Request for Additional Information

June 2025

Disa Technologies, Inc Application Package (ML25087A094)
- Transmittal letter, including Response to NRC Comments
  - March 28, 2025 (ML25087A095)
- Application for a Performance-Based, Multi-Site Radioactive Materials License to Operate a High-Pressure Slurry Ablation Remediation System, Revision 3
  - March 21, 2025 (ML25087A096)
- Environmental Report, Revision 2
  - March 21, 2025 (ML25087A097)

Licensing Information (L)

L-1 Sources

Additional information is needed for the Thorium-230 sources described in Section 3.1 of the application.

- Manufacturer name
- Model Number
- Leak Test Frequency recommended by manufacturer

Basis

In Section 3.1 of the application, Disa requests approval for possession of 10 sealed Thorium-230 source to be used as check and references sources for performance of daily operability check on the radiation survey instruments. The applicant requested to be approved to possess 10 of these sources with an activity of 0.675 microcuries (µCi) each, for a total possession of 6.75 µCi.

NUREG-1556, Volume 18, Revision 1, Section 8.5.1 (NRC, 2018), provides that applicants provide the manufacturer's name, model number, radionuclide, quantity, and nominal activity for each requested sealed source that they will possess, use, and service. Similar to the sealed source requirements in 10 CFR 30.32(g) and 10 CFR 32.74(b)(2), an AUM service provider licensee will be authorized to possess and use only those sources specifically approved for use in their license.

The requested information is needed to allow the Nuclear Regulatory Commission (NRC) staff to verify the sources are acceptable for their stated use and to establish leak test or other requirements for the sources in accordance with the manufacturer's instructions.

L-2 Sampling Plan

Additional information is needed about the sampling and analysis that is planned for the fines, the coarse fraction, and the process water resulting from the use of high-pressure slurry ablation (HPSA) at the temporary job sites. Staff recommends Disa develop a sampling plan that outlines the number and locations of samples, sample collection methodology (e.g., composite samples), analytical methods, analytical parameters, and quality assurance/quality control

measures that sampling staff use to ensure confidence in assessments of the radioactive material concentrations remaining at the temporary jobsites. This sampling plan should address all three streams of the HPSA process.

Basis

Disa has committed to ensuring that those materials left onsite at the end of operations do not meet the definition of source material as defined in 10 CFR 40.4 (i.e., by weight contain less than 0.05% or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof) and meet the 10 CFR 20.1402 release criteria for unrestricted use. The NRC staff is aware of challenges when using certain analytical methods used to determine uranium and thorium concentrations in liquids. Specifically, some analytical methods approved by the Environmental Protection Agency under the Clean Water Act, under-report uranium or thorium content above a concentration of 15 picocuries per liter (pCi/L). Similar under-reporting could occur for process water at temporary jobsites. As Disa has not explicitly identified which analytical methods it plans to use, the NRC staff requests that Disa provide the analytical methods that will be used for determining the uranium and thorium content in the process water, and for the fines and coarse fraction material as well. For example, gamma spectroscopy or alpha spectroscopy methods can inform acceptable analytical methods.

In addition, the NRC staff must have reasonable assurance that the sampling methodology adequately represents the potentially heterogeneous resultant streams that Disa intends to discharge to the ground or reclaim onsite to determine satisfaction of the release criteria in 10 CFR 20.1402. Section 4.2.3 of Disa's application states:

> Disa will also collect 3 samples of the clean coarse material per every 40,000 tons of abandoned mine waste treated to obtain information for the final dose assessment that will be used to determine compliance with the unrestricted release criterion and to demonstrate compliance with the 500 mg/kg exemption limit. These samples will be analyzed for Ra-226, Unat, and natural thorium, if necessary. One sample per 40,000 tons of abandoned mine waste treated will be analyzed for TCLP and SPLP.
>
> If the clean coarse material meets the aforementioned criteria, it will remain onsite and be reclaimed by grading, disking, and seeding…
>
> Disa will also collect samples during treatment of the fines concentrates at a rate of 1 per 10,000 tons to ensure that the HPSA system is meeting project objectives…

The NRC staff understands the coarse material will represent a large resultant stream from the HPSA process. In the application, Disa states that the HPSA technology will collect approximately 90% of the source material in the fines concentrates, while 80% to 90% of the mass remains with the clean coarse material. If Disa plans to collect 3 samples for every 40,000 tons of abandoned mine waste and use the results for the dose assessment to demonstrate compliance, provide justification that this amount of sampling will represent the material left onsite in a statistically representative manner, and the consistency of that remaining material with the release requirements in 10 CFR 20.1402.

