

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nils J. Diaz, Chairman  
Edward McGaffigan, Jr.  
Jeffrey S. Merrifield

DOCKETED 01/18/05

SERVED 01/18/05

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

CLI-05-05

MEMORANDUM AND ORDER

I. Introduction

In CLI-04-25,<sup>1</sup> the Commission accepted for review the issue whether depleted uranium from a uranium enrichment facility appropriately may be categorized as a "low-level radioactive waste," assuming the intent to treat the material as a "waste" requiring disposal instead of utilizing the material as a "resource." We directed the parties to submit briefs on the issue. For the reasons given below, we conclude that depleted uranium is properly considered a low-level radioactive waste.

II. Background

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<sup>1</sup> 60 NRC 223 (2004).

At issue is a contention on waste disposal submitted by intervenors Nuclear Information and Resource Service (NIRS) and Public Citizen (PC).<sup>2</sup> The contention claims that the applicant, Louisiana Energy Services, L.P. (LES), does not have a "plausible strategy" for disposal of the depleted uranium hexafluoride (DUF6) waste that the LES facility will produce.<sup>3</sup> Most of the intervenors' contention challenged LES's first proposed strategy -- indeed its "preferred plausible strategy"<sup>4</sup> -- to dispose of the depleted uranium through *private* sector conversion and disposal of the tails.<sup>5</sup> However, one basis for the intervenors' contention challenged a second option proposed by LES for disposition of the tails: transfer of the tails to

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<sup>2</sup> As originally submitted by the intervenors, the contention was titled "waste storage and disposal" and given the number "2.1." As admitted by the Board, the contention is titled "NIRS/PC EC-3/TC-1 -- Depleted Uranium Hexafluoride Storage and Disposal."

<sup>3</sup> See Petition to Intervene by NIRS/PC (April 6, 2004) ("Intervenors' Petition/Contention") at 25-31.

<sup>4</sup> See National Enrichment Facility Environmental Report, Rev. 2 (July 2004) ("Environmental Report") at 4.13-8.

<sup>5</sup> The Board admitted the intervenors' "private sector" claim, and the Commission affirmed that aspect of the Board's "plausible strategy" decision. See CLI-04-25, 60 NRC at 226.

the Department of Energy (DOE), pursuant to Section 3113 of the USEC Privatization Act.<sup>6</sup>

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9. <sup>6</sup> See Intervenors' Petition/Contention at 27-31; Environmental Report at 4.13-8 to 4.13-

Section 3113(a) of the USEC Privatization Act requires DOE, if requested, "to accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste," generated by "any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility."<sup>7</sup> Consequently, the hearing notice issued for this proceeding specified that "an approach by LES to transfer to DOE for disposal by DOE of LES['s] depleted tails pursuant to Section 3113 of the USEC Privatization Act" would "constitute[] a 'plausible strategy'" for disposal of the depleted tails if the tails could be considered low-level radioactive waste under 10 C.F.R. Part 61.<sup>8</sup> The hearing notice also stated that if LES did not demonstrate a use as a resource for the uranium in the depleted tails, the tails "may be considered waste,"<sup>9</sup> and if "such waste meets the definition of 'waste' in 10 C.F.R. § 61.2, the depleted tails are to be considered low-level radioactive waste within the meaning of 10 C.F.R. Part 61."

In challenging LES's proposed strategy (termed "Option 2") to dispose of the depleted uranium tails by transfer to DOE, the intervenors stressed that this option would be "plausible" only if the "NRC makes a formal determination that [depleted uranium tails] are low-level radioactive waste."<sup>10</sup> Their contention goes on to argue that depleted uranium is not low-level radioactive waste, and that therefore the proposed strategy to have DOE accept, convert, and dispose of the depleted uranium tails is not a "plausible" strategy.<sup>11</sup>

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<sup>7</sup> 42 U.S.C. 2297h-11 (2000). The Act also provides that the generator of the waste must reimburse DOE for cost of the disposal.

<sup>8</sup> See *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-04-3, 59 NRC 10, 22 (2004), reprinted in 69 Fed. Reg. 5873, 5877 (Feb. 6, 2004).

<sup>9</sup> LES states that it will "make a determination as to whether the depleted uranium is a resource or a waste and will notify the NRC." See Environmental Report at 4.13-7.

