POLICY ISSUE (Notation Vote)

<u>June 4, 2002</u> <u>SECY-02-0095</u>

FOR: The Commissioners

FROM: William D. Travers

Executive Director for Operations

SUBJECT: APPLICABILITY OF SECTION 11e.(2) OF THE ATOMIC ENERGY

ACT TO MATERIAL AT THE SEQUOYAH FUELS CORPORATION

URANIUM CONVERSION FACILITY

PURPOSE:

To request Commission approval that certain Sequoyah Fuels Corporation (SFC) waste can be classified as Atomic Energy Act, Section 11e.(2) byproduct material.

SUMMARY:

The SFC uranium conversion facility is included in the Site Decommissioning Management Plan (SDMP) as a result of contamination that occurred during the plant's operations, which ceased in 1992. In March 1999, SFC submitted a decommissioning plan to remediate the site and terminate the license in accordance with the restricted release provisions in the 1997 License Termination Rule (LTR) in 10 CFR 20.1403. In January 2001, SFC formally requested that the staff evaluate whether a portion of its waste could be considered as 11e.(2) byproduct material and, thereby, be remediated under the uranium mill tailings impoundment regulations in Appendix A of 10 CFR Part 40. SFC had made a similar request in 1993 to classify the same materials on site as 11e.(2) byproduct material, but the staff did not agree with its proposal at that time. This paper discusses SFC's most recent request, two options for responding to this

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request, the advantages and disadvantages of each option, and recommends that SFC's waste from the front-end of its Gore, OK, operation be considered 11e.(2) byproduct material. This paper also addresses the recommendations of a panel that reported on a Differing Professional View (DPV) filed by two staff members. The DPV was based on an earlier draft of this paper that also concluded that front-end material could be considered to be 11e.(2) byproduct material.

DISCUSSION:

SFC has thus far been unable to obtain an independent third party/custodian for institutional controls for restricted release under the LTR provisions in 10 CFR Part 20, Subpart E. In a letter dated January 5, 2001, SFC asked the staff to inform it of the applicability of Section 11e.(2) of the AEA to the waste from the front-end process of the Gore, OK, uranium conversion facility, to determine if the facility could be decommissioned pursuant to 10 CFR Part 40, Appendix A. If so, the U.S. Department of Energy (DOE), pursuant to Section 202 of Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), would be required to assume responsibility under the general license for requirements in the Long-Term Surveillance Plan (LTSP) after license termination by the U.S. Nuclear Regulatory Commission (NRC). If the site were remediated under 10 CFR Part 40, DOE would become the general licensee and provide assurance that the LTSP is appropriately implemented. SFC argues that the initial processing of material at the Gore site was equivalent to the processing at a uranium mill (i.e., solvent extraction of uranium from the feedstock). Therefore, SFC submits, the wastes at the Gore site from the initial material process should be classified as Section 11e.(2) byproduct material, to be decommissioned under the criteria in Part 40, Appendix A. SFC has stated that this waste, which is generally segregated from the waste from the back end of the conversion process, is estimated to be about 80 percent of the residual radioactive material at the site. SFC further argues that the staff is more familiar with the decommissioning process in 10 CFR Part 40, Appendix A, and the LTSPs in particular that are implemented by DOE at mill tailings impoundments. The staff has yet to authorize a restricted release of a site under the provisions of the LTR. Therefore, SFC believes that decommissioning under the 10 CFR Part 40. Appendix A, process would be more appropriate, less costly, and take less time than decommissioning the site under the LTR process.

