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Your ref:

Our ref: LTR-RAC-21-65

September 14, 2021

SUBJECT: Request for Alternate Disposal Request Revised Scope Review and Approval
(Docket No. 70-1151)

- REFERENCE: 1) NRC letter to Westinghouse, "Request for Additional Information Related to Westinghouse Electric Company, LLC, Exemption Request for Alternate Disposal of Specific Waste (Enterprise Project Identifier L 2021-LLA-0101)"
2) Westinghouse letter to NRC, LTR-RAC-21-42, "Request for Exemptions Associated with Disposal and Transportation of Specified Columbia Fuel Fabrication Waste" (ML21153A001)

Westinghouse Electric Company, LLC (Westinghouse) requested NRC approval for alternate disposal (ADR) of specified low-activity radioactive materials from the Columbia Fuel Fabrication Facility (CFFF), License No. SNM-1107, for certain waste containing byproduct material and special nuclear material (SNM) (Reference 2). That request was accepted for review by the NRC on June 14, 2021 via NRC e-mail to Westinghouse (ADAMS Accession No. ML21166A105). Westinghouse requested approval of the ADR no later than September of 2021.

On September 3, 2021 Westinghouse was informed by the NRC that additional information would be required to describe the waste to be disposed of as defined in 10 CFR 20.2002(a). A request for additional information (RAI) was sent by the NRC to Westinghouse on September 13, 2021. Westinghouse has been preparing CaF₂ for disposal in anticipation of ADR approval in September as requested and will incur significant additional costs in a delay to the ADR approval beyond the end of September in addition to the delay in environmental cleanup progress at the site. As a result, Westinghouse is requesting NRC to split its review of this ADR into two exemptions:

- (1) The scope of the first exemption will encompass only the existing CaF₂ sludge to expedite the review and approval process to address the immediate need.
- (2) The scope of the second exemption will be defined in a response to the RAI (Reference 1) by October 15, 2021.

Enclosure 1 contains the information necessary for the NRC to complete the review of Item (1).

In summary, Westinghouse is requesting the scope of the original ADR as defined in Reference 2 be broken into two separate requests to mitigate the impact of schedule delays. The cumulative dose calculations, including the combined limit of volumetric and surface contaminated material to be shipped in a year will apply to both requests and will account for the material shipped this year under SNM-1107 License Condition S-11. The scope of the first request is defined as described above and in Enclosure 1. The scope of the second request will be described in a response the RAI (Reference 1) under a separate exemption and will complete the scope as described in Reference 2. These exemptions from License SNM-1107 are required to remove contaminated waste materials from the CFFF and reduce the environmental risk on site.

Please contact me at (803) 331-9425 should you have questions or need any additional information.

Elise Malek

[Elise Malek \(Sep 14, 2021 16:21 EDT\)](#)

Elise Malek
Regulatory Affairs Manager
Westinghouse Columbia Fuel Fabrication Facility
Docket 70-1151 License SNM-1107

Enclosure 1: Exemption Request, CaF₂ Scope (4 Pages)

cc:

Mr. Thomas Vukovinsky

Mr. David Tiktinsky

Enclosure 1

Exemption Request, CaF₂ Scope

WESTINGHOUSE NON-PROPRIETARY CLASS 3

The Westinghouse Electric Company, LLC (Westinghouse) Columbia Fuel Fabrication Facility (CFFF), License No. SNM-1107, has requested an exemption from NRC requirements under the authority of 10 CFR 20.2002, also known as an “Alternate Disposal Request” (ADR). This request was submitted to NRC Headquarters for review on June 1, 2021, titled “Request for Exemptions Associated with Disposal and Transportation of Specified Columbia Fuel Fabrication Waste (Docket No. 70-1151, Special Nuclear Material License SNM-1107)”, internal reference number LTR-RAC-21-42. The NRC, in a letter dated September 13, 2021, submitted a request for additional information (RAI) to Westinghouse indicating a more defined characterization of the waste to be disposed of under the ADR was required for review and approval. Westinghouse has an immediate need for an exemption to dispose of the Calcium Fluoride (CaF₂) sludge stored on site from previous lagoon dredging campaigns and is requesting the scope of the ADR be split into two separate exemption requests:

1. An exemption to ship the existing CaF₂ sludge to US Ecology Idaho (USEI).
2. An exemption to ship the material as defined in a response to the RAI to USEI.

Both requests will follow the dose limit methodology for shipping material as described in the ADR. The information below is a description of the existing CaF₂ sludge on site to support the first request.

Calcium fluoride is a by-product of site operations. It is pumped in very low concentrations to lagoons where the solids settle to the bottom and are periodically dredged from the lagoon bottom, dewatered and placed in a large pile for further drying prior to disposal. The existing CaF₂ waste being considered under this request is contaminated with special nuclear material (SNM) (low enriched uranium {<5wt% U-235}) as described in section 3.2 of ADAMS Accession No. ML20129J936 and in concentrations as described in ADAMS Accession No. ML21039A719. The test results show the waste concentration is well under the assumed concentration in the dose calculations described below.