<sup>10</sup> Intervenors' Petition/Contention at 28.

<sup>11</sup> See *id.* at 27-31.

The current issue before us is a narrow one. We consider only whether depleted uranium is properly considered low-level radioactive waste, and thus whether transfer of the LES tails to DOE pursuant to Section 3112 of the USEC Privatization Act constitutes a “plausible strategy” for disposal of the tails. We need not address any of the other waste disposal options, including particular disposal methods (e.g., engineered trenches, concrete vaults, underground mine) that LES has proposed.

To understand all the issues discussed in this order requires some knowledge of 10 C.F.R. Part 61, which sets out the performance objectives for disposal of low-level radioactive waste, and includes a classification scheme – and related technical disposal requirements – for near-surface disposal of low-level radioactive waste. We begin, therefore, with a brief background description of Part 61. Next, we address the relevant statutory definitions of low-level radioactive waste. We then turn to why the intervenors’ contention contains a misunderstanding of Part 61 and of what constitutes low-level radioactive waste. We conclude with our reasons why depleted uranium should be properly characterized as a low-level radioactive waste.

### **III. Analysis**

#### **A. Background On Part 61**

Part 61 contains the NRC’s licensing requirements for land disposal of low-level radioactive waste. The regulations include general performance objectives applicable to any method of land disposal of low-level radioactive waste.<sup>12</sup> Land disposal – as opposed to sea or extraterrestrial disposal – includes both disposal near the earth’s surface and deeper disposal. “Near-surface” methods of disposal involve disposal at a depth of approximately 30 meters

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<sup>12</sup> 10 C.F.R. § 61.7(a).

(although burial deeper than 30 meters may also be acceptable).<sup>13</sup> More protective methods of land disposal, often called "intermediate" land disposal,<sup>14</sup> may involve deeper burial than near-surface disposal, a mined cavity, or special engineered barriers or disposal techniques.<sup>15</sup> The definition of "land disposal" facilities excludes only a geologic repository,<sup>16</sup> for such facilities are regulated under Part 60 or 63.

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<sup>13</sup> *Id.*

<sup>14</sup> See, e.g., Final Rule, "Disposal of Radioactive Wastes," 54 Fed. Reg. 22,578, 22,580-22,581 (May 25, 1989).

<sup>15</sup> See, e.g., Draft Environmental Impact Statement on Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," NUREG-0782, Vol. 2 at 1-2, 2-4, 2-5 (Sept. 1981).

<sup>16</sup> See 10 C.F.R. § 61.2.

While Part 61 contains general performance objectives -- specifying limits on radiation dose levels -- applicable to *any* form of land disposal of low-level radioactive waste, it also contains specific technical requirements for near-surface disposal of radioactive waste.<sup>17</sup> Part 61 establishes a classification scheme for those types of low-level radioactive wastes considered "generally acceptable for near-surface disposal."<sup>18</sup> Such wastes are divided into three classes: A, B, and C.

The suitability of wastes for near-surface disposal and their appropriate classification (e.g., Class A, B, or C) is determined by the amounts of long-lived and short-lived radionuclides contained in the waste, and whether radiation dose levels will drop to acceptable levels over specified periods of time.<sup>19</sup> Safety objectives for near-surface disposal include assuring stability of the waste and of the disposal site after closure -- in other words, assuring that the waste form maintains its structural integrity. Specific goals include protecting against inadvertent intruders and minimizing water's access to waste (to limit the potential for radionuclides migrating).<sup>20</sup>

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<sup>17</sup> See 10 C.F.R. §§ 61.7; 61.50.

<sup>18</sup> See Final Rule, "Licensing Requirements for Land Disposal of Radioactive Waste," 47 Fed. Reg. 57,446, 57,452 (Dec. 27, 1982)(Final Rule, "Licensing Requirements").

<sup>19</sup> See 10 C.F.R. §§ 61.55(a)(3); 61.55(a)(4).

<sup>20</sup> See 10 C.F.R. §§ 61.7(b)(1); 61.7(b)(2).

Compared to Class A waste, Class B waste requires "more rigorous requirements on waste form to ensure stability after disposal."<sup>21</sup> Class C waste "not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility" to protect against inadvertent intrusion.<sup>22</sup>

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<sup>21</sup> 10 C.F.R. § 61.55(a)(2)(ii).