The staff has previously considered the issue of classifying the waste from the front-end process of the Gore, OK, uranium conversion facility as 11e.(2) byproduct material. In a July 1993 memorandum to the Commission, the Executive Director for Operations (EDO), supported by the Office of the General Counsel (OGC), concluded that the waste was not 11e.(2) byproduct material. This conclusion was based on the previous view that uranium hexafluoride

¹ Under UMTRCA, the State of Oklahoma could assume responsibility before DOE was required to. Oklahoma has indicated that it does not wish to assume responsibility for the SFC site.

conversion plants had not been considered as uranium mills and were not contemplated as such by UMTRCA. OGC has advised the staff that it has reconsidered its position.²

Attachments to this paper provide detailed background information on these matters. Attachment 1 describes the site in a general fashion and also describes two SFC proposals to classify waste as 11e.(2) byproduct material -- one made in 1993, the other in 2001. The staff's response to the 1993 proposal is in Attachment 2, a memorandum from J. Taylor, EDO, to the Commission, dated July 6, 1993. Attachment 3 is a SFC presentation in a June 2000 meeting with the staff. SFC's formal request for review on this issue is set forth in a January 5, 2001, letter to NRC (Attachment 4).

The staff believes that the activity at the front-end of the Sequoyah processing was uranium milling, and thus produced 11e.(2) byproduct material as its wastes. In Attachment 5, "Uranium Milling Activities at the Sequoyah Fuels Corporation Uranium Conversion Facility," the staff discusses in detail why this classification is justified. That attachment contains a plain- language, working definition of uranium milling, based on the language in UMTRCA and Part 40:

Uranium milling is an activity or set of processes that extracts or concentrates uranium or thorium from any ore primarily for its source material content, and the resulting tailings or wastes are 11e.(2) byproduct material.³

The front-end of the Gore facility can reasonably be viewed as a continuation of the milling process that was started at a licensed uranium mill. Since all wastes from such milling are 11e.(2) byproduct material, a strong argument can be made that the waste from that stage of the milling process which occurred at the SFC facility can be considered 11e.(2) byproduct material. In that regard, it should be noted that the staff previously considered all waste at a uranium mill, including some yellowcake from the milling process, to be 11e.(2) byproduct material, because the staff had not divided the milling process into its constituent parts to determine precisely at which stage uranium is no longer being extracted or concentrated from ore. The staff has not found it necessary to label the feed for each step of the milling process as "ore" as the basis for classifying the waste from that step as 11e.(2) byproduct material. When yellowcake underwent additional concentration at the front-end of SFC, it was a continuation of uranium milling, i.e., another step in the milling process. Thus, that part of the

² OGC has advised the staff that the definitions of uranium milling and 11e.(2) byproduct material are process-related definitions and not restricted to a particular location of activity nor the physical characteristics of a material. Although the tailings and waste from the front-end of SFC's facility can continue to be classified as source material, this material can also be classified as 11e.(2) byproduct material if the process that took place at the front-end of SFC's facility can be considered a continuation of uranium milling. As a result, the front-end wastes could fall under the legislative and regulatory definitions of two different licensed materials and it would be a policy decision by the Commission as to whether to classify the front-end wastes as source material or 11e.(2) byproduct material.

³ As stated in NRC's December 13, 2000, Director's Decision, although pre-UMTRCA mill tailings may be chemically, physically, and radiologically similar to 11e.(2) byproduct material, it is not material over which NRC has jurisdiction.

processing at a conversion facility fulfills the "extraction or concentration" terms in the definition of 11e.(2) byproduct material.

The staff has identified two options for responding to SFC's request: (1) continue with the previous view and disagree with SFC's arguments, and continue decommissioning the site under the LTR; or (2) agree with SFC's arguments and classify some SFC waste as Section 11e.(2) byproduct material. SFC has only requested a decision on whether its front-end waste can be considered to be 11e.(2) byproduct material. Thus, decommissioning under that classification or under the LTR, on which its current decommissioning plan is based, are the only two options examined in this paper.

In evaluating these options, the staff has identified a general framework for decision-making involving complex sites undergoing decommissioning, and specific considerations for the SFC site under this framework (Attachment 6). The criteria in the framework are based on the Agency's four Strategic Plan performance goals. The staff's evaluation of SFC's proposal is based not only on whether there is a valid legal argument that the wastes can be classified as 11e.(2) byproduct material, but also on other important factors, such as protection of public health and safety, the imposition of unnecessary regulatory burden, and the effect on public confidence, and agency efficiency.

