

September 8, 2004

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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

NRC STAFF BRIEF ON CLASSIFICATION OF
DEPLETED URANIUM AS WASTE

INTRODUCTION

Pursuant to the Commission's Order of August 18, 2004,¹ the Nuclear Regulatory Commission Staff ("Staff") hereby files its brief addressing the issue raised in a contention submitted by Nuclear Information and Resource Service and Public Citizen ("NIRS/PC") concerning the appropriate classification of depleted uranium tails produced by the proposed enrichment facility to be constructed and operated by Louisiana Energy Services ("LES"). As discussed below, the Staff submits that, contrary to NIRS/PC's contention, the DU meets the definition of low-level waste as provided in 10 C.F.R. § 61.2 and, additionally, meets the criteria for Class A waste pursuant to 10 C.F.R. § 61.55(a)(6).²

¹ *Louisiana Energy Services, L.P.*, (National Enrichment Facility), CLI-04-25, 60 NRC ____, (August 18, 2004).

² On September 3, 1994, the New Mexico Attorney General filed before the Commission "New Mexico Attorney General's Motion for Leave to File a Late-Filed Contention" and "New Mexico Attorney General's Brief in Response to Commission's Order on NIRS/PC Contention D and Attorney General's Late-Filed Contention." In those filings, the Attorney General seeks admission of a late-filed contention relating to the appropriate waste classification of DU. These filings misinterpret the Commission's direction, which was to file briefs on the contention already admitted in this proceeding, and therefore should not be considered by the Commission. The appropriate venue to seek admission of late-filed contentions is the Licensing Board, not the Commission.

BACKGROUND

This proceeding was initiated by the application by LES to construct and operate a uranium enrichment facility in Lea County, New Mexico. The enrichment facility proposed by LES will utilize a centrifuge process to produce an enriched product which, in turn, will be used to fabricate fuel for nuclear reactors. A byproduct of the enrichment process is depleted uranium in the form of DUF_6 which must be stored and/or disposed of.³

Following receipt and docketing of the application by LES to construct and operate the proposed enrichment facility, the Commission published an Order noticing the hearing to be conducted pursuant to the Atomic Energy Act. In that Order, the Commission, among other matters, provided guidance with respect to certain issues, including the disposition of DU.⁴ Specifically, when discussing environmental issues, the Commission said the following:

As to the treatment of the disposition of depleted uranium hexafluoride tails (depleted tails) in these environmental documents, unless LES demonstrates a use for the uranium in the depleted tails as a potential resource, the depleted tails may be considered waste. In addition, if such waste meets the definition of "waste" in 10 CFR 61.2, the depleted tails are to be considered low-level radioactive waste within the meaning of 10 CFR Part 61 in which case an approach by LES to transfer to DOE for disposal by DOE of LES' depleted tails pursuant to Section 3113 of the USEC Privatization Act constitutes a "plausible strategy" for dispositioning the LES depleted tails. The NRC staff may consider the DOE EIS is preparing the staff's EIS. Alternatives for the disposition of depleted uranium tails will need to be addressed in these documents. As part of the licensing process, LES must also address the health, safety, and security issues associated with the storage of depleted uranium tails on site pending removal of the tails from the site for disposal or DOE dispositioning.

Id. at 5877.

³ See Draft Environmental Impact Statement for the Proposed National Enrichment Facility in Lea County, New Mexico, NUREG-1790, September, 2004, at 2-15 to 2-16, 2-27.

⁴ "Notice of Receipt of Application For License; Notice of Availability of Applicant's Environmental Report; Notice of Consideration of Issuance of License; And Notice of Hearing and Commission Hearing and Commission Order," CLI-04-03, 69 Fed. Reg. 5873 (February 6, 2004).

Three petitioners sought to intervene in the hearing: the New Mexico Environmental Department ("NMED"), the New Mexico Attorney General ("NMAG") and the Nuclear Resource and Information Service and Public Citizen ("NIRS/PC"). By Order issued July 19, 2004, the Atomic Safety and Licensing Board (Board) designated in this proceeding granted each of the petitions and admitted certain contentions; others were referred to the Commission.⁵ Of relevance here, the Board, pursuant to 10 C.F.R. § 2.323(f), referred to the Commission the following basis for contention "NIRS/PC EC-3/TC-1 -- Depleted Uranium Hexafluoride Storage and Disposal":

Petitioners contend that Louisiana Energy Services, L.P., (LES) does not have a sound, reliable, or plausible strategy for private sector disposal of the large amounts of radioactive and hazardous Depleted Uranium Hexafluoride ("DUF₆") waste that the operation of the plant would produce in that: . . .

