LOCATION(S) OF USE OR POSSESSION

Regulations

- 10 CFR 40.14(a)
- 10 CFR 40.32(c)
- 10 CFR 40.41(c)

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.3

Specify the street address, city, and state or other descriptive address for each facility. The descriptive address should be sufficient to allow a U.S. Nuclear Regulatory Commission (NRC) inspector to find the facility location. In addition, applicants are encouraged to provide global positioning system coordinates, as appropriate.

A license amendment is required before receiving, using, or storing licensed material at an address or location not already listed on the license should work extend beyond 180 days. License amendments should be requested at least 60 days prior to termination of 180-day timeframe. Licensed activities include receipt, processing and storage of licensed material (both the isolated source material and coarse material fractions resulting from the processing) until such time as licensed material is appropriately dispositioned by transfer or disposal off site, or other appropriate approved method if the remaining materials cannot meet unrestricted release criteria.

Service providers who perform work activities at temporary jobsites should ensure that they are authorized to perform work at each location. To conduct operations at temporary jobsites (i.e., locations where work is conducted for limited periods of time), the address may be stated as “temporary jobsites anywhere in the United States where the NRC maintains jurisdiction.”

SRM-SECY-23-0055

The applicant commits to notifying the NRC, in accordance with Appendix D of 10 CFR Part 20, of the commencement of licensed activities prior to installing equipment and beginning operations at an AUM temporary job site, including those operating under a general license pursuant to 10 CFR 40.22, and after remediation is complete. The notification prior to commencement of licensed activities shall include information consistent, to the extent feasible, with Tables A.3.4 and A.3.5 of NUREG-1757, Vol. 3, Rev. 1, including:

- The estimated type, quantity, and physical/chemical forms of licensed material to be used or possessed;
- The specific site location, the information provided on the site location should be sufficient to allow an NRC inspector to find the site location;
- A description of planned activities including waste management and disposition;
- The estimated start date and completion date for the job;

- The name and title of a point of contact for the job, including information on how to contact the individual; and
- A copy of the written agreement between the licensee and the customer.

Applicant or licensee has committed to provide NRC with verification that sites are abandoned, that there was documented production of uranium, and that the sites are no longer in use for that purpose.

Applicant has described the approximate scope and spatial extent of ground disturbing activities necessary to prepare for, conduct, and terminate licensed activities.

RADIOACTIVE MATERIAL

Regulations

- 10 CFR 30.32(g)
- 10 CFR 40.32(a)
- 10 CFR 40.41

Sealed Sources

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.5.1

Applicants must provide the manufacturer's name, model number, radionuclide, quantity, and nominal activity for each requested sealed source and manufacturer and model number for each device that they will possess, use, and service in accordance with 10 CFR 30.32(g). Service provider licensees will be authorized to possess and use only those sealed sources and devices specifically approved or registered by NRC or an Agreement State.

NUREG-1556, Vol. 18, Section 8.6

Applicants must provide a basis for confidence that radioactive materials will be used as specified on a license. The variety of uses described in Chapter 1," Purpose of Report," are delineated into low or high-risk activities. An application for a license will be approved if the proposed activity is authorized by the Atomic Energy Act of 1954, as amended, and devices will be used only for the purposes for which they were designed and according to the manufacturer's and distributor's recommendations and instructions for use, as specified in an approved SSD registration certificate, unless otherwise authorized in the license. Use of sealed sources and devices other than those listed in the SSD registration certificate require review and approval by the NRC or an Agreement State.

Unsealed Radioactive Material

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.5.2

The applicant must provide the name of the radionuclide(s), chemical form, and maximum possession limit that the applicant will possess, use, and service. Licensed materials shall

include waste rock processed and products from the processing of the waste rock (i.e., isolated mineral fraction and coarse fraction) until the applicant demonstrates those products are appropriately dispositioned or meet the unrestricted release criteria.

Recordkeeping for Decommissioning

Regulations

- 10 CFR 40.36(f)
- 10 CFR 40.46
- 10 CFR 40.61

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.5.3

In accordance with 10 CFR 40.36(f), all licensees must maintain records of equipment where licensed materials are used or stored at locations specifically listed in the license. Also pursuant to 10 CFR 40.36(f), licensees must transfer records important to decommissioning to the new proposed licensee before licensed activities are transferred or assigned, in accordance with 10 CFR 40.46, “Inalienability of licenses”. Furthermore, pursuant to 10 CFR 40.61(f), prior to license termination, each licensee must forward the records required by 10 CFR 40.36(f) to the appropriate NRC headquarters or regional office.

Financial Assurance

Regulations

- 10 CFR 40.36
- 10 CFR 40.46

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.5.4

A service provider who will be authorized to possess licensed material in excess of the limits specified in 10 CFR 40.36, “Financial assurance and recordkeeping for decommissioning,” must provide evidence of financial assurance for decommissioning.

