

December 10, 2004

MEMORANDUM TO: Joseph G. Giitter, Chief
Special Projects Branch, NMSS/FCSS

FROM: Andrew Persinko, Chief **/RA/**
Special Projects Section
Decommissioning Directorate, NMSS/DWMEP

SUBJECT: REVIEW OF AMERICAN CENTRIFUGE AUGUST 2004
DECOMMISSIONING FUNDING PLAN

United States Enrichment Corporation (USEC) submitted a license application and decommissioning funding plan (DFP) dated August 2004 for is proposed American Centrifuge Plant to be located in Piketon, Ohio. The total decommissioning cost was estimated as \$859 million, with \$130 million estimated for plant decommissioning, and \$729 million for depleted uranium disposal.

The staff requires additional information to evaluate the cost estimate and the proposed financial assurance instrument. Specific information requests are attached.

In addition, the DFP does not meet the regulatory requirements of 70.25(e) for three reasons. First, the applicant did not provide originally signed financial instruments. Second, the applicant did not provide a certification that the financial assurance has been obtained in the required amount. These two items will be necessary prior to issuance of the license. Third, the applicant did not provided financial assurance for the full amount of decommissioning. Rather, the applicant proposed an exemption from the regulation to permit it to provide financial assurance incrementally as UF₆ tails accumulate. The DFP cannot be approved until the financial assurance issue is resolved.

Docket No.: 07007004

License No.: Not Applicable

Attachment: Request for Additional Information

Contact: Thomas L. Fredrichs, NMSS/DWMEP/DECD/SPS
(301) 415-5971

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AN: ML-043450177

Template No.: NMSS-010

Ticket No.: DECD-0029

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COMMENT ON EXEMPTION REQUEST

The staff was not requested to evaluate the applicant's request for exemption from 10 CFR 70.25(e), which would permit the applicant to cover the cost of depleted uranium disposal incrementally as the tails are generated.

However, the staff offers the following comments on the exemption request.

While the applicant provided financial assurance documentation generally consistent with NUREG-1757, Vol. 3, with the exception of the items discussed in the Request for Additional Information, the decommissioning funding plan and License Application stated that financial assurance will be provided incrementally as centrifuges are installed, operated on process gas, and UF₆ tails generated.¹ However, 70.25(e) requires the full amount of decommissioning to be provided with the DFP. The applicant recognizes the regulatory requirement, but in Section 1.2.5 of the License Application, the applicant requests an exemption from the requirement that financial assurance be provided for the entire cost of decommissioning. Therefore, the DFP will not meet regulatory requirements until this issue is resolved.

In the event an exemption request is granted, the exemption should be contingent upon providing the increments of additional financial assurance in advance of generation of increments of depleted uranium, such that failure to provide the increments will invalidate the exemption and require the applicant to immediately provide financial assurance for the full amount of decommissioning costs. Providing the financial assurance increments in advance, rather than in arrears, of the generation of depleted uranium is more consistent with the purpose of the regulation to provide financial assurance before the decommissioning liability is incurred. Increases could be provided on an annual schedule. In addition, suitable license conditions should be imposed to further assure incremental additions to the financial assurance total are timely provided.

¹ USEC DFP, pp 2, 5-6, and License Application pp. 1-52 through 1-53, and 10-16 through 10-17.

REQUEST FOR ADDITIONAL INFORMATION
AMERICAN CENTRIFUGE PLANT

The staff reviewed the applicant's decommissioning funding plan (DFP) and license application dated August 2004 for compliance with the regulations of 10 CFR Part 70 and conformance to NUREG-1757, Vol. 3, "Consolidated NMSS Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness" (NUREG-1757). To complete its evaluation of the DFP, the staff requires the following additional information.

(1) Include the Cost of Depleted Uranium Disposal in the Total Decommissioning Cost Estimate (DCE) Presented in Table C3.18 of the DFP (10 CFR 70.25(e))

The regulations of 10 CFR 70.25(e) require the DFP to include an estimate of the cost of decommissioning. Table C3.18 of the DFP presents a summary of total decommissioning costs, but does not include the cost of depleted uranium disposal. Specifically, the summary accounts only for \$130 million (including 25% contingency) for decommissioning the facility, but does not include the \$729 million (including 10% contingency, but see item (2) below) cost of depleted uranium disposal.

Therefore, the applicant must include the cost of depleted uranium disposal in Table C3.18 of the DFP. Conforming changes are necessary in the decommissioning cost summaries presented in License Application Section 10.10 and Table 10.10-1.

(2) Include a Certification that Financial Assurance in the Amount of the Cost Estimate has been Provided (10 CFR 70.25(e))

The regulations of 10 CFR 70.25(e) require the DFP to contain a certification that financial assurance in the amount of the cost estimate has been provided. The DFP did not contain the required certification. Therefore, the applicant must provide the certification.