- (C) The disposition of depleted uranium must be addressed based on the radiological hazards of this material that require that it be disposed of in a deep geological repository.

Contention Order at Appendix A, p. 41. The Commission, in an Order issued on August 18, 2004, agreed to review the waste classification issue presented, noting that the Board had considered it a novel legal or policy question.⁶ Specifically, the Commission stated that it would accept consideration of the contention that DU does not meet the Part 61 definition of low-level radioactive waste, and therefore would not be suitable for transfer to DOE under the USEC Privatization Act. *Id.* at 5. In doing so, the Commission noted that there appeared to be some confusion regarding its original hearing notice with regard to this issue, and directed the parties to file briefs. *Id.* at 6.

DISCUSSION

As reflected above, the Commission, as a threshold matter, has already determined that if the DU produced by the enrichment facility meets the definition of "waste" in 10 C.F.R. § 61.2,

⁵ *Memorandum and Order* (Rulings Regarding Standing, Contentions, and Procedural/Administrative Matters), LBP-04-14 ("Contention Order").

⁶ *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-04-25, 60 NRC ___, slip op. at 4-5 (2004).

the tails are to be considered low-level radioactive waste within the meaning of 10 C.F.R. Part 61, in which case transfer to DOE for dispositioning pursuant to the USEC Privatization Act is plausible. Accordingly, the narrow issue for consideration here is whether DU meets the definition of "waste" in 10 C.F.R. § 61.2, which provides:

Waste means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level waste has the same meaning as in the Low-level Waste Policy Act; that is, radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the Atomic Energy Act (uranium or thorium tailings and waste).

Notwithstanding this definition, NIRS/PC argues that it is inappropriate to conclude that DU is "waste" because it cannot be classified as high-level radioactive waste, transuranic waste, spent nuclear fuel or byproduct material, and remarking further that the classification is to be made by the NRC, not LES.⁷ NIRS/PC further argues that DU should be considered Greater than Class C waste, arguing that the regulations do not appropriately classify this particular material. *Id.* at 29 - 31. As discussed below, both of these arguments should be rejected as impermissible attacks on the Commission's Order and regulations. Except for limited circumstances that NIRS/PC has failed to establish exist here, no rule or regulation of the Commission may be challenged in an adjudicatory proceeding, 10 C.F.R. § 2.335⁸; *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 218, (2003).

Notably, NIRS/PC is not arguing that the regulations which are the subject of the contention - 10 C.F.R. §§ 61.2 and 61.55 - are inapplicable to DU or even that their conclusions are consistent with the regulatory language of those provisions. Rather, they take issue with the

⁷ "Petition to Intervene by Nuclear Information and Resource Service and Public Citizen" April 6, 2004 ("NIRS/PC Petition"), at 28.

⁸ 10 C.F.R. § 2.335(b) provides that a party may petition that application of a rule or regulation be waived on the grounds that due to special circumstances its application would not serve the purposes for which it was adopted.

application of those regulations in this proceeding because they lead to the classification of DU as Class A low level radioactive waste. Further, NIRS/PC attempts to argue for a different application of the criteria than used in the regulation. Arguments such as these, which, without substantial justification of special circumstances, allege that a regulation should be based on a fundamentally different standard or regulatory approach, must be rejected. *See Metropolitan Edison Co. (Three Mile Island Nuclear Power Station, Unit No. 1)*, LBP-83-76, 18 NRC 1266, 1273 (1983).

I. DU is Low-Level Waste as Defined in 10 C.F.R. § 61.2

NIRS/PC argues that LES inappropriately concluded that DU should be considered low-level waste by excluding the other classifications listed in the definition in 10 C.F.R. § 61.2, namely, high-level waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the AEA. As noted above, the Commission defines "waste" in § 61.2, as low-level radioactive waste containing material that is acceptable for disposal in a land disposal facility. Further, the definition provides that low-level waste has the same meaning as in the Low-Level Waste Policy Act, that is, radioactive waste that is not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in the Atomic Energy Act. LES addressed the question of whether DU meets the definition of "waste" in the National Enrichment Facility Environmental Report ("ER") at 4.13 - 6 to 7.