Emergency Plan

Regulations

- 10 CFR 30.32(i)
- 10 CFR 30.72
- 10 CFR 40.32(c)

Acceptance Criteria

NUREG-1556, Vo. 18, Section 8.5.5

Applicants who will be authorized to possess radioactive material in excess of the quantities listed in 10 CFR 30.72, “Schedule C—Quantities of radioactive materials requiring consideration

of the need for an emergency plan for responding to a release," must prepare for the potential release of radioactive material.

NUREG-1556, Vo. 18, Section 8.10.1

As part of the application package, the licensee must develop, implement, and maintain emergency procedures. Emergency procedures should be submitted with all license applications and should address the important radiation safety aspects for the proposed activities and address all likely scenarios that may be encountered, including tornado, hurricane, earthquake, and fire protection, as necessary. The application should also discuss coordination with local emergency responders.

PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

Regulations

- 10 CFR 40.31(d)
- 10 CFR 40.32
- 10 CFR 51.21
- 10 CFR 75.10-12

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.6

Applicants must provide a basis for confidence that radioactive materials will be used as specified on a license. The variety of uses described in Chapter 1," Purpose of Report," are delineated into low or high-risk activities. An application for a license will be approved if the proposed activity is authorized by the Atomic Energy Act of 1954, as amended, and devices will be used only for the purposes for which they were designed and according to the manufacturer's and distributor's recommendations and instructions for use, as specified in an approved SSD registration certificate, unless otherwise authorized in the license. Use of sealed sources and devices other than those listed in the SSD registration certificate require review and approval by the NRC or an Agreement State.

NUREG-2126, Section 1.0

The summary descriptions of the proposed activities are acceptable if they are sufficiently detailed to provide a basic understanding of the activities for which a license or amendment is requested, and include the following:

- Location of proposed facilities by county and state, including the facility name.
- Corporate entities involved, including ownership.
- Land ownership.
- Maximum instantaneous (gallons per minute) and permitted annual production rates of the treatment process (operations: tonnage of waste rock brought to the site and source material production). The maximum permitted rate for which a license is to be written or amended needs to be clearly listed and consistent throughout the license application.

- Waste rock locations and estimated uranium content [Note: The NRC regulates source material, not mining. The U.S. Department of Interior Office of Surface Mining, the U.S. Department of Labor Mine Safety and Health Administration, and the individual states regulate mining. The information on waste rock location and estimated uranium content is for understanding treatment operations.]
- Estimated schedules for construction, mobilization, startup, duration of operations, demobilization, and decommissioning.
- Plans for surface impoundments management.
- Plans for decommissioning that comply with 10 CFR 40.42, that includes necessary activities if unrestricted release criteria are not attainable (e.g., further remediation, construct a cover, alternate dose analysis, and land use controls).
- Plans for pre-operational, operational, and post-operational monitoring.
- Financial assurance arrangements covering eventual site decommissioning.

10 CFR Part 75

Applicant commits to meeting the International Atomic Energy Agency Additional Protocol requirements, which help ensure the U.S. meet its nuclear non-proliferation obligations under the safeguards agreements, contained in 10 CFR 75.10 through 10 CFR 75.12

INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM

Corporate Organization

Regulations

- 10 CFR 40.32
- 10 CFR 20.1101

Acceptance Criteria

NUREG-1556, Vol. 12, Section 8.7

Executive Management, Radiation Safety Officer (RSO) and authorized users play a critical role within their area of responsibility. Applicant must be qualified by training and experience to possess and use the material for the purpose requested in a manner that will protect health and minimize danger to life and property.

NUREG-2126, Section 4.1

The corporate organization and administrative procedures are acceptable if they meet the following criteria:

- The applicant has adequately described the corporate organization, clearly defining management responsibilities and authority at each level. Specifically, the RSO, or equivalent, has responsibilities and authority that are consistent with Regulatory Guide 8.31, Revision 1, “Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable,”

Section 1.2 (NRC, 2002). The organizational structure shows integration among groups that support the operation, maintenance, and safety of the equipment.

- If the applicant requested a performance-based license, the applicant has established a SERP that will consist of at least three individuals with specific qualifications in management, operations, and radiation safety. One member of the SERP will have expertise in management and will be responsible for implementing managerial and financial changes. One member will have expertise in operations and/or construction and will have responsibility for implementing any operational changes. One member will be the RSO, or equivalent, with the responsibility for assuring that changes conform to radiation safety requirements. Additional members may be included in the SERP, as appropriate, to address specific technical issues such as health physics, groundwater hydrology, surface-water hydrology, and specific Earth sciences or other technical disciplines. Temporary members may include consultants. A description of when additional members will be used is provided. The applicant states that the SERP will review all proposed changes and will refer to the NRC those changes that the SERP determines will require a license amendment.
- The proposed administrative procedures are consistent with Regulatory Guide 8.2, Revision 1, “Administrative Practices in Radiation Surveys and Monitoring,” (NRC, 2011) and Regulatory Guides 4.14, Revision 1, “Radiological Effluent and Environmental Monitoring at Uranium Mills,” (NRC, 1980) and 4.15, Revision 2, “Quality Assurance for Radiological Monitoring Programs (Inception through Normal Operations to License Termination) -- Effluent Streams and the Environment,” (NRC, 2007). The applicant has provided or has committed to provide written procedures for dose calculations and measurements, sample collection, sample management and chain of custody, sample preparation and analysis, data reduction and recording, data assessment and reporting, and final sample disposal. Procedures are also provided for addressing support functions, such as operation of process monitors, training, preparation of quality control samples, corrective actions, audits, and records. In addition, the applicant has committed to provide training instructions, procedures, or schedules for the staff performing functions associated with the Quality Assurance program.