The need for a broader framework to consider the issues presented in this paper is driven by significant changes in the external environment since the passage of UMTRCA that affect the management and disposal of low-activity, long-lived radioactive wastes from contaminated sites. States and Compacts have been unable to develop new disposal sites under the Low-Level Radioactive Waste Policy Amendments Act of 1985, and two of the three operating lowlevel waste (LLW) sites are limited in the waste that they can accept in this category. As availability of LLW disposal options has diminished, remediation programs have grown. NRC's Site Decommissioning Management Program (SDMP) was established in 1990 and sites in this program require disposal of hundreds of cubic meters of low-activity material.⁴ During this same period, the uranium mining and milling industry has been in decline and the National Mining Association (NMA), and the mill operators they represent, have been encouraging the greater use of existing mill tailings impoundments for disposal of contaminated materials from sites undergoing decommissioning. NMA stated in its September 11, 2001, petition for rulemaking, that conventional mill tailings impoundments have 20 million metric tons (or approximately 20 million cubic meters) of additional disposal capacity that could be used for other similar wastes. Several companies that operate Resource Conservation and Recovery Act (RCRA) hazardous waste facilities in the U.S. have pursued acceptance of low-specificactivity⁵ radioactive waste licensed under the AEA, to complement the technologically enhanced naturally occurring materials they have been accepting. NRC has approved a number of requests for disposal of unimportant quantities of source materials in such facilities.

⁴ In a staff requirements memorandum dated August 22, 1989, the Commission directed the staff to develop a comprehensive strategy for NRC activities to deal with contaminated sites, to achieve closure on decommissioning issues in a timely manner.

 $^{^{5}}$ By "low-specific activity," the staff means here "unimportant quantities" or less than 0.05% by weight of uranium and/or thorium.

and several States have included acceptance criteria for radioactive wastes in the their RCRA permits for such facilities.

In spite of the alternatives that have developed for these kinds of waste, there still remain obstacles to safe disposal alternatives for low-activity wastes, because of their classification as a particular kind of waste (e.g., as 11e.(2) byproduct material or source material). The purpose of the framework in Attachment 6 is to: (1) address wastes which, in a specific case, may be classified as more than one type of radioactive material; and (2) identify disposal/remediation options that best meet the four NRC Strategic Plan performance goals. This increased flexibility may lead to safe disposal alternatives with lower costs, increased competition, and faster cleanups. In the case of SFC, consideration of the four performance goals provides insights on the advantages and disadvantages of classifying some wastes as 11e.(2) byproduct material. Such a classification is different from the staff's previous position that 11e.(2) byproduct material could only be produced at uranium mills; however, this is outdated in light of the significant changes in the external environment over the last 20 plus years.

The options, both of which are protective of the public health and safety, are discussed below, along with their major advantages and disadvantages.

Option 1: Continue Decommissioning the Site under the LTR.

Under this option, the licensee would continue to decommission the site under the restricted release provisions of the LTR (i.e., 10 CFR 20.1403), including demonstrating compliance with the requirements for institutional controls and associated financial assurances. In this process, the licensee is responsible for providing sufficient financial assurance to enable an independent third party/custodian to assume necessary long-term control and maintenance of the site. Because of the significant quantity of materials with long-lived radionuclides (140,000 - 240,000 cubic meters in contaminated soils, sludge, and groundwater), SFC proposed an unnamed party, "equivalent to DOE," as the custodian. However, SFC has not been able, to date, to identify an entity willing to undertake this responsibility. Section 151(b) of the Nuclear Waste Policy Act of 1982 (NWPA) allows, but does not compel, DOE to assume ownership and control of sites like SFC at no cost to the government. SFC has met with DOE to discuss this issue, but has not obtained a commitment from it at this time. The staff has also been seeking to develop a Memorandum of Understanding (MOU) with DOE to provide long-term care under Section 151(b), but in January 2002, DOE informed the Chairman that it would be seeking to transfer its long-term stewardship responsibilities to the U.S. Department of the Interior (DOI) or another government organization with a land-management mission. Thus, there is considerable uncertainty about whether this provision can be used, or at least when it would be available for use by an NRC or Agreement State licensee. SFC has not proposed the use of the unrestricted release provisions of the LTR, which would be substantially more costly (an estimated several tens of millions of dollars more than an onsite cell).