As LES states in the Environmental Report, the DU is obviously not spent nuclear fuel, which is fuel that has been removed from a reactor. ER at 4.13-7; *see also* Staff Affidavit, attached hereto as Staff Exhibit at ¶10. Additionally, it is not high-level waste, which is defined in 10 C.F.R. § 60.2 as (1) irradiated reactor fuel, (2) liquid wastes resulting from reprocessing irradiated reactor fuel, or (3) solids into which such wastes are converted. *Id.* Further, it is not transuranic waste because transuranics are artificially-made radioactive elements with atomic numbers higher than uranium, while the only product from the enrichment process utilized by LES will be uranium and uranium isotopes. *Id.* Finally, it is not byproduct material, which is defined in Section 11e(2) of

the Atomic Energy Act as the tailings produced from the extraction of uranium ore from rock. *Id.* Accordingly, LES demonstrated that DU is properly considered low-level waste within the meaning of 10 C.F.R. Part 61.

In support of its contention challenging this definition, NIRS/PC first makes the argument that this determination must ultimately be made by the NRC, not LES. NIRS/PC Petition at 28. Certainly that is the case, and any decision now made by the Commission will be dispositive. This does not mean, however, that LES misapplied the definition or it was inappropriate for LES to have suggested that classification in the first instance. Indeed, NIRS/PC does not point to any flaw in the demonstration made by LES. Rather, they complain that the definition is met by exclusion; *i.e.*, because DU is not high-level waste, transuranic waste, spent nuclear fuel or byproduct material it is low-level waste. However, this definition is established by the terms of the regulation itself which provides that low level waste is "radioactive waste *not classified* as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the Atomic Energy Act" (emphasis added). *Id.* at 28 - 29; *see* 10 C.F.R. § 61.2. NIRS/PC's complaint regarding the structure of the definition is not an appropriate subject for this adjudication.

II. DU is Class A Waste Under 10 C.F.R. § 61.55

NIRS/PC makes the additional argument that the DU should be considered Greater than Class C waste, and therefore is unacceptable for near surface disposal under the provisions of 10 C.F.R. § 61.55(3)(iii) and (iv). NIRS/PC Petition at 29 - 31. While conceding that the terms of the regulation do not provide for such a classification, NIRS/PC essentially argues that an interpretation contrary to the terms of the regulation should be imposed. Again, this adjudication is not the appropriate forum to challenge the fundamental structure of a Commission regulation.

Section 61.55 of the Commission's regulations sets forth the means to classify waste for near-surface disposal. As set forth in 10 C.F.R. § 61.55(a)(1), this is done based on two considerations. First, consideration is given to the concentration of long-lived radionuclides and their

precursors whose potential hazard will persist after precautions have ceased to be effective. Secondly, consideration is given to the concentration of shorter-lived radionuclides for which precautions are effective.

Under § 61.55(a)(2), waste is classified as A, B, C depending on the concentrations of radionuclides, with class A exhibiting the lowest concentrations. Staff Affidavit at ¶6. Waste which exceeds class C is classified as generally not acceptable for near-surface disposal (Greater than Class C waste). *Id.* In order to determine the appropriate classification, the regulation sets forth two Tables which identify radionuclides and concentrations, and then specifies how wastes are to be classified depending on their presence and concentration. *Id.* at ¶ 7. The section relevant to DU is § 61.55(a)(6) which states, "Classification of wastes with radionuclides other than those listed in Tables 1 and 2. If radioactive waste does not contain any nuclides listed in either Table 1 or 2, it is Class A." Because the only radionuclide in the feed material is uranium, and none will be created or added during the enrichment process, only uranium and its decay products will be present in the DU. As explained in the Staff affidavit at ¶¶ 7-9, neither uranium nor any of its decay products are listed in Table 1 or 2.