An acceptable form of certification is illustrated in NUREG-1757, Vol. 3, Section A.2.4.

(3) Incorporate a 25 Percent Contingency Factor into the Disposal Cost Estimate for Depleted Uranium (Section 3.1.2.3, Appendix A, NUREG 1757, and Appendix A, NUREG/CR-6477)

The DCE applies a 25 percent contingency factor to all decommissioning costs except those associated with tails disposition. A ten percent contingency factor is applied to the tails disposition costs. However, a contingency factor helps ensure coverage for *unexpected* circumstances that could increase decommissioning costs and such circumstances are equally likely for tails dispositions, as well as decommissioning costs. NUREG-1757, Volume 3, Appendix A, page A-29 states the following (emphasis added):

Because of the uncertainty in contamination levels, waste disposal costs, and other costs associated with decommissioning, the cost estimate should apply a contingency factor of 25 percent to the *sum of all estimated decommissioning costs*. The 25 percent contingency factor provides reasonable assurance for unforeseen circumstances that could increase decommissioning costs, and should not be reduced or eliminated simply because foreseeable costs are low.

NRC's recommendation for the use of a 25 percent contingency factor is consistent with the analysis and guidance contained in NUREG/CR-6477, which applies a 25 percent

contingency factor to all estimated costs associated with decommissioning various reference facilities.

Therefore, the applicant should apply the 25 percent contingency factor to tails disposition costs

(4) Submit Additional Detail to Support the Cost Estimate (Appendix A, NUREG 1757)

In preparing the decommissioning cost estimate (DCE), the applicant modified the tables in NUREG-1757, Appendix A. Specifically, the applicant has not included information about decontamination methods in Table C3.7. However, without additional detail on the decontamination methods, NRC cannot verify if appropriate unit costs and labor rates were used, or if disposal of wastes generated from these decontamination methods was included in the DCE.

In addition, in Tables C3.6 through C3.10, labor hours were provided for the five major tasks: (1) planning and preparation, (2) decontamination and/or dismantling of radioactive facility, (3) restoration of contaminated areas of facility grounds, (4) final radiation survey, and (5) site stabilization and long term surveillance. However, no breakdown of the major tasks to be accomplished under these headings was included. For example, under Table C3.10, total hours are given for site stabilization and long term surveillance, but there is no explanation of what activities are anticipated, nor any justification for how those hour estimates were derived. Consequently, it is difficult to determine if the cost estimate adequately covers all tasks to be undertaken during decommissioning.

Therefore, the applicant should revise the DCE to provide information on decontamination methods, as well as the types of activities likely to be undertaken in the five phases of decommissioning described above.

(5) Revise the Worker Unit Cost Schedule to Include An Appropriate Overhead Rate on Labor Costs (Appendix A, NUREG-1757, and Appendix A, NUREG/CR-6477)

In the worker unit cost schedule in Table D3.12, the applicant does not include any labor overhead rate. Appendix A of NUREG/CR-6477 (*Revised Analyses of Decommissioning Reference Non-Fuel-Cycle Facilities*, Pacific Northwest National Laboratory, 1998), however, applies overhead rates of 50 to 70 percent for direct labor, and over 100 percent for subcontracted labor, based on NRC's decommissioning experience at reference facilities. The following factors, listed for the subcontracted rate, should be considered in determining appropriate overhead rate for an independent third-party contractor:

Overhead rates applied to direct staff labor are expected to be significantly higher for subcontracting organizations than for the facility operator because of the larger ratio of supervisory and support personnel to direct labor than usually exists in subcontracting organizations. Having personnel in the field rather than in the home office also increases the overhead costs, because of travel and living expenses for some of the personnel. In view of these factors, an overhead rate on direct staff labor of 110%, plus 15% profit on labor and overheads, is assumed to be applicable to all subcontractor hours in this reevaluation study. (Pp. A.2-A.3)

To ensure that the cost estimate accurately reflects all labor costs associated with decommissioning, the applicant should modify its worker unit cost schedule to include an appropriate overhead² rate on labor.

**(6) Revise Labor Costs to Include Contractor Profit and Variations in Labor Rates
(Appendix A, NUREG-1757, and Appendix A, NUREG/CR-6477)**

The DCE does not appear to include profit on labor. Appendix A, NUREG-1757 recommends that decommissioning cost estimates assume work will be performed by an independent third-party contractor. Appendix A, NUREG-1757 and Appendix A, NUREG/CR-6477 recommend that labor costs associated with all decommissioning tasks and activities include wages and benefits for contractor staff performing decommissioning-related tasks, overhead costs, and contractor profit.

