RAS 10761

November 18, 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

ASLBP No. 04-826-01-ML

STATEMENT OF UNDISPUTED FACTS SUBMITTED ON BEHALF OF INTERVENORS NUCLEAR INFORMATION AND RESOURCE SERVICE AND PUBLIC CITIZEN IN SUPPORT OF MOTION FOR PARTIAL SUMMARY DISPOSITION

Preliminary statement

This Statement of Undisputed Facts is submitted on behalf of Intervenors Nuclear Information and Resource Service and Public Citizen ("NIRS/PC") in support of the Motion for Partial Summary Disposition, filed this date.

Undisputed facts

NIRS/PC contend that, for purposes of the present Motion for Partial Summary Disposition, the following facts should be deemed established and undisputed:

1. The Draft Environmental Impact Statement for the National Enrichment Facility, NUREG-1790, was issued in September 2004 (the "Draft EIS"). That document contains a discussion at page 4-59 of postulated radiological impacts from disposal of depleted U_3O_8 from the NEF in an abandoned mine as a geologic disposal site. The accompanying text states that an analysis of the impacts of deep disposal of depleted uranium wastes

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was previously presented in the EIS for the Claiborne Enrichment Center ("CEC"), and the potential impacts of NEF-generated DU_3O_8 would be proportional to the quantity of material postulated from the CEC. Estimated dose figures at the time of peak dose are stated in Table 4-19 of the Draft EIS:

Table 4-19 Maximum Annual Exposure from Postulated Geologic Disposal Sites

		Granite Site	Granite Site	Sandstone/Basalt Site	Sandstone/Basalt Site
Scenario	**Pathway**	**millisieverts**	**Millirem**	**millisieverts**	**millirem**
Well	Drinking Water	3×10^{-4}	3×10^{-2}	2×10^{-7}	2×10^{-5}
	Agriculture	4×10^{-3}	4×10^{-1}	4×10^{-6}	3×10^{-4}
River	Drinking Water	9×10^{-13}	3×10^{-11}	3×10^{-16}	3×10^{-14}
	Fish Ingestion	2×10^{-12}	2×10^{-10}	5×10^{-11}	5×10^{-9}

2. On October 20, 2004, NIRS/PC moved to amend their contentions, stating, among other things, that the Draft EIS for the National Enrichment Facility ("NEF") fails adequately to support or explain the modeling of disposal of depleted uranium. (NIRS/PC motion to amend and supplement contentions, Oct. 20, 2004, at 13). NIRS/PC stated that the Draft EIS fails adequately to disclose the models used or the parameter values and that the results are unlike those reported in connection with the CEC facility.
3. On October 21, 2004, NIRS/PC propounded interrogatories to the Commission Staff, requesting disclosure of the models used and the parameter values used in the modeling, together with supporting information about the data underlying the parameter values. (NIRS/PC interrogatories to Commission Staff, Interrogatory No. 10, Oct. 21, 2004).

4. On November 10, 2004, Commission Staff answered the interrogatory as follows:

INTERROGATORY 10:

> With regard to the estimate of the impact of disposal of the converted waste, set forth at pages 4-58 through 4-59 (sec. 4.2.14.4 and Table 4-19) of the DEIS, please describe in full the models used to develop such estimate, each parameter used in modeling, and identify the source of each parameter, with references. Please describe any documents concerning such estimate.

STAFF RESPONSE:

The basis for Table 4-19 of the DEIS lies in the previous evaluation of impacts of disposal of U_3O_8 in deep geologic disposal units provided in the CEC EIS (pp. 4-66 to 4-68). The impacts were adjusted based on the possible quantity of U_3O_8 assumed in the CEC EIS to the amount from the operations of the proposed NEF. Specifically, the CEC EIS states that 91,000 MT (9.1×107 kg) of U_3O_8 would need to be disposed. *See* CEC EIS at p. 4-66. The proposed NEF would generate approximately 197,000 MT of DUF_6 during the time of operation. Based on the DOE DUF_6 conversion facilities' Final Environmental Impact Statements ("Portsmouth EIS" & "Paducah EIS"), these facilities would produce approximately 0.79 MT of U_3O_8 for every metric ton of DUF_6 processed. This would result in 157,000 MT of U_3O_8 from the conversion of the DUF_6 for the proposed NEF. Therefore, the CEC EIS geologic disposal units impacts were adjusted based on a ratio of 1.72 (157,000 MT divided by 91,000 MT).

With respect to this issue, the NRC Staff refers NIRS/PC to the following publicly available documents:

(1) (CEC EIS) U.S. Nuclear Regulatory Commission, NUREG-1484, *Final Environmental Impact Statement for the Construction and Operation of Claiborne Enrichment Center, Homer, Louisiana*, Docket No. 70-3070, Louisiana Energy Services, L.P., Office of Nuclear Material, Safety and Safeguards (Aug. 1994).

(2) (Portsmouth EIS) U.S. Department of Energy, DOE/EIS-0360, *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site*, Office of Environmental Management (June 2004).

(3) (Paducah EIS) U.S. Department of Energy, DOE/EIS-0359, *Final Environmental Impact Statement for the Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky Site*, Office of Environmental Management (June 2004).

(NRC Staff response to NIRS/PC interrogatories and document request, at 6-7, Nov. 10, 2004). Thus, other than referring to the CEC Final EIS and the application of a ratio to values reported in the CEC Final EIS, Staff have essentially no further information on the modeling or the derivation of the parameter values.