In contrast, the regulatory sections cited by NIRS/PC do not apply to the DU material. Specifically, 10 C.F.R. §§ 61.55(a)(3)(iii) and (iv) both apply only to situations in which the waste contains radionuclides listed in Table 1. NIRS/PC does not claim that DU will contain those radionuclides, but instead argues that the isotopes in DU should be treated the same way because they have some similar characteristics. NIRS/PC Petition at 30. However, the Commission has also made it clear that when a waste does not contain the radionuclides in Table 1, it should be considered Class A waste. 10 C.F.R. § 61.55(a)(6). Their argument, therefore, is plainly an attack on the plain meaning of the regulation and should be rejected on that basis.

CONCLUSION

For the reasons discussed above, the Staff submits that the DU produced by the LES enrichment facility meets the definition of low-level waste as provided in 10 C.F.R. § 61.2, and is appropriately classified as Class A waste pursuant to 10 C.F.R. § 61.55(a)(6).

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lisa Clark", written in a cursive style.

Lisa B. Clark
Counsel for NRC Staff

Dated at Rockville, Maryland
this 8th day of September, 2004

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of)	
)	
LOUISIANA ENERGY SERVICES. L.P.)	Docket No. 070-03103
)	
(National Enrichment Facility))	

AFFIDAVIT OF TIMOTHY C. JOHNSON

I, Timothy C. Johnson, being duly sworn, declare as follows:

1. I am competent to make this affidavit, and the statements herein are true and correct to the best of my knowledge, information, and belief. The opinions expressed herein are based on my best professional judgment.

2. I am the U.S. Nuclear Regulatory Commission (NRC) Project Manager (PM) 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 of 2002, when LES initiated discussions with NRC for the project. As PM, I have evaluated the application for construction and operation of the proposed facility submitted by LES on December 12, 2003 (ML040020261), Revision 1 submitted on February 27, 2004 (ML040750526), and Revision 2 submitted July 30, 2004 (ML042190019).

3. My professional qualifications are presented in Attachment A.

4. The purpose of this affidavit is to address the issue of whether the depleted uranium tails from a uranium enrichment facility meets the definition of low-level radioactive waste as set forth in 10 C.F.R. Part 61.

5. Part 61 of the Commission regulations sets forth the terms and conditions for the disposal of low-level radioactive waste. Part 61 contains general procedural requirements and performance objectives for land disposal of these wastes. Part 61 also contains technical requirements for near-surface disposal of radioactive waste, that is, disposal in the upper, approximately 30 meters of the Earth's surface. The technical requirements for near-surface disposal include requirements for site suitability, disposal site design, site operations, environmental monitoring, waste classification, waste form, and institutional requirements.

6. The method of disposal that is appropriate for a particular type of waste is determined, initially, by the classification of the waste. For wastes generally suitable for near-surface disposal, there are three classifications. The first is Class A waste, which is the lowest activity waste suitable for near-surface disposal. Because of the low hazard of these materials, Class A waste can be disposed of if it meets the minimum waste form requirements. Minimum waste form requirements include minimizing the amount of free standing liquids not to exceed one percent of the volume; no explosive or reactive materials; and no pyrophoric, toxic, pathogenic, or infectious materials. Class B waste contains radioactivity levels greater than Class A waste, and because of the higher relative hazard, Class B waste must meet the waste form requirements regarding stability. Class C waste is the highest activity waste generally suitable for near-surface disposal. Class C waste must meet the stability requirements and be disposed of with an intruder barrier. An intruder barrier is intended to prevent direct contact of the waste by an inadvertent intruder after institutional control over the disposal site is assumed to be lost. Low-level radioactive waste that exceeds the Class C limits are referred to as Greater Than Class C (GTCC) waste and are generally unsuitable for near-surface disposal. Under 10 C.F.R. § 61.58, however, the Commission may authorize other provisions for the classification and characteristics of waste on a case-specific basis, if, after evaluation of the specific characteristics of the waste, disposal site,

and method of disposal, it finds reasonable assurance of compliance with the performance objectives of 10 C.F.R. Part 61, Subpart C.

7. The classification of depleted uranium as waste depends on its characteristics as defined by 10 C.F.R. § 61.55. Under 10 C.F.R. 61.55, classification of waste depends on the types of radionuclides present in the waste and their concentrations. Radionuclides of concern in determining classification are set forth in Tables 1 and 2. When a waste does not contain any of those radionuclides, under section 61.55(a)(6), it is considered to be Class A.

