National Enrichment Facility in Lea County, New Mexico" (June 2005), Chapter 10 ("Decommissioning")
LES 82	Deconversion	NUREG-1757, "Consolidated NMSS Decommissioning Guidance" (Sept. 2003), Volume 3 ("Financial Assurance, Recordkeeping, and Timeliness"), pp. iii, 4-1 to 4-11, A-25 to A-30
Staff 38	Deconversion	NUREG/CR-6477, "Revised Analyses of Decommissioning Reference Non-Fuel-Cycle Facilities" (Jul. 1998)
LES 83	Deconversion	National Enrichment Facility Safety Analysis Report, Chapter 10 ("Decommissioning") (most current version)
Staff 39	Deconversion	In-Office Review Summary: LES Decommissioning Fund (April 19, 2005)
LES 97	Deconversion	E-mail from Rod Krich (LES) to James Curtiss (Winston & Strawn LLP) (Nov. 21, 2004), with Attachment, "CaF <sub>2</sub> Disposal Option, prepared by George Harper, Framatome-ANP (Nov. 19, 2004)
Staff 40	Deconversion	Letter from Robert C. Pierson, NRC, to Robert A. Williams, Westinghouse Electric Corp., "Subject: Renewal," (Nov. 3, 1995), enclosing "Safety Evaluation Report for the Renewal of Special Nuclear Material License SNM-1107 for the Westinghouse Electric Corporation Columbia Fuel Fabrication Facility, Columbia, South Carolina" (Sept. 1995) (excerpt).



Party Exh. #	Witness/ Panel	Description
Staff 41	Deconversion	Letter from Robert C. Pierson, NRC, to L.J. Maas, Siemens Power Corporation, "Subject: Renewal," (Nov. 15, 1996), enclosing "Safety Evaluation Report for the Renewal of Special Nuclear Material License SNM-1227 for the Siemens Power Corporation Richland Engineering and Manufacturing Facility, Richland, Washington" (Nov. 1996) (excerpt).
Staff 42	Deconversion	Letter from Michael F. Weber, NRC, to Ralph Reda, "Subject: Safety Evaluation Report: Application dated September 19, 1997, Changes to Table 6.0 for the DCP HF Effluent Recovery and Storage Facility," (Sept. 26, 1997), enclosing "Safety Evaluation Report for the Renewal of Special Nuclear Material License SNM-1097 for the General Electric Company, Nuclear Energy Production, Wilmington, North Carolina" (June 1997) (excerpt).
LES 77	Deconversion	Letter from V. Autry, Director of Division of Waste Management, Bureau of Land and Waste Management, South Carolina Department of Health and Environmental Control, to L. Garner, Regulatory Affairs Coordinator, Starmet CMI (Apr. 1, 1999)
LES 78	Deconversion	Letter from V. Autry, Director of Division of Waste Management, Bureau of Land and Waste Management, South Carolina Department of Health and Environmental Control, to L. Garner, Regulatory Affairs Coordinator, Starmet CMI (June 17, 1999)
LES 76	Deconversion	Slide, AREVA-COGEMA, "Defluorination of Depleted UF <sub>6</sub> – The W defluorination facility" (Sept. 26 2004)
LES 98	Transportation	E-mail from Rod Fisk (Transportation Logistics International, Inc.) to Rod Krich (LES) (Dec. 2, 2004) <b>[PROPRIETARY]</b>
LES 99	Transportation	E-mail from Rod Fisk (Transportation Logistics International, Inc.) to Rod Krich (LES) (Mar. 23, 2005)
LES 109	Disposal	Section 4.13 of the NEF Environmental Report, "Waste Management Impacts" (most current revision)(nonproprietary)
LES 103	Disposal	Letter from Al Rafati (Envirocare of Utah, LLC) to E. James Ferland (LES) (February 3, 2005)

Party Exh. #	Witness/ Panel	Description
LES 104	Disposal	Memorandum from Matthew Blevins (NRC) to Scott Flanders (NRC), "Subject: Telephone Summary Regarding Depleted Uranium Disposal", with attached Telephone Summary (Apr. 6, 2005)
LES 105	Disposal	Memorandum of Agreement Between Louisiana Energy Services, L.P. and Waste Control Specialists, LLC" (Jan. 14, 2005) <b>[PROPRIETARY]</b>
Staff 43	Disposal	STP-04-003, "NRC Process to Identify Decommissioning Sites with Inadequate Funding for Remediation" (Jan. 2004)
LES 91	Rebuttal Deconversion	Urenco Business Study (Aug. 26, 2004) <b>[PROPRIETARY]</b>
NIRS 56	Rebuttal Deconversion	Hatem Elayat, Julie Zoler, Lisa Szytel. "Cost Analysis Report for the Long-Term Management of Depleted Uranium Hexafluoride," UCRL-AC-127650, Livermore, CA: Lawrence Livermore National Laboratory, May 1997.
LES 16	Rebuttal Disposal	"Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site" (DOE/EIS-0360), Vol. 1
LES 17	Rebuttal Disposal	"Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky Site" (DOE-EIS-0359), Vol. 1
NIRS 109	Rebuttal Disposal	US EPA, "Waste Characterization Program Documents Applicable to Transuranic Radioactive Waste From the Hanford Site for Disposal at the Waste Isolation Pilot Plant," <i>available at</i> <a href="http://www.epa.gov/fedrgstr/EPA-WASTE/2001/November/Day-27/f29545.htm">http://www.epa.gov/fedrgstr/EPA-WASTE/2001/November/Day-27/f29545.htm</a>
LES 101	Rebuttal Disposal	10 CFR 71, "Licensing Requirements for Land Disposal of Radioactive Waste" (2005)
NIRS 169	Rebuttal Disposal	NUREG-0945, Vol. 1, "Draft Environmental Impact Assessment on 10 CFR 61, 'Licensing Requirements for Land Disposal of Radioactive Waste,'" App. G-Q (Sept. 1981)

Party Exh. #	Witness/ Panel	Description
Staff 44	Rebuttal Disposal	Letter from Dane Finerfrock, State of Utah, Department of Environmental Quality, to Paul Lohaus, NRC, "Subject: Possession Limits of Calibration Source" (Sept. 19, 2005)
Staff 45	Rebuttal Disposal	R.D. Baird, et al., "Evaluation of the Potential Public Health Impacts Associated with Radioactive Waste Disposal at a Site Near Clive, Utah (June 1990)