Advantages

• This approach is consistent with previous staff position on this issue and may avoid some controversy by not reconsidering staff positions on 11e.(2) byproduct material.

- This approach maintains staff's previous position on 11e.(2) byproduct material by defining it in terms of the location where processing takes place, viz., a uranium mill (although the statute makes no reference to where the processing takes place).
- This approach avoids interpretations based on detailed analyses and arguments over what constitutes "milling," "ores," and "extraction or concentration" -- the key terms in the definition of 11e.(2) byproduct material.
- This approach utilizes SFC's existing decommissioning plan.

Disadvantages

- SFC does not have a commitment from an independent third party/custodian for institutional controls as required by 10 CFR 20.1403, and it is not clear that it will ever be able to obtain such a commitment. No NRC licensee with a privately owned site has been able to obtain an independent third party/custodian for institutional controls, and DOE ownership and control of such sites under Section 151(b) is highly uncertain at this time. The effort to negotiate an MOU with DOE to facilitate such transfers has been unsuccessful because of DOE plans to transfer this responsibility to DOI.
- Continued delays in SFC acquiring an independent third party/custodian expend SFC's limited financial resources needed for decommissioning.
- Continued delays in implementing decommissioning under LTR increase unnecessary regulatory burden and it might be inefficient for the staff to continue its safety and environmental reviews with the feasibility of the LTR option so uncertain.
- The staff's previous position that 11e.(2) byproduct material can only be produced at a uranium mill unnecessarily limits flexibility provided by the language in UMTRCA.
- If SFC is unable to obtain an independent third party/custodian, or have DOE assume long-term care responsibilities, SFC contends would need to decommission the site for unrestricted use under the LTR, which is substantially more costly.

Option 2: Classify Some SFC Waste as Section 11e.(2) Byproduct Material and Decommission Under 10 CFR Part 40, Appendix A.

Under this option, NRC would agree with SFC's proposal that the residual radioactivity produced as a result of the front-end process at the uranium conversion facility can be classified as byproduct material as defined in Section 11e.(2) of the AEA. Under this option, SFC has stated, in its January 5, 2001, submittal, that 11e.(2) byproduct material would be disposed of in a 10 CFR Part 40, Appendix A, tailings impoundment at the site. At the completion of remediation, ownership and control of the 11e.(2) byproduct material cell would be transferred to DOE, under Title II of UMTRCA.

In its proposal, SFC expects that DOE would also agree to assume control of any non-11e.(2) byproduct material contained in the 11e.(2) cell, either under the November 2000 interim guidance set forth in Regulatory Issue Summary 2000-23, "Recent Changes to Uranium Recovery Policy," or Section 151(b) of the NWPA. As with Option 1, DOE is not required to assume control for non-11e.(2) byproduct material that might be disposed of on site, either under UMTRCA or NWPA 151(b). A DOE decision would be needed to determine the ultimate disposition of non-11e.(2) byproduct material. The remainder of the site would be released for unrestricted use under the LTR and/or Appendix A of Part 40.⁶