Sufficient independence exists between operations and maintenance staff and radiological safety staff such that significant safety issues can be raised to corporate management. This is demonstrated in an organizational chart and in the application text. The applicant states what the radiological staff can and cannot do to maintain radiological safety.

Radiation Safety Officer (RSO)

Regulations

- 10 CFR 40.32(b)

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.7.1

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.

NUREG-1556, Vol. 18, Appendix C

Typical Duties and Responsibilities of the Radiation Safety Officer

NUREG-2126, Section 4.4

The qualifications of the radiation safety officer, or designee, are acceptable if they meet minimum qualifications and experience that are comparable with Regulatory Guide 8.31, Revision 1, “Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable ,” Section 2.4 (NRC, 2002). If the licensee proposes to use a designee in the absence of the RSO who does not meet the education and experience of the RSO or health physics technician as recommended in Regulatory Guide 8.31, Revision 1, the minimum qualifications of the designee should be described in the license application.

Authorized Users and Radiation Workers

Regulations

- 10 CFR 19.11-19.13
- 10 CFR 20.1201-1208
- 10 CFR 40.32

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.7.2

Authorized Users (AUs) should have a college degree or equivalent training and experience in physical, chemical or biological sciences or engineering and must receive instruction commensurate with their duties and responsibilities, as required by 10 CFR 19.12, “Instruction to workers,” for individuals whose assigned duties involve exposure to radiation or radioactive material, and individuals who in the course of their employment are likely to receive in a year an occupational dose of radiation greater than 1 millisievert (mSv) [100 millirem (mrem)].

NUREG-1556, Vol. 18, Appendix D

Criteria for Acceptable Training and Experience for Authorized Users

Management Control Program

Regulations

- 10 CFR 40.32(c)
- 10 CFR 40.44
- 10 CFR 40.60, 40.61, 40.65
- 10 CFR 20.1101
- 10 CFR 20.1201(e)
- 10 CFR 20.1902
- 10 CFR 20.2002, 20.2007
- 10 CFR Part 20, Subparts L and M

Acceptance Criteria

NUREG-2126, Section 4.2

The management control program is acceptable if it meets the following criteria:

- The proposed management control program is sufficient to ensure that any activities affecting health and safety, including compliance with any license commitments or conditions, will be conducted in accordance with written standard operating procedures. The applicant describes the process for identifying and developing standard operating procedures for routine work, and the review and approval process the radiation safety staff will use to modify standard operating procedures when appropriate. Subsequent NRC inspections will ensure that standard operating procedures are adequate and applied correctly. Standard operating procedures for radiation safety are consistent with Regulatory Guide 8.31, Revision 1, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable," Section 2 (NRC, 2002).
- The applicant presents methods for review and approval of non-routine work or maintenance activities by the radiation safety staff. The methods include the preparation and issuance of radiation work permits for activities where standard operating procedures do not apply.
- A detailed review of SERP composition is addressed in Section 4.1 of this SRP. Procedures governing the functioning of the SERP ensure that approvals of any changes in the facility, the operating procedures, or the conduct of tests or experiments are appropriately documented and reported. The applicant will verify that these changes, tests, or experiments may be implemented without obtaining a license amendment pursuant to 10 CFR 40.44, "Amendment of licenses at request of licensee," so long as the change, test, or experiment does not:
    - Create a possibility for an accident of a different type than previously evaluated in the license application (as updated);
    - Create a possibility for a malfunction of a component with a different result than previously evaluated in the license application (as updated); or
    - Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report or technical evaluation reports or other analyses and evaluations for license amendments.
    - Amend a license condition.

  SERP records will include evaluations of all proposed changes to operations and the SERP decision of whether the change requires a license amendment. SERP records will also include written health and safety evaluations the SERP makes that provide the basis for determining whether changes, tests, or experiments were implemented in accordance with the basis described in Section 4.1.3 in this SRP. The applicant states that all SERP reports shall be sufficiently comprehensive to allow staff to thoroughly evaluate the change, test, or experiment.
- The recordkeeping and retention plans demonstrate that the applicant will maintain and retain records of the receipt, transfer, and disposal of any source material processed or produced at the treatment sites for the period set out in the license, or until the Commission terminates the license. The proposed record keeping and retention

programs are adequate to ensure that the applicant will be able to track, control, and demonstrate control of the source material at each treatment site, such that onsite and offsite dose limits will not be exceeded.