Further, the base labor salaries shown in Table D3.12 of the DCE include only two labor categories (i.e., salary and hourly) although the cost estimate makes use of eleven labor groupings. To ensure the adequacy of the cost estimate, the applicant should revise the salaries in the cost estimate to account for the variation in labor rates and the addition of contractor profit.

**(7) Include Estimates for Disposal of Waste Generated from Decommissioning Activities
(Appendix A, NUREG-1757, NUREG/CR-6477, and 10 CFR 70.25)**

The DCE does not appear to include waste disposal costs for any wastes generated by the decontamination process for the facility components or any wastes generated from restoration of facility grounds. Therefore, the applicant must revise the cost estimate to include costs for disposal of wastes generated in decontaminating its individual facility components and restoring facility grounds.

**(8) Justify the Costs of Packaging, Shipping, and Disposing of Radioactive Wastes
(Appendix A, NUREG-1757 and 10 CFR 70.25)**

The DCE provides several unit costs for packaging, shipping, and disposal of wastes. Specifically, in Table C3.14, the DCE indicates unit costs of \$28/ft³ for compacted equipment waste disposal, and \$4.47/lb for classified waste disposal. Further, the heading on table C3.14 implies that labor costs were not included (i.e., “Table C3.14 Packaging, Shipping, and Disposal of Radioactive Wastes (Excluding Labor Costs)”). The cost of labor for packaging, shipping and disposal of waste must be accounted for. Therefore, the DCE must be revised to include labor costs to package, ship, and dispose of the waste.

Further, because the unit cost for compacted equipment waste does not break out the transportation costs, NRC cannot verify that adequate transportation costs or distances were

² The term “overhead” typically includes costs that are not directly traceable to any particular product produced or project conducted by the firm. Thus, overhead typically includes “period” costs such as insurance, utilities, rent, supplies, property taxes, depreciation, and the costs of any wages, salaries, and benefits incurred as a result of the corporation’s officers and “support staff” (e.g., accounting staff, legal staff, janitorial staff, security staff). To spread such costs across multiple products or projects fairly, firms usually calculate an “indirect” overhead rate that is applied to all direct labor hours (i.e., on those labor hours that are directly associated with particular products or projects). Licensees/applicants should provide justification for the overhead rates assumed in the cost estimate.

used. Therefore, the applicant should revise or justify the disposal unit costs so that these costs can be verified.

Table C3.19 indicates a tails disposal cost of \$3/kg U, with no explanation of where the tails will be processed or how this unit cost was derived. No other costs are included for tails disposal, such as transportation or loading. Because the ultimate disposition of the tails is not known at this point, it is not clear whether the tails would need to be transported (e.g., the tails might be processed by DOE at its co-located facility). Therefore, the applicant must justify this unit cost and clarify whether it includes anything beyond the actual waste disposal costs.

(9) Revise or Justify Estimates for Non-labor Costs (Appendix A, NUREG-1757 and NUREG/CR-6477)

The DCE does not provide justification for the laboratory costs included in table C3.16. Specifically, no information is included to indicate the number of samples and locations, or the derivation of the \$105/sample unit cost. Therefore, the applicant must provide a justification of the laboratory costs.

The miscellaneous costs listed in Table C3.17 do not include license fees, insurance, or taxes. Therefore, the applicant must revise the cost estimate to include these costs.

(10) Provide Additional Documentation for Financial Assurance (Appendix A, NUREG-1757)

The NRC regulations at 10 CFR 70.25 require that decommissioning funding plans include a certification that financial assurance has been provided in the amount of the site-specific cost estimate. The applicant supplied an unexecuted copy of a surety bond and standby trust agreement proposed to be used as the mechanism for decommissioning financial assurance. The unexecuted copies of the surety bond and standby trust agreement are consistent with the recommended wording in NUREG-1757, Volume 3, Appendix A.³ However, the applicant did not submit an unexecuted copy of the broker/agent's power of attorney,⁴ as recommended by NUREG-1757, Volume 3, pages 4-24 and A-90. An unexecuted copy of the broker/agent's power of attorney authorizing the broker/agent to issue bonds on behalf of the issuing company will ensure that the surety bond is enforceable. Although a model power of attorney is not included in NUREG-1757, it is a commonly-used legal document. Therefore, the applicant should submit an unexecuted copy of a broker/agent's power of attorney, as recommended in NUREG-1757, Volume 3, pages 4-24 and A-90.

Note that pursuant to 70.25(e), the DFP does not meet regulatory requirements until the originally signed financial instruments have been received by the NRC.

³ NRC recognizes that the amount of the surety bond is contingent upon the cost estimate and assumes that the amount and surety organization will be inserted into the surety bond at the appropriate time in the NRC licensing process.

⁴ NRC recognizes that a power of attorney cannot be executed until the surety is chosen and a valid instrument is created; however inclusion of an unexecuted copy in the application package demonstrates the applicant's understanding that the instrument is part of the recommended application package.