SFC has proposed an onsite disposal cell, but classification of front-end wastes as 11e.(2) byproduct material could also lead to other remediation options. Mill tailings could be directly disposed in an offsite mill tailings impoundment at an existing uranium mill, without having to obtain DOE and LLW Compact approvals -- conditions that are specified by the staff in Regulatory Issues Summary 2000-23, for non-11e.(2) byproduct materials. Similarly, if the non-11e.(2) byproduct material at SFC could not be disposed in the tailings impoundment or left as residual radioactivity under the restricted release provisions of the LTR, the amount of material requiring offsite disposal would be reduced by classifying front-end wastes as mill tailings. SFC has not proposed any of these alternatives, but would have the flexibility to choose them if NRC agrees with their proposal for classification of 11e.(2) byproduct material at the site.⁷ This flexibility may be needed if DOE is unable or unwilling to accept non-11e.(2) byproduct material left on site. This flexibility would also enable SFC to develop options based on other considerations -- in addition to public health and safety -- such as their feasibility, cost, and time to implement.

Advantages

- This option provides a more certain resolution of long-term control for most, if not all, of SFC's waste, by using DOE as the long-term custodian under UMTRCA, if these wastes are left on site. This option provides what may be the only viable path forward for site decommissioning, given the uncertainties associated with implementing the existing restricted release provisions of the LTR.
- The staff position of 11e.(2) byproduct material under this option is more in line with the language in UMTRCA than the previous staff position that considered mill tailings to be produced at uranium mills, only.

⁶ Although SFC has not indicated which criteria would be used for areas outside of a disposal cell, cleanup of these areas for unrestricted release might be more efficient if only one set of regulations, either the LTR or Appendix A of 10 CFR Part 40, were used. The LTR would apply to non-11e(2) byproduct material, and Appendix A to the mill tailings. The release criteria for mill tailings and source material are both protective, but different in their approaches. SFC could request an exemption from one set of regulations, assuming the exemption criteria would be met.

⁷ In fact, in SFC's April 30, 2002, response to staff's Request for Additional Information, SFC stated that it is conducting studies to de-water raffinate sludges, and if successful, may ship them to a uranium mill.

- NRC and DOE have experience in implementing the Part 40, Appendix A, decommissioning process. NRC staff expects to be able to review this option more efficiently.
- DOE's Office of Environmental Management and Office of the General Counsel have reviewed the proposal and indicated that DOE does not have any formal position on the classification issue, and will accept NRC's designation (see Attachment 7).
- The Cherokee Indian Nation, in a letter sent on April 11, 2002, prefers this option, if offsite disposal of all of the material is not possible.
- This option gives SFC flexibility in choosing onsite/offsite disposal options by considering the front-end wastes to be either 11e.(2) byproduct material or source material. SFC can choose the optimum alternative with this flexibility, taking into account factors such as cost, public acceptance, and efficiency.

Disadvantages

- This option is not consistent with the previous staff position on the applicability of AEA Section 11e.(2) to the SFC site, which was focused on the location of the activity (i.e., not at a uranium mill) rather than on the milling process and the language of the statute.
- This option is not consistent with the current source material license and would require SFC to submit a request to amend its license to reclassify a portion of its waste,⁸ and to substantially revise its existing Decommissioning Plan and submit it as a reclamation plan under Part 40. Although there would be an increased burden on the licensee in the immediate future, SFC considers it to be worth the investment to have a more certain path for decommissioning.
- The overall approval of the site decommissioning plan may be delayed because the new license amendment request would offer an opportunity for a hearing to any affected party. Presently, the identities of parties that may object to an UMTRCA disposal cell (11e.(2) cell) at the SFC site are not known.
- For onsite disposal of all wastes, SFC would need to obtain approval for disposal of the non-11e.(2) wastes in an 11e.(2) cell, which is not guaranteed. The staff does not intend to approve a decommissioning plan which includes an 11e.(2) cell without the non-11e.(2) material being addressed.⁹ This would require DOE, the State of

⁸ The staff is currently considering an amendment to authorize SFC to decommission the facility under the LTR. A hearing on the amendment is pending before a Presiding Officer. The hearing has been held in abeyance at this time, as staff waits for completion of the environmental impact statement.

⁹ Before the staff could docket a license application for 11e.(2) materials, SFC would need to resolve its approach for the non-11e.(2) material and DOE's acceptance of it in the 11e.(2) cell, if necessary.