The NRC staff also could not find specific details on the sampling methodology Disa intends to perform on the process water, except for Section 5.14 notes that "water samples will be

analyzed during each project to determine compliance with the Appendix B effluent standards." As such, the sampling plan should address all three streams of the HPSA process so that the staff can determine how each stream will be evaluated for consistency with site release criteria. NRC technical staff is specifically seeking information demonstrating how the proposed number of samples for the coarse fraction, fines, and process water per tonnage of AUM waste processed will accurately characterize the process streams. With regard to the process water and coarse fraction streams, which would remain onsite after HPSA processing is completed, undersampling could incorrectly underestimate public dose and result in demobilization from a temporary jobsite when contamination levels above the unrestricted release criteria are still present onsite.

L-3 Process Water Treatment

Additional information is needed about the liquid treatment that is planned for the process water resulting from the use of HPSA at the temporary job sites.

Basis

Section 5.14 of the application states:

> The plan also includes treating and discharging water or transporting liquids and solids to licensed disposal facilities. Liquids treatment will be designed to meet 10 CFR Part 20, Appendix B effluent standards, and Disa will not discharge treated water directly to surface water.

Please explain the applicability of the 10 CFR Part 20, Appendix B effluent standards to mine waste remediation at AUM sites. Please describe the water treatment process so that NRC staff can confirm any discharge of the treated water will meet the unrestricted release criteria in 10 CFR 20.1402.

Health Physics (HP)

HP-1 Radiation Protection Staff Qualifications and Responsibilities

Additional documentation is needed to support the qualifications and training of the proposed Radiation Safety Officer (RSO) and Alternate Radiation Safety Officer (ARSO) specific to health physics and radiation protection associated with uranium operations. Additional justification is needed to support the proposed reduction in the education and training requirements for the RSO and ARSO who are responsible for the radiation protection program.

Please describe the responsibilities that Disa intends to delegate from the RSO to the Field Service Manager (FSM) and Radiation Safety Technician (RST) related to health and safety at the temporary jobsites. Please provide details on the degree of oversight the RSO will have for day-to-day operations at each temporary jobsite, including the frequency of presence onsite, auditing frequency for each temporary jobsite, observation of monitoring and surveys, incident investigation and emergency response, identification of the need for personnel monitoring, bioassay, and air sampling as work activities change.

Basis

In Section 5.4 of the application, Disa commits to following Section 2.4.1 (Technical Qualifications of Health Physics Staff) of Regulatory Guide (RG) 8.31 (NRC, 2002) for the RSO and ARSO with one exception:

> Disa will utilize the qualifications requirements of RG 8.31, except that RSO and ARSO qualifications will include 1 week of specialized classroom training instead of 4 weeks, which is justified considering that uranium is not being milled or processed by HSPA.

Upon review of the application, neither the proposed RSO nor the proposed ARSO appear to meet the RSO requirements of NUREG-1556, Volume 18, Section 8.7.1 which states (in accordance with 10 CFR 40.32(b)):

> **Criteria**: Radiation Safety Officers (RSOs) must be qualified by training and experience in radiation protection and be available for advice and assistance on radiological safety matters. The RSO's training and experience must be commensurate with the requested licensed material to be identified on the license. The RSO is typically the first responder for all radiological emergencies.