- The following will be permanently maintained and retained until license termination:
    - Records of onsite radioactive waste disposal, such as by land application or burial under 10 CFR 20.2002, “Method of obtaining approval of proposed disposal procedures,” and 20.2007, “Compliance with environmental and health protection regulations”.
    - Records of radiation measurements and surveys required by 10 CFR 20.2103(b)(4), including:
        - Surveys to measure radiation dose.
        - Measurements and calculations used to determine individual intakes of radioactive materials.
        - Measurements resulting from air sampling, surveys, and bioassays; and
        - Measurements and calculations used to evaluate the release of radioactive effluents.
    - Records containing information important to decommissioning, including:
        - Descriptions of any spills, leaks, contamination events, or unusual occurrences, including the dates, locations, areas, or facilities affected; assessments of hazards; corrective and cleanup actions taken; assessment of cleanup effectiveness and the location of any remaining contamination; nuclides involved; quantities, forms and concentrations, and descriptions of hazardous constituents; descriptions of inaccessible areas that cannot be cleaned up; and sketches, diagrams, or drawings marked to show areas of contamination and places where measurements were made (significant spills that will be included are any radiological spills that have the potential to exceed site cleanup standards and any radiological spill that leaves the site; a license condition will be established to this effect).
        - Information related to site characterization; residual soil contamination levels; onsite locations used for burials of radioactive materials; hydrology and geology, with particular emphasis on conditions that could contribute to groundwater or surface-water contamination; and pre-operational background radiation levels at and near the site.
        - As-built drawings or photographs of equipment, restricted areas, areas where radioactive materials are stored.

  The applicant will maintain these records, such as descriptions of spills and other unusual occurrences and retain them in an identifiable or, preferably, separate file with adequate safeguards against tampering and loss.
- The applicant demonstrates a plan to maintain the records and provides the records (i) to the site owner prior to demobilization, (ii) new owner or new applicant if the license is transferred or (ii) to NRC after license termination. These records include any such records received from a previous applicant. The records will be maintained as hard copy originals or will be electronically protected and will be readily retrievable for NRC inspection.
- The applicant commits to making reports of spills; surface impoundment leaks; and leaks of source material to the NRC project manager (or Operations Center if required) by

telephone or electronic mail (e-mail) within 48 hours of the event. This notification will be followed within 30 days by submittal of a written report to NRC detailing the conditions leading to the spill or incident/event, corrective actions taken, and results achieved.

- The applicant commits to reporting the theft or loss of source material in an aggregate quantity greater than 1,000 times the quantity specified in Appendix C to Part 20 to the NRC project manager (or Operations Center, if required) by telephone or by electronic mail within 48 hours of the event. The applicant further commits to reporting in writing, within 30 days after the occurrence, any lost, stolen, or missing licensed material that becomes known to the licensee in quantities greater than 10 times the quantity specified in 10 CFR 20, Appendix C, "Quantities of licensed material requiring labeling," and includes the quantity that is still missing at this time. The applicant also commits to reporting the discovery of any incident in which an attempt has been made or is believed to have been made to create a theft or unlawful diversion of more than 6.8 kg [15 lb] at any one time or more than 68 kg [150 lb] of such material in any one calendar year to the NRC project manager (or Operations Center, if required).
- The applicant commits to submitting a report to the NRC prior to decommissioning and demobilization that is comparable to NMSS States Agreement Procedure SA-900, "Termination of Uranium Milling Licenses in Agreement States" (NRC, 2022).
- An annual report will be submitted to NRC that includes the As Low As Reasonably Achievable (ALARA) audit report, monitoring data, the corrective action program report, the semi-annual effluent and monitoring reports, and the SERP determinations.

TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

Regulations

- 10 CFR 19.11-19.13
- 10 CFR 20.1801-1802
- 10 CFR 40.9
- 10 CFR 40.32(b)
- 10 CFR 40.41(e)

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.8

Ancillary personnel may include clerical, housekeeping, security, any customers' personnel working under the supervision and direction of the service provider's RSO or AU at the time licensed materials are possessed (incident to providing services) under the service provider's license, and other similar types of personnel whose duties may require them to work in the vicinity of radioactive material, whether they are escorted or not by AUs. These individuals should be informed about radiation hazards and the appropriate precautions they should take when working in the vicinity of licensed material. The licensee should assess each individual's involvement with licensed material and provide appropriate training.