5. The Final Environmental Impact Statement for the National Enrichment Facility, NUREG-1790, was issued in June 2005 (the "Final EIS"). That document contains a discussion at page 4-64 of postulated radiological impacts from disposal of depleted U_3O_8 from the NEF in an abandoned mine as a geologic disposal site. The accompanying text states that an analysis of the impacts of deep disposal of depleted uranium wastes was previously presented in the EIS for the Claiborne Enrichment Center ("CEC"), and the potential impacts of NEF-generated DU_3O_8 would be proportional to the quantity of material postulated from the CEC. Estimated dose figures at the time of peak dose are stated in Table 4-19 of the Final EIS:

Table 4-19 Maximum Annual Exposure from Postulated Geologic Disposal Sites

		Granite Site	Granite Site	Sandstone/Basalt Site	Sandstone/Basalt Site
Scenario	**Pathway**	**millisieverts**	**Millirem**	**millisieverts**	**millirem**
Well	Drinking Water	3×10^{-4}	3×10^{-2}	2×10^{-7}	2×10^{-5}
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6. By its ruling dated October 19, 2005 in CLI-05-20, the Commission held that NIRS/PC's contention about deep disposal impacts is timely.

7. The information in the CEC Final EIS does not include all necessary source data, does not fully disclose modeling methodology, and is inadequate to enable other scientist to reproduce dose results published in that EIS. The Commission Staff itself has been unable or unwilling to reproduce these results.
8. The CEC Final EIS in Table A.6 reports solubility values of 1×10^{-4} mg/L for uranium, 5×10^{-13} mg/L for thorium, and 1×10^{-2} mg/L for radium. The derivation of such values, including all of the relevant data and assumptions, is not explained in the CEC Final EIS.
9. The analysis by Kozak et al. of Sandia National Laboratory, performed by a Department of Energy laboratory for the Commission Staff in connection with the Claiborne proceeding, considered the behavior of depleted uranium and estimated solubility values in the range of 10^{-6} to 10^{-5} moles per liter for uranium. (NIRS/PC Ex. 128 at 31).
10. Other recent work conducted by George Rice modeled depleted uranium in deep disposal and identified solubility values in the range of 10^{-6} moles per liter for uranium in the form of U_3O_8 (NIRS/PC Ex. 190 at 22).
11. The value reported in Table A.6 of the Claiborne Final EIS is approximately 4×10^{-10} moles per liter, assuming UO_2 as the dominant solid phase. No explanation has been given for this choice nor of the three-order-of-magnitude difference from the Kozak analysis, which was conducted for the Commission Staff in connection with the same license application.
12. The use of inappropriately low solubility values would introduce a non-conservative bias into the analysis, causing erroneous results inconsistent with appropriate environmental modeling.

13. The CEC Final EIS analysis incorporates modeling of flow of groundwater and transport of radionuclides. It refers to retardation coefficients "greater than 1,200 for uranium, thorium, and radium." (at A-13). However, it does not state the actual retardation values used for each element.

14. The retardation coefficient figures referred to in the CEC Final EIS suggest that the quantification of retardation was considered to be high. If the choice of the NRC Staff was inappropriately high, it would introduce another non-conservative bias into the analysis.

15. The CEC Final EIS does not disclose the configuration of the model used to describe release, vertical flow, horizontal flow, and dose within which these retardation coefficients operate. Thus, it is not possible to discern the impact of the parameter selection, even if the parameter values had been disclosed.

16. Other relevant values are undisclosed, such as the modeling assumptions as to presence of CO_2, which would affect uranium solubility values. Without knowing all of the essential specific parameter values used at each step of the modeling exercise, the source of the values, and how the models were used with such values, it is not possible to state conclusively what other errors may lie behind the modeling results reported in the CEC Final EIS and said to be used to derive the results reported in Table 4-19 of the NEF Draft EIS.

17. The published results of the CEC analysis contrast dramatically with observed values. The U-238 doses from drinking water in the CEC analyses were a hundred thousand to a hundred trillion times lower than typical background doses. For a 70 kilogram adult, the highest well water dose for uranium-238 estimated by the Commission Staff in the CEC

Final EIS (5×10^{-9} mrem per year) is less than the dose that would be received from the disintegration of just 23 uranium-238 atoms in the entire body over an entire year. The lowest drinking water dose for U-238 reported in the CEC Final EIS (2.3×10^{-15} mrem per year) would imply that less than one atom of uranium-238 would disintegrate in the person's body over their entire lifetime. In fact, the decay of just a single uranium-238 atom in a 70-kilogram adult in one year would result in an absorbed dose nearly five orders of magnitude larger than the drinking water dose reported in the CEC Final EIS for the generic sandstone/basalt disposal scenario. (Makhijani Aff. par. 8).

18. Such extreme ratios indicate that the dose estimates published in the CEC Final EIS, and claimed to be the source for dose estimates published in Table 4-19 with regard to the NEF, are likely to be wrong by several orders of magnitude. The nature of the errors giving rise to these incredible results cannot now be conclusively identified, nor can NIRS/PC effectively propose corrections, because the underlying data, the modeling methodology, and the full range of parameters used in modeling have not been adequately disclosed.

Respectfully submitted,

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November 18, 2005

CERTIFICATE OF SERVICE

Pursuant to 10 CFR § 2.305 the undersigned attorney of record certifies that on November 18, 2005, the foregoing Statement of Undisputed Facts submitted on behalf of Intervenors Nuclear Information and Resource Service and Public Citizen in support of Motion for Partial Summary Disposition was served by electronic mail and first class mail upon the following:

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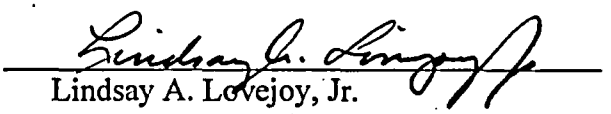

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