8. Feed to a uranium enrichment plant is natural uranium consisting of about 99.27 percent by weight U-238, 0.72 percent by weight U-235, and 0.006 percent by weight U-234. The enrichment process utilized by LES will enrich the U-235 concentration in natural uranium using the gas centrifuge process. The enriched uranium is used for fabrication of fuel for nuclear reactors. In addition, depleted uranium containing a lower fraction of U-235 than was present in the feed material is also produced. This is called "depleted uranium tails" and has a concentration of U-235 of about 0.2 to 0.3 weight percent. Depleted uranium also contains about 99.8 percent by weight U-238 and 0.001 percent by weight U-234.

9. Depending on the age of the uranium, depleted uranium will also have decay products of various isotopes of thorium, protactinium, actinium, radium, radon, polonium, bismuth, thallium, and lead. None of these nuclides is listed in Tables 1 or 2 or 10 C.F.R. § 61.55.

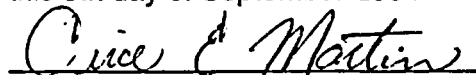
10. Depleted uranium tails are not high-level radioactive waste, which is defined in 10 C.F.R. § 60.2 to be "(1) Irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted." They are not considered spent nuclear fuel because the depleted uranium tails have not been irradiated in a nuclear reactor, nor liquid or solid wastes from reprocessing irradiated reactor fuel, nor 11e.(2) byproduct material

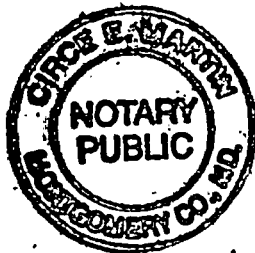
because the depleted uranium tails are not the "tails or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." DU also cannot be considered transuranic wastes, which contain radionuclides with atomic numbers greater than 92. Because uranium has an atomic number of 92, it is not a transuranic nuclide. The decay products of uranium are also not transuranic nuclides because their atomic numbers are also less than 92.

10. The statements expressed above are true and correct to the best of my knowledge, information and belief.


Timothy C. Johnson

Subscribed and sworn to before me
this 8th day of September 2004





My commission expires: March 1, 2007

CIRCE E. MARTIN
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 1, 2007

Attachment A

TIMOTHY C. JOHNSON

Professional Qualifications

I am currently the Licensing Project Manager of the Louisiana Energy Services (LES) uranium enrichment plant project in the Gas Centrifuge Facility Licensing Section, Special Projects Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

I received a Bachelor of Science degree in Mechanical Engineering from Worcester Polytechnic Institute in Worcester, Massachusetts, in 1971 and a Master of Science degree in Nuclear Engineering from Ohio State University, in Columbus, Ohio, in 1973.

Courses I have taken that are pertinent to my present discipline are in the areas of advanced mathematics, engineering design, mass and heat transport, thermodynamics, reactor theory, nuclear physics, nuclear power plant engineering, and health physics. I was elected to membership in Pi Mu Epsilon, the mathematics honorary society.

From January 1973 to August 1977, I was employed by Stone & Webster Engineering Corporation in Boston, Massachusetts. As the offgas and ventilation filter system specialist, I was responsible for the technical adequacy of offgas and ventilation filter systems for pressurized water reactor, boiling water reactor, high temperature gas cooled reactor, and liquid metal fast breeder reactor projects. My responsibilities included ensuring that equipment met both applicable regulatory and equipment code requirements. I prepared master specifications for offgas and ventilation filter systems for use by project staff. I reviewed project specifications and performed technical reviews of vendor proposals. I also reviewed vendor procedures for qualification and testing of offgas and ventilation system components.

Since September 1977, I have been employed by the U.S. Nuclear Regulatory Commission in the areas of radioactive waste management, decommissioning, and fuel cycle facility licensing.

From September 1977 to April 1984, I had lead responsibility for the waste form performance aspects of low-level radioactive wastes to include radwaste processing, solidification, high integrity containers, and volume reduction systems. In this capacity, I developed programs for analyzing, evaluating, coordinating, and recommending licensing actions related to the waste form and waste classification areas of 10 CFR Part 61. These responsibilities have specifically included coordinating the development of the waste form and waste classification requirements and preparing the appropriate sections for: (1) the low-level waste management regulation, 10 CFR Part 61; (2) the draft and final environmental impact statements that support 10 CFR Part 61; and (3) the technical positions on waste form and waste classification that provide guidance to waste generators for complying with the 10 CFR Part 61 requirements. I also acted as lead for an intra-agency task group for implementation for the 10 CFR Part 61 requirements at nuclear power plants.