NUREG-1556, Vol. 18, Appendix D

Criteria for Acceptable Training and Experience for Authorized Users

NUREG-2126, Section 4.5

The training program is acceptable if it meets the following criteria:

- It is consistent with the approach described in Regulatory Guide 8.31, Revision 1, "Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable," Section 2.5 (NRC, 2002). This guide recommends that before beginning their jobs, all new employees should be instructed, by means of an established course, in the inherent risks of exposure to radiation and the fundamentals of protection against exposure to uranium and its daughters.
- It is consistent with Regulatory Guide 8.13, Revision 3, "Instruction Concerning Prenatal Radiation Exposure" (NRC, 1999). This guide provides guidance for protection of the fetus.
- It is consistent with Regulatory Guide 8.29, Revision 1, "Instruction Concerning Risks from Occupational Radiation Exposure" (NRC, 1996). This guide provides a basis for training employees on the risks from radiation exposure in the workplace.

EQUIPMENT

Regulations

- 10 CFR 20.1101(b)
- 10 CFR 20.1406
- 10 CFR 37.5
- 10 CFR 40.32(c)-(d)
- 10 CFR 51.20-51.21

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.9

Equipment must be adequate to protect health and minimize danger to life or property. Additionally, they must minimize the possibility of contamination, facilitate decommissioning, and keep exposure to occupationally exposed workers and the public ALARA.

NUREG-2126, Section 3.4

The description of the treatment process is acceptable if it meets the following criteria:

- The description of the treatment process includes proposed material balances and flow rates that are adequately described, if applicable. The amount of flow into the process equipment has been shown to equal the sum of the various flows out of the process equipment.
- Plans, specifications, and inspection programs are adequate to construct/assemble the equipment according to accepted engineering practices. The applicant provides detailed information on processing equipment (e.g., tanks, piping materials). Quality

assurance/quality control programs exist for radiologically significant equipment, including processing equipment.
- The applicant should describe its contamination control plan including use of engineering controls to minimize the spread of contamination.
- All filtration, confinement, dust collection, and radiation monitoring equipment are described as to size, type, and location. Availability requirements for safety equipment are adequately stated, and measures for ensuring availability and reliability are clearly identified, including the type of safety equipment, its locations, the maintenance requirements, and the responsibility for performing maintenance.
- Specifications, quantities, locations, and operating conditions, such as flow rates, temperatures, and pressures of radioactive materials and those hazardous materials with the potential to impact radiological safety, are clearly identified together with the hazards associated with these materials. Furthermore, controls used for eliminating or mitigating the hazards presented by the radioactive materials and those hazardous materials with the potential to impact radiological safety are adequately described.
- The description of the facility instrumentation is acceptable if instrumentation has been described for the various components of the treatment equipment. Specific brands of instrumentation are not necessary; however, the basic type of instrument or component that is used to maintain control of radioactive material is provided. Instrumentation is designed to allow the equipment operator to continuously monitor and control a variety of parameters, including total flow into the equipment, total waste flow leaving the equipment. Furthermore, the instrumentation includes alarms and interlocks in the event of a failure.

RADIATION SAFETY PROGRAM

Regulations

- 10 CFR 40.32(b)-(d)
- 10 CFR 20.1101

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10

A radiation safety program must be established and submitted to the NRC as part of the application. The program must be commensurate with the scope and extent of activities for the use of licensed materials in service operations. Each applicant must develop, document, and implement a radiation protection program that is specific to its types of operations. Radiation safety programs should address the elements described in this section.

Operating and Emergency Procedures

Regulations

- 10 CFR 19.11(a)(3)
- 10 CFR 20.1101
- 10 CFR 20.1406

- 10 CFR 20.1801-1802
- 10 CFR 20.1902-1905
- 10 CFR 20.2201-2203
- 10 CFR 21.21
- 10 CFR 40.32(c)
- 10 CFR 40.41(e)
- 10 CFR 40.60

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.1

As part of the application package, the licensee must develop, implement, and maintain operating and emergency procedures. Operating procedures for high-risk licensed activities (described in Chapter 1, "Purpose of the Report") should be submitted with the application. Low-risk licensed activities do not require the submission of operating procedures. Emergency procedures should be submitted with all license applications and should address the important radiation safety aspects for the proposed activities and address all likely scenarios that may be encountered.

NUREG-2126, Section 8.1

The applicant's response program for radiological accidents provides for notification to NRC in compliance with the notification and reporting requirements of 10 CFR 20.2202, "Notification of incidents," and 10 CFR 20.2203, "Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits". Notification requirements include both immediate and 24-hour notification, depending on severity. Reporting requirements include both written (including electronic submission, when practicable) and verbal (telephone or emergency notification system) reports. The applicant describes adequate procedures to respond to and mitigate or remediate the likely consequences of radiological accidents.

NUREG-2126, Section 8.2

Adequate procedures to respond to and mitigate or remediate the likely consequences of transportation accidents are identified or referenced in the application. The applicant has procedures in place to detect and respond to postulated transportation accident conditions and to mitigate consequences. These procedures include those related to monitoring, identification, and response to transportation accidents related to accidents and spills.