The technical methodology used in the ADR conservatively assumed the maximum radiological concentration of the waste was equal to the Waste Acceptance Criteria (WAC) at the USEI facility, which is 3,000 pCi/g total activity considering contributions from all radioisotopes. Using the WAC as the hypothetical maximum, volumes were calculated for volumetrically contaminated material and for surface contaminated objects that would be equal to the dose limit of 5 mrem/yr. These calculations resulted in the following determinations:

$$\text{For volumetrically contaminated waste: } \frac{5 \text{ mrem/year}}{322,000 \text{ ft}^3/\text{year}} = \frac{1.55\text{E-}5 \text{ mrem}_{\text{vc}}}{\text{ft}^3}$$

$$\text{For surface contaminated waste: } \frac{5 \text{ mrem/year}}{122,000 \text{ ft}^3/\text{year}} = \frac{4.1\text{E-}5 \text{ mrem}_{\text{sc}}}{\text{ft}^3}$$

$$\sum \left[\frac{(1.55\text{E-}5 \text{ mrem}_{\text{vc}} \times \text{total}_{\text{vc}} \text{ ft}^3)}{\text{ft}^3} + \frac{(4.1\text{E-}5 \text{ mrem}_{\text{sc}} \times \text{total}_{\text{sc}} \text{ ft}^3)}{\text{ft}^3} \right] < 5 \text{ mrem}$$

Using this methodology, the total credited dose for the waste already shipped to USEI in 2021 can be calculated. To date, 497 supersacks of stabilized East Lagoon waste mixture have been shipped at 243 ft³ each, and 313 UF₆ cylinders have been shipped at 44 ft³ each. While USEI's maximum WAC limit (3,000 pCi/g) was used in the table below to show maximum calculated dose, in actuality the East Lagoon material and UF₆ cylinders were characterized prior to shipment as described in the ADR request (ADAMS Accession No. ML20129J936) and activity concentrations were a fraction of these limits i.e. the results are extremely conservative.

2021 ADR Waste to Date

Waste Type	Waste Volume (ft ³)	Dose (mrem)
Stabilized East Lagoon Mixture	120,771	1.87
Decommissioned UF ₆ Cylinders	13,722	0.57
	Total:	2.44

There are 213 UF₆ cylinders remaining to be shipped in 2021 under the existing ADR approval (526 UF₆ cylinders in total were approved for disposal). Westinghouse is requesting an additional volume of CaF₂ up to 133,000 ft³ also to be shipped to USEI. The CaF₂ pile was defined in a Westinghouse letter to the NRC (ADAMS Accession No. ML21039A719). The packaged CaF₂ waste may also contain de minimis amounts of debris such as plastic tarps used during load out, and/or gravel, soil, and vegetation that were collected during packaging. It is not anticipated that absorbent material will be needed, however small amounts of water absorbent material may also be added as necessary to ensure that no free liquids are present in the waste stream to comply with shipping and receiving requirements. The addition of these non-radiological materials will not negatively impact the overall radiological concentrations in the waste or alter the physical form of the waste destined for disposal at USEI. The waste is also well characterized, and it has been established that the radiological concentrations in the pile are well below the USEI WAC as shown in the table below

Average CaF₂ Radiological Concentration Based on Sampling

U-234 (pCi/g)	U-235 (pCi/g)	U-238 (pCi/g)	Tc-99 (pCi/g)
49.2	1.7	6.1	0

Despite these low concentrations, Westinghouse will utilize the methodology described above and assume that the waste concentration is equal to the USEI WAC of 3,000 pCi/g to calculate the amount of CaF₂ material that can be shipped to USEI in the remainder of 2021.

2021 Additional ADR Waste

Waste Type	Waste Volume (ft ³)	Dose (mrem)
CaF ₂	133,000	2.06
Decommissioned UF ₆ Cylinders	9,372	0.39
	Total:	2.45

Combining the dose credited for the waste already shipped in 2021 (assuming maximum concentrations, a very conservative assumption), with the calculated dose from the additional waste proposed to be shipped in 2021 as described above (also at maximum concentrations), the result is 4.9 mrem. In conclusion, shipping an additional volume of up to 133,000 ft³ of CaF₂ with radiological concentrations below the USEI WAC will not exceed the constraints of the 20.2002 Alternate Disposal Request, or represent any undue risk to the safety and health of the Radiological Workers handling the waste, the public, or the environment. In addition, due to the actual radiological concentration of the shipped material being a fraction of the WAC, actual worker dose will be a fraction of the calculated total. It is unlikely that the entire 133,000 ft³ can be shipped in 2021, however the calculations were performed to demonstrate the request is within the established limit. Any shipments of the material in 2022 will be counted against the combined material limit for that year.

Below is a summary of how the proposed exemption request meets the requirements of 10 CFR 70.17(a).

Authorized by Law

The material will be transported in compliance with US Department of Transportation (DOT) regulations to USEI. USEI is a Subtitle C Resource Conservation and Recovery Act (RCRA) hazardous waste disposal facility permitted by the State of Idaho to receive radioactive waste that is not licensed or exempted from licensing by the NRC. As such, the material will be removed per state and local regulations, will be shipped per existing federal regulations to a location approved by the state of Idaho to receive the material. The proposed exemption is not otherwise inconsistent with NRC regulations or other applicable laws. Therefore, the request is authorized by law pending NRC approval of the exemption.

Not endanger Life, Property, or the Common Defense and Security

As described above, the material shipping and handling will follow all applicable state and federal regulations and the radiological assessment has shown the requested actions will not exceed regulatory requirements. In addition, CFFF maintains an NRC approved Physical Security Plan (ML19295F234). Therefore, shipments of the waste material for disposal at USEI will be conducted in accordance with applicable regulations that provide reasonable assurance the requested exemption will not endanger life, property or the common defense and security.

In the Public Interest

This project is part of CFFF's ongoing efforts to remediate legacy environmental concerns at the site. Improvements to the CaF₂ pad are planned and cannot be executed until the pad is cleared of material. Disposing of contaminated material and the proposed enhancements to the CaF₂ pad are in the interest of public health and safety and the environment.