In addition, neither individual appears to have experience with the typical duties and responsibilities of the RSO outlined in NUREG-1556, Volume 18, Appendix C.
The RSO will be responsible for making real-time field safety decisions at multiple jobsites using the HPSA process. In accordance with Section 2.4.1 of RG 8.31:

> The RSO should have the following education, training, and experience:
>
> 1. Education: A bachelor's degree in the physical sciences, industrial hygiene, or engineering from an accredited college or university or an equivalent combination of training and relevant experience in uranium mill radiation protection. Two years of relevant experience are generally considered equivalent to 1 year of academic study.
>
> 2. Health physics experience: At least 1 year of work experience relevant to uranium mill operation in applied health physics, radiation protection, industrial hygiene, or similar work. This experience should involve actually working with radiation detection and measurement equipment, not strictly administrative or "desk" work.
>
> 3. Specialized training: At least 4 weeks of specialized classroom training in health physics specifically applicable to uranium milling. In addition, the RSO should attend refresher training on uranium mill health physics every 2 years.
>
> 4. Specialized knowledge: A thorough knowledge of the proper application and use of all health physics equipment used in the mill, the chemical and analytical procedures used for radiological sampling and monitoring, methodologies used to calculate personnel exposure to uranium and its daughters, and a thorough understanding of the uranium milling process and equipment used in the mill and how the hazards are generated and controlled during the milling process.

Based on the NRC staff's review of the information in Appendix A to Disa's application, it appears that neither individual meets the descriptions in items 2, 3, and 4 above. In certain situations, the NRC staff has relaxed its guidance on the minimum qualifications for an RSO. One example is for a water treatment system that operates in a self-contained, passive manner with no discharge to the environment. Disa's planned operations differ from that approach as the HPSA process has the potential to create an airborne hazard and leave waste products behind after remedial activities are complete. As such, the application does not support a less rigorous position description.

The resume for the proposed RSO appears to indicate that he has supervised health physics staff in the conduct of radiation protection work and supported multiple licensing actions associated with uranium milling and uranium in-situ recovery, but it does not appear that he has performed work as an RSO for a uranium site licensed by the NRC or an Agreement State. Therefore, it does not appear that he meets the criteria for 1 year of experience of applied health physics, radiation protection or industrial hygiene relevant to uranium facilities.

In addition, Disa notes in Section 5.5.2:

> The ARSO will assume these same responsibilities when acting on behalf of the RSO or an abbreviated list of responsibilities based on direct instructions from the RSO.

The NRC does not recognize an ARSO position in RG 8.31, however, if Disa chooses to identify an individual as an ARSO in its radiation protection plan as someone with the same responsibilities as the RSO, that individual must meet the same requirements as the RSO. Generally, if the ARSO is not listed on the license, the NRC does not approve that individual to act for the RSO when the RSO is not available. The resume for the ARSO in Disa's application indicates he has limited experience with radiation protection related to oversight of a source materials license.

In addition, Sections 5.5.3 and 5.5.4 of the Disa application identify the radiation safety responsibilities assigned to the FSM and RST, respectively, at each temporary jobsite. Some of these responsibilities, especially those assigned to the RST, are identified as RSO duties and responsibilities in NUREG-1556, Volume 18, Appendix C, and are inappropriate for an individual identified as an RST due to the lesser training and qualification requirements defined in Regulatory Guide 8.31 Section 2.4.1.

As part of the pre-submission audit, NRC staff requested a description of the RSO designee program and what qualification and training program were going to be in place to designate the FSM and RST to act for the RSO at temporary job sites. In the comment responses attached to the application cover letter, Disa indicates it does not use the term "RSO-designee" in the application. As such, the NRC staff understands that the FSM and RST are not RSO-designees for the temporary jobsites.

To ensure adequate radiation safety and oversight at each temporary jobsite, the NRC staff needs reasonable assurance that the RSO will maintain significant involvement in the field activities, as these responsibilities will not be part of an RSO-designation program to allow the FSM and RST to exercise RSO decision making authorities or conduct RSO responsibilities at the temporary jobsites.

HP-2 Dose Assessment for Multiple HPSA Units

Additional information is needed regarding dose assessment for sites with more than one HPSA unit operating concurrently. Alternatively, please provide justification for why the occupational and public doses would not be expected to change with additional HPSA systems operating concurrently at a temporary jobsite.