<sup>22</sup> 10 C.F.R. § 61.55(a)(2)(iii).



Those low level radioactive wastes with radionuclide concentration limits even greater than the limits specified for Class C – commonly termed GTCC [Greater Than Class C] waste – are “generally unacceptable for near-surface disposal,” although on a case-by-case basis and with proposed “special processing or design” such waste may be approved as suitable for near-surface disposal.<sup>23</sup> Moreover, even if a particular form of GTCC waste does not meet the Part 61 requirements for near-surface disposal, it may still be acceptable for disposal by more protective land disposal methods, if the Part 61 performance objectives for land disposal can be met.<sup>24</sup>

We turn now to the intervenors' contention, specifically as it challenges LES's proposed strategy for DOE to dispose of depleted uranium.

**B. The USEC Privatization Act and NIRS/PC Contention on DOE Strategy**

The USEC Privatization Act requires DOE to accept for disposal depleted uranium from any NRC uranium enrichment licensee, if depleted uranium is “ultimately determined to be low-level radioactive waste.”<sup>25</sup> The statute does not specify any further conditions, such as whether the depleted uranium waste also meets NRC requirements for near-surface disposal or any other method of disposal, or whether it falls within a particular class of low-level radioactive waste (e.g., A, B, etc.). Under the statute, therefore, if LES's depleted uranium is low-level

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<sup>23</sup> *Id.*

<sup>24</sup> See, e.g., 10 C.F.R. §§ 61.55(a)(2)(iv); 61.58.

<sup>25</sup> 42 U.S.C. § 2297h.

waste, regardless of radionuclide concentration, DOE must accept it for disposal.

The hearing notice in this proceeding specified one way of showing that the depleted uranium tails are low-level waste: if the tails meet the definition of "waste" in 10 C.F.R. § 61.2. That definition reads as follows: "Waste means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility."

Recently, the Commission received a brief from USEC, Inc., which is not a party to this proceeding, but like LES, also has pending before the NRC an application to construct and operate a uranium enrichment facility, and therefore has an interest in whether the transfer of depleted uranium tails to DOE is a plausible waste disposal strategy.<sup>26</sup> USEC submits that depleted uranium tails "do not need to meet the 10 C.F.R. 61.2 definition of "Waste" to be considered LLW."<sup>27</sup> We agree.

The term "waste" in the Part 61 definition is very clearly, as USEC states, "a subset of the larger category of LLW," and refers specifically to "those" low-level wastes that are acceptable for land disposal under Part 61.<sup>28</sup> This is evident from the "waste" definition itself, and from the broader definition of *low-level radioactive waste* that immediately follows it in § 61.2:

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<sup>26</sup> The Commission chose to treat the USEC brief as an *amicus* filing in this proceeding, and allowed the parties to respond to the brief. See Order (12/01/04)(unpublished).

<sup>27</sup> USEC, Inc. Brief on the Proper Classification of Depleted Uranium Tails (Oct. 18, 2004)("USEC Brief") at 6 (emphasis in original).

<sup>28</sup> *Id.*

[L]ow-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).

Most low-level radioactive wastes likely would be acceptable for some form of land disposal, and thus would fall within the § 61.2 "waste" definition,<sup>29</sup> given the wide array of potential land disposal methods – near-surface and intermediate – that may be governed under Part 61.<sup>30</sup> (Only a geologic repository – which instead is regulated under Part 60 or 63 – is not

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<sup>29</sup> See, e.g., Proposed Rule, "Licensing Requirements for Land Disposal of Radioactive Waste," 46 Fed. Reg. 38,081, 38,082 (July 24, 1981)(emphasis added)("Part 61 is intended to deal with the disposal of *most* wastes included in this [Low-Level Radioactive Waste Policy Act] definition)." Whether a low-level radioactive waste is "acceptable for land disposal" depends upon whether (1) the waste meets the Part 61 criteria for near-surface disposal, or (2) the NRC, after evaluating the "specific characteristics of the waste, disposal site, and method of disposal," finds reasonable assurance that radiation exposures will not exceed the limits established in the Part 61 performance objectives for land disposal. See 10 C.F.R. §§ 61.58; 61.55(a)(2)(iv); 61.40 ; 61.55 (requirements for near-surface disposal).