Oklahoma, and, potentially, Central LLW Compact approval, in addition to NRC approval. Alternatively, SFC could propose that non-11e.(2) wastes be disposed offsite (to meet the unrestricted release criteria in the LTR), attempt to leave the material onsite under the restricted release provisions of the LTR, and/or provide another acceptable approach.

- 10 CFR Part 40, Appendix A, does not have the public participation requirements of the LTR. However, the staff expects that SFC would continue to actively engage the public, given the interest of the public, local and State governments, and the Cherokee Nation in the resolution of this license termination.
- There is the potential for unknown and unintended consequences from this change in the staff's position on the classification of this waste as 11e.(2) byproduct material. The staff position limits the flexibility offered in this case to the milling process (i.e., activities involved with the extraction or concentration of uranium). The staff cannot foresee any adverse consequences in this limited decision. The only other commercial conversion facility in the U.S., the Honeywell plant at Metropolis, IL, currently does not perform milling operations. 10 The three other sites in the SDMP that are considering restricted release, and in need of a third party/custodian, are clearly not involved in milling activities, and therefore could not be considered for an 11e.(2) byproduct material classification of their wastes. Once the fuel cycle is beyond natural uranium oxide, and the conversion processes take place, the milling process is clearly completed. Although the staff is mindful of a concern that there may be unintended consequences from Option 2, each case must be considered on its own merits to determine if the milling process is involved. If, however, other licensees were to argue for additional flexibility in classification of their wastes, in order to reduce disposal costs, for example, it is possible that schedules for remediating sites could be affected and additional staff resources would be needed to address any licensee proposals.

The staff believes this option is viable, notwithstanding the EDO's 1993 view. If the Commission extends 11e.(2) byproduct material treatment to the SFC front-end waste, the waste would then be classifiable as both source material, because of its uranium and thorium content, and 11e.(2) byproduct material, because of the process by which it was created. In a similar situation at the Stepan Chemical Company site in Maywood, New Jersey, the staff, in a September 20, 2001, letter to Envirocare of Utah, Inc., classified material that could be both source and 11e.(2) byproduct material, as 11e.(2) byproduct material.

Two staff members submitted a DPV on an earlier draft of this paper that recommended Option 2. A Panel evaluated their submittal and prepared the report in Attachment 8. Attachment 9 contains the DPV. The staff continues to believe that Option 2 is viable. The staff has addressed the recommendations of the DPV Panel in this revised paper.

COORDINATION:

Although uranium milling was not performed at Honeywell in the recent past, the staff is determining whether uranium milling was ever performed at this facility. If so, some wastes could be potentially be classified as 11e.(2) byproduct material. Honeywell has not indicated that it would pursue this classification with NRC.

OGC has reviewed this paper and has no legal objection. The hearing pending before the Atomic Safety and Licensing Board (ASLB), regarding SFC's decommissioning plans, does not involve any issue related to classification of material at the Gore site as Section 11e.(2) byproduct material. Thus, no separation-of-function issues are raised by this paper.

RECOMMENDATION:

Both options are legally viable and protective of public health and safety and the environment. Based on the above considerations, and after weighing the advantages and disadvantages of the options, the staff recommends that the Commission approve Option 2 -- that SFC frontend waste can be classified as Section 11e.(2) byproduct material.

/RA by CPaperiello Acting For/

William D. Travers Executive Director for Operations

Attachments:

- 1. Background information
- 2. Staff memo to Commission on SFC Plan, 1993
- 3. SFC June 2000 slide proposal to categorize waste as 11e.(2)
- 4. SFC January 2001 Proposal to classify waste as 11e.(2)
- 5. Uranium Milling Activities at Sequoyah Fuels Corporation
- 6. Decision-Making Framework
- 7. DOE letter re taking over site
- 8. DPV Panel Report
- 9. DPV

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*See Previous Concurrence

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