During this time, I also participated on a Task Force responsible for Three Mile Island Unit 2 (TMI-2) waste disposal issue resolution to include the evaluation of EPICOR-II, Submerged Demineralizer System, and decontamination solution wastes. I also prepared and coordinated waste disposal section for the TMI-2 Programmatic Environmental Impact Statement. For other nuclear power facilities, I prepared and coordinated waste disposal sections for the Dresden Unit 1 Decontamination and the Turkey Point Steam Generator Replacement Environmental Impact Statements.

As Project Officer, I coordinated with contractors and managed the following technical assistance studies:

1. Alternative Methods for the Disposal of Low-Level Waste;
2. Chemical Toxicity of Low-Level Waste;
3. Volume Reduction Techniques for Low-Level Wastes;
4. TMI Resin Solidification Test Program; and
5. Assay of Long-Lived Radionuclides in Low-Level Waste from Power Reactors.

From April 1984 to April 1987, I was Section Leader of the Materials Engineering Section in the Division of Waste Management. In this capacity, I supervised a section that performed technical and engineering evaluations of low-level and high-level radioactive waste packages. This included planning and executing section programs, providing technical direction and integration of materials concerns into NRC low-level and high-level waste licensing activities, and supervising the management of technical assistance programs.

In the low-level waste area, my responsibilities included planning and supervising: (1) the reviews of topical reports on solidification agents, high integrity containers, and waste classification computer codes; and (2) the reviews of licensee specific requests for packaging unique waste materials.

In the high-level waste area, my responsibilities included planning and supervising: (1) the reviews of DOE waste package programs; (2) the reviews of draft and final Repository Site Environmental Assessments in the materials and waste package areas; (3) the direct interactions with DOE in formal waste package and waste glass program meetings; (4) the development of five-year plans for waste package activities; (5) the development of a capability to review the DOE Site Characterization Plans; and (6) the development of technical positions in the areas of waste package reliability and extrapolation of test data to long time frames.

From April 1987 to May 1992, I was Section Leader of the Special Projects Section in the Division of Waste Management. In this capacity, I supervised a section responsible for mixed wastes, decommissioning of materials licensee facilities and power reactors, financial assurance for decommissioning materials licensees and low-level waste disposal facilities, greater than Class C wastes, low-level waste disposal site quality assurance, and the low-level waste data base.

In these areas, the Special Projects Section issued three joint NRC/U.S. Environmental Protection Agency guidance documents on mixed wastes, a Standard Review Plan and a Standard Format and Content Guide on financial assurance mechanisms for materials licensee decommissioning, and a guidance document on quality assurance for low-level waste disposal facilities. The section was also responsible for coordinating the storage and disposal of greater than Class C wastes with DOE, reviewing decommissioning plans for the Pathfinder, Shoreham, Rancho Seco, and Fort St. Vrain nuclear power facilities, and developing a financial assurance program for materials licensees.

From May 1992 to November 1999, I was Section Chief of decommissioning sections in the Division of Waste Management responsible for developing and executing the Site Decommissioning Management Plan (SDMP), an agency effort to ensure that 17 decommissioning policy issues were resolved and over 40 non-routine decommissioning sites would be properly decommissioned. During this time, I acted as Project Manager for the decommissioning of the

Chemetron site in Cleveland, Ohio, a controversial contaminated site located in a residential neighborhood. The site was remediated and the license terminated in 1998.

From November 1999 to the present, I was a Senior Mechanical Systems Engineer in the Division of Fuel Cycle Safety and Safeguards. In this position, I acted as deputy project manager for the Mixed Oxide Fuel Fabrication Facility licensing and project manager for the licensing of gas centrifuge uranium enrichment facilities. I am currently Project Manager for the Louisiana Energy Services gas centrifuge enrichment plant.