<sup>30</sup> See, e.g., 10 C.F.R. §§ 61.7(a); Final Rule, "Disposal of Radioactive Wastes," 54 Fed.

encompassed by the Part 61 definition of "land disposal" facilities.)<sup>31</sup> Nonetheless, USEC is correct that the § 61.2 "waste" definition does not "represent a comprehensive definition of LLW [low-level waste]," and thus that, conceivably, some materials "may not meet the [Part 61] definition of '[w]aste' ... but nevertheless may properly be classified as LLW [low-level waste]."<sup>32</sup>

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Reg. at 22,581.

<sup>31</sup> See 10 C.F.R. § 61.2; Final Rule, "Disposal of Radioactive Wastes," 54 Fed. Reg. at 22,580. The NRC has regulations for "specific types of disposal facilities .... Part 60 applies to any geologic repository for HLW [high-level waste], regardless of what other types of radioactive wastes may be disposed of there," while "Part 61 pertains to land disposal facilities other than repositories." Final Rule, "Disposal of Radioactive Wastes," 54 Fed. Reg. at 22,579.

<sup>32</sup> USEC Brief at 6.

The "plausible strategy" contention before us concerns LES's proposed strategy to dispose of depleted uranium by transfer to DOE, pursuant to the USEC Privatization Act. That Act does not mention Part 61 and refers generally to "low-level radioactive waste," not to an NRC-established subset of that waste. We therefore agree with USEC that in determining whether the proposed DOE option is a "plausible strategy," we need not resolve the question whether the LES depleted uranium tails also would meet the "waste" definition in § 61.2. As USEC states, "inclusion of the reference to the [Part 61] definition of "Waste" in the hearing notice added an unnecessary requirement for showing that material is low-level radioactive waste."<sup>33</sup> Our inquiry must begin with the USEC Privatization Act and how it expressly defines low-level waste.

Section 3102 of the USEC Privatization Act specifies that "low-level radioactive waste" has the meaning" set forth in section 2(9) of the Low-level Radioactive Waste Policy Act.<sup>34</sup> In turn, section 2(9) of the Act<sup>35</sup> defines low-level radioactive waste as radioactive material that:

(A) is not high-level radioactive waste, spent nuclear fuel, or byproduct material (as defined in section 11e.(2) of the Atomic Energy Act of 1954 (42 U.S.C. 2014(e)(2)))<sup>36</sup> and

(B) the Nuclear Regulatory Commission, consistent with existing law and in accordance with paragraph (A), classifies as low-level radioactive waste.

The intervenors' contention does not contend that LES's depleted uranium tails will contain high-level radioactive waste, spent nuclear fuel, or 11e.(2) byproduct material. In other

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<sup>33</sup> *Id.*

<sup>34</sup> 42 U.S.C. § 2297h.

<sup>35</sup> 42 U.S.C. § 2021b(9).

<sup>36</sup> The 10 C.F.R. § 61.2 definition of low-level radioactive waste also excludes transuranic waste, as does the low-level radioactive waste definition in the Nuclear Waste Policy Act of 1982 (see 42 U.S.C. § 10102). Depleted uranium tails are not transuranic waste.

words, their contention nowhere suggests that depleted uranium falls into any other general category of waste other than low-level radioactive waste. Instead, the contention reflects a misunderstanding of the structure and content of Part 61 and its relation to the Low-Level Radioactive Waste Policy Act, which determines ultimately what kinds of wastes may fall under the “umbrella” category of low-level radioactive waste.

Specifically, in challenging the DOE disposal strategy option, the intervenors argue that “[t]he classification of low-level waste can apply only to waste that would clearly be appropriate for shallow land disposal and 100 year institutional control,” and that depleted uranium “meets neither requirement.”<sup>37</sup> The contention further argues that “[t]he long half-life of all three uranium isotopes ..., the fact that they are all alpha emitters, and the specific activity of DU [depleted uranium] ... all point to the classification of DU as GTCC [greater-than-Class-C] waste.”<sup>38</sup> The intervenors conclude that depleted uranium as proposed for disposal by LES is unsuitable for near-surface disposal and will require disposal in a deep geologic repository. None of these arguments, however, even if correct, would preclude categorizing depleted uranium as a low-level radioactive waste.