Material Receipt and Accountability

Regulations

- 10 CFR 20.1501(a)
- 10 CFR 20.1801-1802
- 10 CFR 20.1906
- 10 CFR 20.2001
- 10 CFR 20.2108
- 10 CFR 20.2201, 2207
- 10 CFR 40.36(f)
- 10 CFR 40.41(e)

- 10 CFR 40.51
- 10 CFR 40.61
- 10 CFR 40.64

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.2

Service provider licensees who will obtain and possess licensed material must do the actions described in the guidance, including

- Establish, maintain, and retain written procedures for safely opening packages (10 CFR 20.1906, “Procedures for receiving and opening packages”).
- Secure and maintain accountability of licensed material (10 CFR 20.1801, “Storage and control of licensed material,” and 10 CFR 20.1802, “Control of material not in storage”).
- Maintain records of receipt, transfer, and disposal of licensed material (10 CFR 20.2108, “Records of waste disposal” and 10 CFR 40.61(a)).
- Conduct physical inventories at intervals not to exceed 6 months (or some other interval justified by the applicant and approved by the NRC) to account for all sealed sources in accordance with license condition.

Radiation Monitoring Instruments

Regulations

- 10 CFR 20.1501
- 10 CFR 20.2103(a)
- 10 CFR 40.32(c)

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.3

Licensees must possess and periodically calibrate radiation monitoring instruments that are necessary to protect health and minimize danger to life or property. Instruments used for quantitative radiation measurements must be calibrated periodically for the radiation measured.

NUREG-2126, Section 6.1

Monitoring equipment (for external dose) is identified by type, sensitivity, calibration methods and frequency, availability, and planned use to protect health and safety. Applicant includes information associated with the surveys to be conducted, criteria used for determining location of surveys, frequency or surveys, action levels, and layout and location of monitors with criteria for determining location during monitoring.

NUREG-2126, Section 6.2

Applicant provides criteria for selection of air sampling equipment and frequency of sampling with respect to operations and occupancy. Applicant includes information associated with sensitivity of instrument/counting device, sample analysis, action levels and calibration frequency.

Surveys

Regulations

- 10 CFR 20.1101
- 10 CFR 20.1301
- 10 CFR 20.1406
- 10 CFR 20.1501
- 10 CFR 20.2103
- 10 CFR 20.2203
- 10 CFR 40.63

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.4

10 CFR 20.1501, “General,” and 10 CFR 20.2103, “Records of surveys,” contain general survey and survey recordkeeping requirements. When developing procedures for the safe use of equipment, licensees should consider how to minimize radioactive contamination during operation, decontamination and decommissioning efforts, and radioactive waste generation. Procedures should address contamination of soil. Records of surveys and leak-test results must be maintained, if applicable.

Leak Tests

Regulations

- 10 CFR 40.63

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.5

The NRC requires testing of sealed sources containing greater than 3.7 MBq [100 microcuries] of beta/gamma or 0.37 MBq [10 microcuries] of alpha radioactive material, in order to determine whether there is any radioactive leakage from sealed sources. Requirements for leak tests are based on the type of radiation escaping from the inner capsule. Records of test results must be maintained in accordance with license conditions or, if applicable, NRC regulations.

Occupational Dose

Regulations

- 10 CFR 19.13
- 10 CFR 20.1201-1204, 1207-1208
- 10 CFR 20.1501-1502
- 10 CFR 20.1701-1703
- 10 CFR 20.2104, 2016
- 10 CFR 20 Appendix B

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.6

Each licensee must evaluate the potential exposures of all workers and monitor occupational exposure to radiation when required and control the occupational dose to individual adults to comply with the dose limits set forth in 10 CFR 20.1201, “Occupational dose limits for adults.” If monitoring of occupational doses is required in accordance with 10 CFR 20.1502, “Conditions requiring individual monitoring of external and internal occupational dose,” then the licensee must determine the occupational radiation dose received during the current year, in accordance with 10 CFR 20.2104, “Determination of prior occupational dose,” and maintain records of the monitoring, regardless of the actual dose received, in accordance with 10 CFR 20.2106, “Records of individual monitoring results”.

NUREG-2126, Section 6.1

The external radiation exposure monitoring program is acceptable if it meets the following criteria:

- Applicant provides information associated with the survey methods and instrumentation/equipment that will be used to determine employee exposure during routine and non-routine operations Application should include layout and location of monitors for external radiation and criteria used to determine location.
- Applicant details the criteria used to identify those employees who are to receive external exposure monitoring as well as the plans for documenting exposure. Program is adequate to protect workers from beta radiation hazards associated with decay products of uranium when effective shielding is not present.
- Program is sufficient to detect and control gamma radiation hazards from uranium decay products in areas where large volumes of uranium may be present.
- Program is consistent with the guidance provided in Regulatory Guides 8.30, Revision 1, “Health Physics Surveys in Uranium Recovery Facilities,” (NRC, 2002) and 8.34, Revision 1, “Monitoring Criteria and Methods To Calculate Occupational Radiation Doses” (NRC, 2002).