Basis

Section 7.0 of the application presents the expected dose from the operation of HPSA units at a site; however, Table 7-1, which lists Components Included in External Dose Model as Source Terms appears to account for only one HPSA system at the site. Table 4-1 shows that Tiers 3, 4, and 5 would have 2, 3, and 4 HPSA units, respectively, operating concurrently. It is not clear how the use of multiple HPSA units is accounted for in the dose modeling presented in Section 7 of the application.

Table 7-4 shows the maximum public dose is 74 mrem/yr while the average public dose is 22 mrem/yr. The NRC staff must have reasonable assurance that the public dose would remain below the public dose limit of 100 mrem/yr in 10 CFR 20.1301(a) for sites with numerous HPSA units operating concurrently. How Disa's dose modeling accounts for the multiple HPSA units envisioned in conjunction with larger operations is unclear.

Section 7.2.2 of the application provides:

> To model the potential public doses [during operation of the HPSA process], an average distance of 50 feet from equipment was modeled. This distance varies slightly depending on the layout and size of the equipment. This distance represents a potential restricted area, beyond which no members of the public would be allowed access.

Disa should clarify assumptions of public access within 50 feet of multiple HPSA units and the impacts of having additional trailers for the fines concentrates on site that would contribute to the public dose.

HP-3 Dose Assessment for Long-term Operations

Additional information is needed on Disa's dose assessment exposure assumptions. Please provide justification for the 6-month exposure assumptions for the public dose assessments for long-term sites where Disa expects to operate for longer than 2 years (i.e., Tiers 2 through 5 on Table 4-1). Alternatively, revise the dose assessment assumptions for these sites to account for longer occupancy times.

Basis

Section 7.2.2 presents the assumptions and approximations for Disa's dose assessment.

> A member of the public will be exposed 8 hours a day, 7 days a week, for 6 months of the year. In reality, the occupancy times may be much less, particularly for the public, because this equipment will move from site-to-site. In addition, these sites are generally located in remote areas and may have

additional site access controls to further reduce potential doses. Therefore, this occupancy assumption is highly conservative.

Table 4-1 notes that the number of years operations are expected for Tiers 2 through 5 ranges from 2.5 to 12.7 years.

Disa should provide additional justification for the assumption that a member of the public would only be exposed for 6 months of the year at sites where HPSA operations would occur for longer than one calendar year, for example up to 8.5 years at a Tier 4 site. The NRC staff must have reasonable assurance that the public dose will remain below the public dose limit of 100 mrem/yr in 10 CFR 20.1301(a) for sites with HPSA operations longer than one year.

HP-4 Public Dose Modelling and Calculations

Additional information is needed to support the calculated public dose during operations, to release a site for unrestricted use, and post-demobilization, under the recreational use scenario. In order for NRC staff to be able to validate Disa's calculated public dose for these scenarios, please provide information regarding the assumptions and description of the recreational use scenario, justification of calculating the external public dose at 1 foot from the pile of coarse material rather than at the edge of the pile or the middle of the pile post-demobilization, and justification for calculating the internal public dose at 254 feet from the edge of the pile rather than next to the pile. For the modelled doses, the input and output sheets should be provided, and the formulas (if calculated) or input values (if modelled) should be provided to allow the NRC staff to verify the dose. If default values are used in the modelling, please indicate which defaults and if site information is used, please provide the origin of that information.

Basis

Section 7.0 of the Disa application provides some data associated with the assumptions involved in the dose assessment for the public. Table 7-4 indicates the maximum calculated annual public dose during operations is 74 millirem (mrem).

Section 7.4 states:

> For the external dose, 6 receptors were modeled at 5 ft increments, starting at 1 ft from the edge of the pile. For the internal doses, 4 receptors were modeled at distance of 254 feet (100 m) in the cardinal directions around each pile.

Table 7-7 indicates the external public dose from the coarse fraction was calculated to be 0.4 mrem at 1 foot away from the edge of the coarse fraction pile. Based on the table, the NRC staff approximate the dose at the edge of the pile (approximately 1 cm) increases the public dose to 12.7 mrem, which while under the 25 mrem public dose limit for unrestricted use, demonstrates the sensitivity of the public dose to this assumption.