To begin with, the intervenors' suggestion that only wastes suitable for disposal by near surface methods can be categorized as low-level radioactive wastes is patently incorrect. Part 61 identifies three classes of waste typically suitable for near-surface disposal – Classes A, B, and C – but in no way suggests that these are the only wastes considered low-level radioactive waste, or even that Part 61 applies only to such wastes. On the contrary, Part 61 explicitly governs “any method of land disposal” of low-level radioactive waste, including methods more

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<sup>37</sup> See Intervenors' Petition/Contention at 28.

<sup>38</sup> *Id.* at 29.

stringent than near-surface.<sup>39</sup> Low-level radioactive wastes are not limited to those suitable for near-surface disposal.

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<sup>39</sup> 10 C.F.R. § 61.7(a)(emphasis added).

Indeed, when Part 61 was issued, its Environmental Impact Statement explicitly acknowledged that the NRC might receive license applications involving disposal of low-level radioactive waste requiring either an enhanced near-surface disposal method or "intermediate" land disposal methods. It was -- and remains -- the NRC's intent to "retain the flexibility to be able to address these license applications in the existing framework of the [Part 61] rule."<sup>40</sup> Thus, Part 61 did not originally "establish an absolute concentration limit for land disposal of transuranic or other radionuclides."<sup>41</sup> The Part 61 performance objectives would govern all applications involving land disposal of low-level radioactive waste, including waste that might require more isolation than near-surface methods.

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<sup>40</sup> FEIS for Part 61, Vol. 2, at B-92.

<sup>41</sup> *Id.*



In the end, the "bottom line for disposal" of low-level radioactive wastes are the *performance objectives* of 10 C.F.R. Subpart C,<sup>42</sup> which set forth the ultimate standards and radiation limits for (1) protection of the general population from releases of radioactivity; (2) protection of individuals from inadvertent intrusion; (3) protection of individuals during operations; (4) and stability of the disposal site after closure.<sup>43</sup> Thus, while there may not yet be detailed technical criteria established for all of the kinds of land disposal that might be proposed under Part 61, criteria can be developed "on a case-by-case basis," as needed.<sup>44</sup> After all, any technical requirements are "intended to help ensure that the performance objectives established in Subpart C are met," but they are "not the end in themselves, ... [only] a means of achieving the end,"<sup>45</sup> which are the performance standards. Specific disposal requirements for more stringent land disposal methods, therefore, "were left to be addressed in action on a specific application, subsequent guidance, and rulemaking effort, if rulemaking is warranted."<sup>46</sup>

In any event, low-level radioactive waste can encompass both those wastes suitable for near-surface disposal and those that may require greater isolation. That a particular waste

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<sup>42</sup> Final Environmental Impact Statement (FEIS) On 10 C.F.R. Part 61 "Licensing Requirements for Land Disposal of Radioactive Waste," NUREG-0945, Vol. 2 (Nov. 1982) ("FEIS for Part 61") at B-107.

<sup>43</sup> 10 C.F.R. §§ 61.41, 61.42, 61.43, 61.44.

<sup>44</sup> See, e.g. Final Rule, "Licensing Requirements for Land Disposal of Radioactive Wastes," 58 Fed. Reg. 33,886, 33,887 (June 22, 1993) (clarifying that Part 61 performance objectives can apply to the licensing of above-ground disposal facilities for low-level radioactive waste, although Part 61 does not contain technical criteria specific to above-ground disposal).

<sup>45</sup> FEIS for Part 61, Vol. 2 at B-91.