NUREG-2126 Section 6.2

The airborne radioactivity monitoring program within the restricted area is acceptable if it meets the following criteria:

- Applicant provides sufficient information to support the technical basis for determining radionuclide concentrations, frequency of sampling and analysis, types and sensitivity of analysis, actions levels and minimum number and criteria for location of monitoring stations within the restricted area. Applicant agrees to submission of semi-annual effluent/environmental monitoring reporting.
- Applicant provides information regarding the criteria for selection of locations and sample frequency with respect to operations and personnel occupancy and describes the program to determine the concentration of airborne radioactive material including radon for routine and non-routine operations, maintenance and cleanup.
- Applicant provides sufficient information regarding estimation of occupational dose. If calculations are used to demonstrate compliance with public dose, the applicant should

agree to perform environmental monitoring to confirm the licensing basis and validity of the calculations for estimating the effluent concentrations and calculating public dose.
- Location of air monitoring within the restricted area should be in accordance with Regulatory Guides 8.25 and 8.30, Revision 1, “Health Physics Surveys in Uranium Recovery Facilities,” (NRC, 2002) if an air monitoring program is proposed.
- Acceptable derived air concentrations (DAC) for mixtures of radionuclides. If selecting DAC for U_{nat}, commits to analyze composite samples and follow the conditions necessary to satisfy the removal of some radionuclides from consideration in the decay chain (i.e., use of total activity, concentration of individual nuclide to be disregarded cannot exceed 10%, and no more than 30% of the total nuclides in the decay chain can be disregarded).
- Applicant provides a drawing of the location of the environmental air samplers and a basis for the placement of each one. Monitoring equipment should be identified by type, sensitivity, calibration method and frequency, range of sensitivity and planned use. Appropriate techniques will be used for Ra-226 and Th-230.

NUREG-2126 Section 6.3

The program for exposure calculations is acceptable if it meets the following criteria:

- Applicant should describe the methodology to be used to determine intake exposure calculation for U_{nat} and radon (with daughters). And use the DACs in Appendix B to 10 CFR 20, “Annual limits on intakes (ALIs) and derived air concentrations (DACs) of radionuclides for occupational exposure; effluent concentrations; concentrations for release to sewerage,” for mixtures where the concentrations of each are known, use the sum of the ratios, for mixtures where concentrations are unknown use the most restrictive DAC.
- Occupational dose determination will be in accordance with 10 CFR 20.1101, Radiation protection programs,” and 20.1301, “Dose limits for individual members of the public”.
- Fetal and prenatal dose determination will be in accordance with Regulatory Guides 8.36, “Radiation Dose to the Embryo/Fetus,” (NRC, 1992) and 8.13, Revision 3, “Instruction Concerning Prenatal Radiation Exposure” (NRC, 1999).
- Parameters used for dose calculations must be representative of site conditions.
- Estimates for airborne concentrations must assume maximum production capacity identified in the application.
- Recordkeeping and Reporting of doses must be in accordance with 10 CFR 20, Subparts L, “Records,” and M, “Reports”.

Public Dose

Regulations

- 10 CFR 20.1003
- 10 CFR 20.1101
- 10 CFR 20.1301-1302
- 10 CFR 20.1801-1802
- 10 CFR 20.2107

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.7

Licensees must do the following to prevent or minimize dose to members of the public:

- Ensure that licensed material will be used, transported, stored, and disposed of in such a way that members of the public will not receive more than 1 mSv [100 mrem] in one year, and the dose in any unrestricted area will not exceed 0.02 mSv [2 mrem] in any one hour, from licensed operations.
- Ensure that air emissions of radioactive material to the environment, excluding radon-222 and its daughters, will not result in exposures to individual members of the public in excess of 0.1 mSv [10 mrem] in a year from those emissions.
- Control/maintain constant surveillance of licensed material when in use and not in storage.
- Secure stored licensed material from unauthorized access or removal.

NUREG-2126, Section 5.3

The airborne radiation monitoring program is acceptable if it meets the following criteria:

- Applicant provides sufficient information to support the technical basis for determining radionuclide concentrations, frequency of sampling and analysis, types and sensitivity of analysis, actions levels and minimum number and criteria for location of monitoring stations. Applicant should agree to submission of semi-annual effluent/environmental monitoring reporting.
- Applicant provides information regarding public dose estimation and that those doses are ALARA in accordance with Regulatory Guide 8.37, “ALARA Levels for Effluents from Materials Facilities” (NRC, 1993). If calculations are used to demonstrate compliance with public dose, the applicant should agree to perform environmental monitoring to confirm the licensing basis and validity of the calculations for estimating the effluent concentrations and calculating public dose.
- Sampling locations for effluents/public dose are consistent with Regulatory Guide 4.14, Revision 1, “Radiological Effluent and Environmental Monitoring at Uranium Mills,” (NRC, 1980).
- Applicant provides a drawing of the location of the environmental air samplers and a basis for the placement of each one. Monitoring equipment should be identified by type, sensitivity, calibration method and frequency, range of sensitivity and planned use. Appropriate techniques should be used for Ra-226 and Th-230.