The internal public dose was modeled at 254 feet from the coarse fraction pile. Table 7.7 indicates the highest internal dose Disa modelled to be 0.83 mrem. Please confirm that this highest internal dose was modeled for exposure to a member of the public downwind from the predominant wind direction, of the temporary jobsite.

HP-5 Airborne Environmental Monitoring

Justification is needed for the radon monitoring approach Disa proposes in Table 5-6. For Tier 1 sites (100,000 tons of abandoned uranium mine [AUM] waste), the table does not indicate a radon detector to be at each station, as is shown in the table for Tiers 2 through 5. It is not clear why Disa does not plan for radon monitoring at the Tier 1 sites. In addition, provide justification for the elimination of monitoring described in Table 5-6.

Basis

Section 5.21.3.4 of Disa's application presents the proposed airborne environmental monitoring that will be conducted for the various tiers of jobsites. Disa does not include radon monitoring for Tier 1 sites. For Tier 2 through 5 sites Disa states:

> Disa will reserve the right to amend or eliminate air particulate monitoring if data is demonstrating that Disa's abandoned uranium mine waste remediation projects are not presenting an airborne exposure risk due to particulates, radon, or environmental gamma.

An environmental program should be in place for each temporary jobsite that follows the guidance provided in Regulatory Guide 4.14 (NRC, 1980). While this guidance is focused on uranium mills, 10 CFR 20.1501(a), requires that surveys, including measurements in air, are required when reasonable under the circumstances to evaluate an occupational radiological hazard. If the applicant does not want to follow this guidance, additional justification is needed for the NRC staff to understand why this monitoring is not appropriate for each temporary jobsite. The NRC staff will also need to evaluate the justification for the criteria for the elimination of air particular monitoring at temporary jobsites before it can conclude with reasonable assurance that airborne exposure risk is within regulatory requirements.

HP-6 Baseline Surveys

Please describe the objectives of the baseline survey and the parameters to be measured and how they relate to the unrestricted release criteria.

Basis

Section 4.2.2 of the application states:

> However, it should be noted that the unrestricted release criteria are based on gamma counts and uranium and thorium concentrations; the other parameters are not necessary to demonstrate compliance with Disa's license.

It is unclear to NRC staff what Disa intends with this statement. This section of the application discusses the use of baseline gamma surveys to characterize the AUM site and provide background information on the gamma levels at the site prior to deploying the HPSA process. Unrestricted release criteria is typically associated with the unrestricted release of equipment, materials and personnel from the site. The unrestricted release criteria are based on fixed and removeable contamination levels specific to uranium and thorium as documented in FC83-23 (ML003745523). The regulations in 10 CFR 20.1402 state:

> A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water…

The NRC staff seeks additional information on the baseline survey that will be used to establish background levels at the AUM sites so that a meaningful evaluation of post-operational site conditions can be made to determine if the unrestricted release criteria in 10 CFR 20.1402 are satisfied.

Environmental

E-1 Air Emissions

Additional information is needed for estimates of generator and non-generator air emissions during construction, operation, and demobilization for the five HPSA operating tiers:

- Criteria pollutants under the National Ambient Air Quality Standards: sulfur dioxide, lead, ozone, PM10 for generator emissions, and PM2.5 for generator and non-generator (construction and operation) emissions
- Greenhouse gases that would be emitted, such as carbon dioxide, methane, nitrous oxide, and any fluorinated gases. Alternatively, provide estimates of aggregated greenhouses gases in the form of CO2e (CO2 equivalents) and an explanation of the CO2e estimates.

In addition, indicate whether the estimates already included in Table 1-2 of the Environmental Report (ER) (for nitrogen oxides, hydrocarbons, carbon monoxide and particulates) account for construction and demobilization activities. If they do not, provide estimates for construction and demobilization activities.

Basis

The NRC needs information to inform the generic evaluation of potential environmental impacts of air emissions from HPSA operations, as required in 10 CFR 51.60 and 10 CFR 51.45 and consistent with Section 6.4.6 of the NMSS environmental review guidance in NUREG-1748 (NRC, 2003).