At the NRC, I have participated as the NRC and Division of Waste Management representative on the following industry, government, and international committees:

1. American Nuclear Society Subcommittee 16.1, Leach Testing Standard;
2. American Nuclear Society Subcommittee 40.35, Volume Reduction Systems Standard;
3. American National Standards Institute Subcommittee N14.9.2, Packaging for Transportation Standard;
4. American Society of Mechanical Engineers Radwaste Committee;
5. American Society for Testing and Materials Subcommittee C26.07, Waste Management Committee;
6. International Atomic Energy Agency Committee to prepare a Code of Practice for Low-Level Waste Management at Nuclear Power Plants;
7. International Atomic Energy Agency Committee to prepare a document "National Policies and Regulations for Decommissioning Nuclear Facilities;"
8. Interagency Review Board for the Chemical Waste Incinerator Ship Program;
9. Interagency Review Group for Disposal of Low-Level Wastes at Sea;
10. American Society of Mechanical Engineers Mixed Waste Committee.

I also served as a member of the Nuclear Engineering Program Advisory Board at Worcester Polytechnic Institute.

I am a member of the following professional societies:

American Nuclear Society
American Society of Mechanical Engineers
American Society for Testing and Materials

Publications and Presentations

T.C. Johnson, M.J. Bell, "Volume Reduction of Low-Level Wastes," Ninth Biennial Conference of Reactor Operating Experience, Arlington, Texas, August 1979.

T.C. Johnson, P.H. Lohaus, R.D. Smith, "10 CFR 61 Waste Form Requirements," Atomic Industrial Forum Conference on NEPA and Nuclear Regulation, Washington, DC, October 1981.

T.C. Johnson, P.H. Lohaus, R.D. Smith, "10 CFR Part 61 Waste Classification Requirements," Electric Power Research Institute Radwaste Workshop, Charlotte, NC, October 1981.

T.C. Johnson, P.H. Lohaus, R.D. Smith, "10 CFR Part 61 Requirements," American Society of Mechanical Engineers/Electric Power Research Institute Radwaste Workshop, Augusta, GA, February 1982.

T.C. Johnson, H. Lowenberg, "Classification of TMI Wastes," Waste Management '82, Tucson, AZ, March 1982.

T.C. Johnson, P.H. Lohaus, R.D. Smith, "10 CFR 61 Waste Form Requirements," American Nuclear Society Topical Meeting on Radioactive Waste Management, Richland, WA, April 1982.

T.C. Johnson, P.H. Lohaus, G.W. Roles, "Implementation of 10 CFR 61 Part Waste Classification and Waste Form Requirements," Waste Management '83, Tucson, AZ, March 1983.

R.E. Browning, Et al., "Status Report on NRC Regulation for Land Disposal of Low-Level Radioactive Wastes and Geologic Disposal of High-Level Wastes," International Atomic Energy Agency Radioactive Waste Management Conference, Seattle, WA, May 1983.

P.H. Lohaus, T.C. Johnson, "NRC Approach to Dealing with Hazardous Substances in Low-Level Radioactive Wastes," American Nuclear Society Summer Meeting, Detroit, MI, June 1983.

T.C. Johnson, P.H. Lohaus, G.W. Roles, "Implementation of 10 CFR 61 Part Waste Classification and Waste Form Requirements," ERM-Midwest Workshop, Columbus, OH, June 1983.

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T.C. Johnson, et al., "Economics of 10 CFR Part 61," Waste Management '84, Tucson, AZ, March 1984.

M. Tokar, et al., "NRC Licensing Requirements for High-Level Radioactive Waste Packages," Waste Management '85, Tucson, AZ, March 1985.

T.C. Johnson, et al., "Current Regulatory Issues," American Society of Mechanical Engineers/Electric Power Research Institute Radwaste Workshop, Savannah, GA, February 1986.

T.C. Johnson, et al., "High-Level Waste Package Licensing Considerations for Extrapolating Test Data," Materials Research Society Symposium, Boston, MA, December 1986.

T.C. Johnson, et al., "Update on LLW Regulatory Guides and Topical Reports," Waste Management '87, Tucson, AZ, March 1987.

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Harvard School of Public Health Waste Disposal Course, Boston, MA, 1990.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of

LOUISIANA ENERGY SERVICES, L.P.

(National Enrichment Facility)

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Docket No. 70-3103

ASLBP No. 04-826-01-ML

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF BRIEF ON CLASSIFICATION OF DEPLETED URANIUM AS WASTE" 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 8th day of September, 2004.

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