<sup>46</sup> Branch Technical Position Statement On Licensing of Alternative Methods of Disposal of Low-Level Radioactive Waste, 51 Fed. Reg. 7806, 7807 (Mar. 6, 1986); see also Final Rule, Licensing Requirements, 47 Fed. Reg. at 57,451; Final Rule, Disposal of Radioactive Wastes, 54 Fed. Reg. at 22,581, 22,579. Because no intermediate land disposal facilities ever were constructed, the NRC never had the need to develop and issue regulations outlining specific technical requirements for land disposal methods other than near surface disposal.

might not meet the requirements for near-surface disposal does not mean it is not low-level waste. Recognizing this defeats the intervenors' contention attacking the DOE disposal option. At its heart that contention rests on the intervenors' claim that depleted uranium "fits into the waste category of GTCC [greater-than-Class-C] waste" because of its specific radioactivity and because it has long-lived radiation-emitting isotopes.<sup>47</sup> But GTCC waste is itself a form of *low-level radioactive waste*. It is a "low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in § 61.55" of Part 61.<sup>48</sup> Thus, even if we assume that the intervenors are correct, and that the depleted uranium from the LES facility conceivably might ultimately be classified as GTCC waste, such waste is a form of low-level

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<sup>47</sup> See Intervenors' Petition/Contention at 29-30.

<sup>48</sup> See 10 C.F.R. §72.3.

radioactive waste.<sup>49</sup>

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<sup>49</sup> See generally Final Rules, Disposal of Radioactive Wastes, 54 Fed. Reg. 22,578 (discussing "greater-than-Class-C (GTCC) low level radioactive waste"); see also, e.g., Interim Storage for Greater Than Class C Waste, 66 Fed. Reg. 51,823 (Oct. 11, 2001) (while GTCC waste is generally unsuitable for near-surface disposal "it is considered as LLW [low-level waste].")

Since its inception, Part 61 has treated GTCC waste as low-level radioactive waste. Part 61 established radionuclide concentration limits for the first three classes of low-level radioactive wastes (A, B, and C), but never considered that those wastes that do not fall within the other defined waste categories (*e.g.*, high-level waste, spent nuclear fuel) but simply exceed the Class C limits in § 61.55 are anything other than a low-level radioactive waste, albeit one not typically suitable for near-surface disposal.<sup>50</sup> Among the 3 classes of low-level radioactive wastes that are routinely acceptable for near-surface disposal, Class C waste "denotes the highest radionuclide concentrations of the three [classes];" but Class C waste "does not denote a maximum concentration limit for low-level wastes."<sup>51</sup> Because "there is no regulatory limit on the concentrations of LLW [low-level waste] ... some LLW (exceeding Class C concentrations) may [even] have concentrations approaching those of HLW [high-level waste]."<sup>52</sup>

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<sup>50</sup> See generally, Draft Environmental Impact Statement on 10 C.F.R. Part 61 'Licensing Requirements for Land Disposal of Radioactive Waste,' NUREG-0782, Vol. 2 (Sept. 1981).

<sup>51</sup> Advance Notice of Proposed Rulemaking, "Definition of High-Level Radioactive Waste," 52 Fed. Reg. 5992, 5994 (Feb. 27, 1987).

<sup>52</sup> *Id.*

Indeed, in 1989 the NRC considered revising the definition of *high-level* radioactive waste to include Greater-Than-Class-C wastes because intermediate land disposal facilities had not yet become available. But the agency explicitly chose to maintain GTCC wastes within the category of low-level wastes, concluding that to assure the safe disposal of GTCC waste it would be unnecessary and counter-productive to alter waste category definitions.<sup>53</sup> Instead of broadening the high-level waste definition, the NRC amended Part 61 to highlight the need for prior NRC approval of land disposal methods for GTCC, and to state that without such approval the GTCC waste would require disposal in a geologic repository. Even so, the agency stressed that while GTCC waste is "not generally acceptable for near-surface disposal," and thus may require disposal methods "more stringent" than near-surface disposal, a geologic repository is only *one* of several potential "more stringent" disposal methods for GTCC waste.<sup>54</sup> Various alternative or "intermediate" land disposal methods for GTCC wastes could be approved by the Commission,<sup>55</sup> such as disposal at an intermediate depth, or disposal with special engineered barriers. In short, as we discussed above, "[a] wide variety of disposal methods, including all of those currently proposed as 'intermediate' disposal methods could be licensed under Part 61,"<sup>56</sup> taking into consideration the Part 61 performance objectives and applicable radiation standards.

Under Part 61, GTCC low-level waste may be acceptable for disposal in a near-surface disposal facility with special design provisions, or acceptable for land disposal in an intermediate

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<sup>53</sup> See generally, Final Rule, Disposal of Radioactive Wastes, 54 Fed. Reg. 22,578.