To generically assess the potential impacts on air quality, the NRC staff needs to know the emissions of pollutants for which the United States has set ambient air quality standards: sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter (PM) at no larger than 10 micrometers in diameter (PM10) and no larger than 2.5 micrometers in diameter (PM2.5). Disa's ER provides estimates of emissions of nitrogen oxides, hydrocarbons, carbon monoxide, aggregate PM for generators, and PM10 for non-generator emissions during construction and operation. However, the ER does not contain a breakdown of PM into PM10 and PM2.5 for the generator air emissions and does not contain estimates of PM2.5 for non-generator emissions from construction and operation. The ER also does not contain emission estimates for sulfur dioxide, lead, or ozone. The NRC staff needs estimates of these pollutants to assess the potential impacts of HPSA operations on air quality.

Greenhouse gases include carbon dioxide, methane, nitrous oxide, and certain fluorinated gases. Greenhouse gas emission levels are expressed as carbon dioxide equivalents (CO2e),

which is an aggregate measure of total greenhouse gas global warming potential described in terms of carbon dioxide and accounts for the heat-trapping capacity of different gases. The ER does not provide estimates of greenhouse gas emissions. The NRC staff needs these estimates to assess the greenhouse gas impacts of HPSA operations.

E-2 Socioeconomics

Provide estimates or estimated ranges of the number of full- and part-time employees for each HPSA operating tier for the construction, operation, and demobilization phases.
The NRC staff assumes that each tax estimate in Table 4-7 of the ER applies to a single employee. Please confirm this or explain the assumptions underlying the estimates in Table 4-7. To provide a description on tax revenues in areas of abandoned mine clusters, provide tax information for each of the communities listed in Table 3-10.

Section 4.10.4 of the ER states “communities located near clusters of abandoned uranium mines may experience longer commercial activity and the need for temporary housing.” Please explain the meaning of this statement. Is Disa indicating that portions of communities or entire communities may require alternative housing arrangements to mitigate the potential impacts of HPSA operations? Describe the situations in which alternative housing would be pursued and the types of environmental impacts from HPSA operations that could result in the need for alternative housing.

Basis

The NRC needs information to inform the evaluation of potential socioeconomic impacts of HPSA operations as required in 10 CFR 51.60 and 10 CFR 51.45 and consistent with Section 6.4.10 of NUREG-1748. To generically assess the potential socioeconomic impacts of HPSA operations on local communities and services, the NRC staff needs estimates of the number of full-time and part-time employees for each operating tier.

Table 4-7 does not describe underlying assumptions for the estimates. Further, the discussion of Table 4-7 does not explain why Disa chose to use Montrose County, Colorado as an example.

If HPSA operations could result in impacts significant enough to require alternative housing, the NRC staff needs more information about the kinds of situations in which this measure would be needed.

E-3 Coarse Material Handling

Additional information is needed about the actions Disa will take to disposition the coarse material onsite after treatment, including plans for monitoring, regrading, seeding, and any other measures to prevent erosion, biointrusion, animal intrusion, and windblown dust. In addition, in what ways would the handling of coarse material be different from site to site?

Basis

To ensure the EA for the proposed HPSA licensing action adequately assesses the potential impacts of HPSA operations, the NRC needs accurate information about the proposed action in accordance with 10 CFR 51.45 and 10 CFR 51.60 and consistent with guidance in Sections 6.1.2, 6.2.1.2, and 6.4 of NUREG-1748. This includes information about demobilization and

Disa's actions to secure the coarse material onsite in a manner that prevents impacts on surface water and air quality.

Section 4.3.4 of the ER states, "regrading the clean coarse material is not a requirement of this alternative. Furthermore, regrading the clean coarse material is likely an activity to be performed by the owner of the materials." However, Section 1.3 of the application says that Disa would "minimally reclaim the clean coarse material, which such activities include grading, disking into existing soil, and seeding." Further, Disa's Notification After Remediation in Section 4.1.1 states that Disa would include a "description of how coarse material was handled following processing" (item i).

E-4 Materials and Wastes

Describe chemicals and materials (e.g., generator fuel, explosives, gravel for roads and the site) that may be used and stored at the HPSA sites, describe storage plans, and provide estimates of quantities for each HPSA operating tier. Please explain the conditions under which explosives would be used. Describe the expected quantity and frequency of explosives use.

List the expected radioactive and nonradioactive waste types that would be generated during HPSA and support operations (other low-level radioactive wastes, mixed wastes, hazardous wastes, nonhazardous solid waste, any construction/demolition wastes) in addition to those listed in Table 5-1 of the application. Provide estimated quantities for each waste type for each HPSA operating tier. Describe planned onsite storage (including timeframes) and management of wastes before transporting offsite for disposition.

Basis

The application and ER do not describe the types of materials, chemicals, and wastes that would be used, generated, stored onsite, and transported for disposal. To ensure the EA for the proposed HPSA licensing action adequately assesses the potential impacts of HPSA operations, the NRC needs accurate information about the proposed action and waste management in accordance with 10 CFR 51.45 and 10 CFR 51.60 and consistent with guidance in Sections 6.2.1.2, 6.3.12, and 6.4.13 of NUREG-1748.

E-5 Transportation

Estimate the quantity of gravel and resulting number of truck shipments that would be needed per 10 miles of road as indicated in Table 1-1. Clarify how the information on quantities of trucks provided in the first paragraph of ER Section 4.2.4 relates to the tiers and estimates of trucks in Table 1-1.

Basis

The quantities of trucks in Section 4.2.4 of the ER are not tied to frequencies or to the HPSA operating tiers. Clarify how the information in Section 4.2.4 relates to the operating tiers. The ER does not provide estimates of truck shipments for gravel. To ensure the EA for the proposed HPSA licensing action adequately assesses the potential transportation impacts of HPSA operations, the NRC needs accurate information about transportation in accordance with 10 CFR 51.45 and 10 CFR 51.60 and consistent with guidance in Section 6.4.2 of NUREG-1748.

Confirmatory Information (CI)

CI-1 Equivalent Feed

Based on its review of the application, the NRC staff understands that the HPSA technology does not utilize ion exchange resins or any accompanying infrastructure (tanks, piping, vents) as part of Disa's HPSA system. It is unclear to the staff how material from Disa's process would be processed as equivalent feed (as described in guidance in Regulatory Issue Summary (RIS) 2012-06) (NRC, 2012) when it does not appear to be utilizing equipment or techniques that implicate that RIS. If ion exchange resins are used within the HPSA process, that may alter monitoring locations for worker doses and effluents. Please confirm that Disa is not planning to use ion exchange resins and any accompanying infrastructure (tanks, piping, vents) as part of Disa's HPSA system.

Basis

Section 1.0 of the application states:

> The fines concentrates will be transported to a licensed recipient, such as a low-level radioactive waste disposal facility, a uranium recovery facility that will recycle the fines concentrates as equivalent feed (as discussed in Regulatory Information Summary (RIS) 2012-06), or a storage facility pending disposal or recycling.

Additionally, Sections 1.3, 1.4, 3.1, 4.5.1, 5.14, and 8 of the application also reference the term "equivalent feed."

The NRC staff seeks clarification on the presence of this term in the application as RIS-2012-06 defines equivalent feed as:

> ion exchange (IX) resin that is loaded with uranium at facilities licensed for source material (i.e., water treatment plants or mine dewatering operations) or licensed uranium recovery facilities whether conventional, heap leach, or in-situ recovery (ISR) facilities.

The description of the HPSA process in Section 1.2 of the application does not discuss ion exchange resins as a component of the HPSA process. The list of equipment and facilities in Section 4.2.4.1 of the application does not discuss ion exchange resins or tanks. Additionally, Disa's airborne effluent monitoring program in Section 5.21.3.4 of the application does not discuss monitoring of ventilation from tanks that are typically present at uranium ISR facilities. Monitoring or measurements of radioactive material in air are required under 10 CFR 20.1501(a).