<sup>54</sup> See *id.*, 54 Fed. Reg. at 22,580.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*, 54 Fed. Reg. at 22,581; see also *id.*, 54 Fed. Reg. at 22,578.

land disposal facility.<sup>57</sup> But even if it were sent to a geologic repository governed under Part 60 -  
- a choice that conceivably could be made for cost reasons - it would still be "GTCC [greater-  
than-Class-C] LLW [low-level waste]." <sup>58</sup>

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<sup>57</sup> See 10 C.F.R. §§ 61.7(b)(5); 61.58, 61.55(a)(2)(iv).

<sup>58</sup> See Final Rule, Disposal of Radioactive Wastes, 54 Fed. Reg. at 22,578, 22,579-81.

In sum, the intervenors' challenge to the DOE disposal option as a "plausible strategy" for disposal of the LES depleted uranium tailings rests on inaccurate premises -- that only waste suitable for near-surface disposal can be low-level radioactive waste and that GTCC waste is not a low-level waste. Because these assumptions are incorrect on their face, the portion of the intervenors' contention challenging the DOE disposal option does not raise a "genuine dispute ... on a material issue" for litigation as our contention rules require.<sup>59</sup> While the contention raises factual arguments over whether the LES waste may properly be disposed of in a near-surface waste disposal facility (a matter we need not resolve today), such allegations are simply not material to the DOE "plausible strategy" issue before us. Even if proved, they would not show that depleted uranium should be categorized as anything other than a low-level radioactive waste. It is depleted uranium's status as low-level radioactive waste, not its suitability (or non-suitability) for near-surface disposal, that triggers DOE's statutory duty to accept the waste for disposal under the USEC Privatization Act.

### C. Depleted Uranium is a Low-Level Radioactive Waste

In assessing whether the proposed DOE disposal option is a "plausible strategy," the *only* question to be answered is whether depleted uranium is a low-level radioactive waste, not whether it meets one of the particular low-level waste classifications, or whether a near-surface disposal facility will be adequate. Consistent with the Low-Level Radioactive Waste Policy Act, the Commission finds that depleted uranium, assuming it is not treated as a resource, is appropriately categorized as a low-level radioactive waste. Depleted uranium is not high-level waste, spent nuclear fuel, 11e.(2) byproduct material, or transuranic waste as those waste

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<sup>59</sup> See 10 C.F.R. § 2.309(f)(1).

categories are currently defined under relevant statutes and regulations.<sup>60</sup> Further, no other statute, regulation, or consideration either precludes or would render inappropriate identifying depleted uranium as a low-level radioactive waste.

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<sup>60</sup> See, e.g., NWPA, 42 U.S.C. §§ 10101(12); 10101(23); AEA, 42 U.S.C. § 2014e(2); 10 C.F.R. § 60.2.



Low-level waste traditionally has been defined by what it is not. Thus, both the "Low-Level Radioactive Waste Policy Act, and the Commission's regulations in 10 C.F.R. Part 61 currently classify wastes as 'low-level' if they are not otherwise classified as high-level wastes or certain other types of materials (e.g., uranium mill tailings)"<sup>61</sup> and the Commission further finds the categorization appropriate. Depleted uranium clearly is not spent fuel, transuranic waste, or 11e.(2) byproduct material. Nor does it meet the high-level waste definition, which includes specific kinds of wastes such as irradiated fuel and the liquid and solid wastes resulting from the processing of irradiated fuel. Indeed, as we recounted above, the NRC years ago considered but explicitly rejected the idea of broadening the high-level waste definition to encompass those low-level wastes with the highest radionuclide concentrations -- the GTTC wastes.<sup>62</sup> Regardless of which form the uranium may take at the time of disposal (e.g. UF<sub>6</sub> or U<sub>3</sub>O<sub>8</sub>) or its radionuclide concentration, depleted uranium belongs most appropriately under the general low-level radioactive waste category. In the event depleted uranium at some particular radionuclide concentration level and volume were to require disposal by methods more stringent than near-surface disposal, it would still be low-level waste.

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<sup>61</sup> 52 Fed. Reg. at 5997; *see also* 10 C.F.R. § 61.2 (low-level waste definition, following "waste" definition).