If Disa does plan to utilize the ion exchange process as part of its HPSA system, please modify the application accordingly and include information on the quantity of resin, size of the ion exchange tanks, survey procedures to verify dose rates, and any required effluent monitoring from ventilation systems.

If Disa does not plan to utilize the ion exchange process as part of its HPSA system, explain the applicability of the equivalent feed policy discussed in RIS 2012-06 and how it would apply to the fines concentrates resulting from the HPSA process.

CI-2 Cap Installation

Please confirm that Disa does not expect to cap coarse material in place at the temporary jobsites if that material does not meet unrestricted release criteria. Apparently contradictory statements appear in Disa's application package.

Basis

Disa's March 28, 2025, transmittal letter comment response table (5.2.4.1 Land Use) states:

> Regarding the capping of material, this is no longer a consideration by Disa.

Statements in Section 4.5.2.1 of the application and Section 2.5.1.2 of the ER still refer to the potential capping in place of coarse material that does not meet NRC unrestricted release criteria. The NRC's understanding is that these statements are only part of the description of the treatability study results.

However, Section 4.8 states:

> If early sampling of the clean coarse material indicates that Disa is not achieving the release criteria, then Disa will cease operations. Disa will apply for alternative release criteria for the clean coarse material and will once again continue the treatment. Meanwhile, the produced clean coarse material will be returned to the waste rock pile and will be capped in place.

Capping coarse material in place that does not meet NRC unrestricted release criteria would likely require a separate NRC review. In addition, 10 CFR 20.1404, Alternate criteria for license termination, states that the Commission may terminate a license using alternate criteria greater than the dose criterion of §§ 20.1402, 20.1403(b), and 20.1403(d)(1)(i) (A), however, a decommissioning plan is required as well as participation by representatives of a broad cross section of community interests who may be affected by the decommissioning, among other requirements. As indicated in Section 6.3 of NUREG-1757 (NRC, 2006):

> In the unlikely event that a licensee is not able to reduce residual radioactivity to a level that limits the calculated dose such that it is not in excess of 0.25 mSv/y (25 mrem/y) with restrictions in place, the licensee may request permission from the Commission to use alternate criteria. In doing so, the licensee must demonstrate all of the following:
>
> - The calculated dose from all man-made sources is unlikely to exceed 100 mrem (1 mSv) per year by identifying these sources and the expected dose from each.
> - Institutional controls will minimize the dose from the site.
> - The licensee has obtained public advice on the proposed institutional controls and financial assurance.

To ensure the EA for the proposed HPSA licensing action adequately assesses the potential impacts of HPSA operations, the NRC needs accurate information about decommissioning aspects of the proposed action in accordance with 10 CFR 51.45 and 10 CFR 51.60 and consistent with guidance in Sections 6.1.2, 6.2.1.2, and 6.4 of NUREG-1748.

CI-3 Waste Classification and Shipment

Please confirm that waste to be shipped to a low-level waste disposal facility or a uranium processing facility will be classified and shipped in accordance with 10 CFR Part 61 and 10 CFR Part 20, Appendix G.

Basis

Section 5.14 of the application states:

> Disa will provide all information required in NRC's Uniform Low level Radioactive Waste Manifest and transfer this information to the recipient. Disa will also obtain the necessary permits from the Rocky Mountain Low Level Radioactive Waste Board to export radioactive waste, if necessary.

Standard Operating Procedures (SOPs) 4, 10, 11, and 13 discuss the handling, storage, and shipment of radioactive materials and waste with some reference to compliance with Federal regulations. The NRC staff could not find SOPs that discuss waste classification and shipment in accordance with 10 CFR Part 61 and 10 CFR Part 20, Appendix G, which is required if any of the waste streams in Table 5-1 are sent to a low-level waste disposal facility. Please confirm that Disa will include procedures for such waste classification in accordance with these regulations in revisions to these SOPs.

For example, SOP-4, Guidelines for Handling Radioactive Material states, "Classification and disposal of waste must conform to Federal and State regulations." This SOP should be revised to reference 10 CFR Part 61 and 10 CFR Part 20, Appendix G and the Uniform Waste Manifest and provide more details related to waste classification and shipment.

References

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