<sup>62</sup> *See generally*, Final Rule, Disposal of Radioactive Wastes, 54 Fed. Reg. 22,578.

Although the Commission itself may not have explicitly declared previously, as a matter of law, that depleted uranium is a form of low-level radioactive waste, it has long been understood within the NRC to fall within the low-level radioactive waste umbrella.<sup>63</sup> A more difficult question – and one we need not answer today – concerns whether the LES material, in the volumes and concentration proposed, will meet the Part 61 requirements for near-surface disposal. The Commission agrees with the intervenors that a definitive conclusion on this and other disposal method questions cannot be reached at this time, and may require further environmental or safety analysis. Our decision should not be read to intimate any Commission view on this issue, which relates both to the plausibility of LES's proposed private disposal options, and to financial assurance – issues which remain before the Board.<sup>64</sup>

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<sup>63</sup> For example, in the proposed Part 61 rule, depleted uranium was one of the radionuclides included in the low-level waste classification charts found in 10 C.F.R. § 61.55, with assigned upper bound concentration limits for near-surface disposal. See Proposed Rule, 46 Fed. Reg. at 38,097. Prior to issuance of the final rule, however, the staff removed uranium from the charts because at the time the types of uranium-bearing material typically disposed of by NRC licensees did not pose a sufficient safety hazard to warrant inclusion in the charts. See FEIS (Part 61), Vol. 1 at 5-37 to 5-38. But at no point did the staff suggest that depleted uranium waste – at any radionuclide concentration – would be anything other than a low-level radioactive waste.

Before the Commission, the intervenors cite a 1991 SECY paper titled the "Disposition of Depleted Uranium From Enrichment Plants," highlighting the "unique licensing issue" presented by disposal of depleted uranium from a uranium enrichment plant. See SECY-91-019 (Jan. 25, 1991). The paper nonetheless concludes that if depleted uranium from uranium enrichment facilities is treated as a waste instead of a resource, "it is a unique form of *low-level* waste that would require disposal." *Id.* at 4 (emphasis added).

<sup>64</sup> See Contention NIRS/PC EC-5/TC-2 AGNM TC-i (Decommissioning Costs); NIRS/PC EC-6/TC-3 (Costs of Management and Disposal of Depleted UF<sub>6</sub>). It appears that when the intervenors discuss the question whether material may be disposed of as "low-level waste," they may mean whether near-surface disposal is acceptable. But as we have explained at length in today's decision, that is not a question we need answer in considering the plausible strategy contention.

Another point warrants mention. In accepting review of whether depleted uranium is a low-level radioactive waste, the Commission in CLI-04-25 directed the parties to address 10 C.F.R. § 61.55(a)(6), a rule that we believed might bear on our analysis. The parties addressed

#### IV. Conclusion

We conclude today that depleted uranium properly is considered a form of low-level radioactive waste. Accordingly, pursuant to Section 3113 of the USEC Privatization Act, disposal of the LES depleted uranium tails at a DOE facility represents a "plausible strategy" for disposition of the tails. We therefore reverse the admission to this proceeding of the portion of the intervenors' plausible strategy contention NIRS/PC EC-3/TC-1 that challenges the DOE disposal option (termed Basis "D" in the intervenors' contention and renamed by the Board Basis "C").

IT IS SO ORDERED.

For the Commission

/RA/

Annette L. Vietti-Cook  
Secretary of the Commission

Dated at Rockville, Maryland  
this 18<sup>th</sup> day of January 2005.

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the rule in their briefs. However, because our decision rests on the relevant statutes – the USEC Privatization Act and the Low-Level Radioactive Waste Policy Act – we need not reach the issues concerning § 61.55(a)(6) that have been presented in the briefs.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )

LOUISIANA ENERGY SERVICES, L.P. )

Docket No. 70-3103-ML

(National Enrichment Facility) )

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing COMMISSION MEMORANDUM AND ORDER (CLI-05-05) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution, with copies by electronic mail as indicated.

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Docket No. 70-3103-ML  
 COMMISSION MEMORANDUM AND ORDER (CLI-05-05)

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[Original signed by Adria T. Byrdsong]

Office of the Secretary of the Commission

Dated at Rockville, Maryland,  
 this 18<sup>th</sup> day of January 2005