Transportation

Regulations

- 10 CFR 20
- 10 CFR 40.51
- 10 CFR 71.5
- 10 CFR 71.14, 17
- 10 CFR 71.47
- 10 CFR 71.87

- 49 CFR Parts 171-178

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.8

Applicants that will be packaging and transporting licensed material must develop, implement, and maintain safety programs for transport of radioactive material to ensure compliance with NRC and U.S. Department of Transportation (DOT) regulations.

Maintenance

Regulations

- 10 CFR 20.1101
- 10 CFR 40.41(e)

Acceptance Criteria

NUREG-1556, Vol. 12, Revision 1, Section 8.10.8

Maintenance of equipment should be planned and carried out as frequently as needed, using ALARA principles. Individuals performing maintenance should be trained in the procedures they implement. Procedures should be written to account for the skills of the implementing personnel. Ordinarily, individuals handling unshielded materials should have up to 40 hours of classroom and on-the-job training in radiation safety. Instructors should be more extensively qualified than the staff they teach.

Audit and Review of Program

Regulations

- 10 CFR 20.1101
- 10 CFR 20.2102-2110
- 10 CFR 21.21(a)

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.10.10

Licensees must review the content and implementation of their radiation protection programs at least annually to ensure that the program:

- is commensurate with the scope and extent of licensed activities;
- is compliant with NRC and DOT regulations (as applicable);
- is compliant with the terms and conditions of the license;
- maintains occupational doses and doses to members of the public ALARA; and
- is documented and that appropriate records are maintained for the required duration.

NUREG-2126, Section 4.3

The management audit and inspection program, including the proposed frequencies, types, and scopes of reviews and inspections; action levels; and corrective action measures, is acceptable if:

- The management responsibilities for audit and inspection are adequately defined.
- The annual ALARA audit program is consistent with Regulatory Guide 8.31, Revision 1, "Information Relevant to Ensuring That Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable," (NRC, 2002).

WASTE MANAGEMENT

Regulations

- 10 CFR 20.1101
- 10 CFR 20.1301
- 10 CFR 20.1501
- 10 CFR 20.1904
- 10 CFR 20.2002-2008
- 10 CFR 20.2108
- 10 CFR Part 20, Appendices B and G
- 10 CFR 40.32(c)
- 10 CFR 40.61
- 40 CFR 190

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.11

Radioactive waste must be managed and disposed of in accordance with regulatory requirements and license conditions. Appropriate records of waste disposal must be maintained.

Regulatory Information Summary 2012-06

Applicability will depend on how application defines the mineral fraction.

NUREG-2126, Section 3.5

The description of waste management is acceptable if it meets the following criteria:

- Licensee should provide information associated with quantities and composition of wastes expected during (1) construction and mobilization, (2) operations and (3) decommissioning and demobilization. Information should include details on effluent control systems for liquids and gases, control of solid and liquid wastes and design specifications for any waste retention or disposal system.
- Description of waste process include chemical, physical and radiological characteristics of the waste, analysis of impact on the environment, location of other potentially affected licensees and non-licensees, and an analysis to verify that doses (occupational and public) are within the limits of 10 CFR Part 20, "Standards For Protection Against Radiation," and maintained ALARA.
- Monitoring and control systems for effluent are located to optimize their intended function and effluent releases are in compliance with 10 CFR 20,1101, "Radiation Protection Programs," 10 CFR 20,1301, "Dose limits for individual members of the public," the release criteria of Table 2 of Appendix B to 10 CFR 20, 10 CFR 40.32(c),

and 40 CFR 190, “Environmental Radiation Protection Standards for Nuclear Power Operations”.

DECOMMISSIONING ACTIVITIES

Regulations

- 10 CFR 40.32(c)
- 10 CFR 40.42

Acceptance Criteria

NUREG-1556, Vol. 18, Section 8.5.3

In accordance with 10 CFR 40.36(f), all licensees must maintain records of equipment and locations where licensed materials specifically listed in the license are used or stored. Also pursuant to 10 CFR 40.36(f), licensees must transfer records important to decommissioning to the new proposed licensee before licensed activities are transferred or assigned. Furthermore, pursuant to 10 CFR 40.61(f), prior to license termination, each licensee must forward the records required by 10 CFR 40.36(f) to the appropriate NRC regional office.

NUREG-1757, Volume 2, Section 5

The licensee’s projections of compliance with regulatory criteria are acceptable, provided that the NRC staff has reasonable assurance of the following:

- Any one of the following:
    - The licensee has committed to calculating an annual dose using a screening analysis, which meets unrestricted release criterion in 10 CFR Part 20, Subpart E, “Radiological Criteria for License Termination,” planned Derived Concentration Guideline Levels (DCGLs) are equal to or less than those provided by the screening criteria, and the licensee has committed to ensuring the sum of fractions is no greater than 1, if applicable.
    - The licensee has committed to using a site-specific exposure scenario, model, and set of parameters with the final survey results to show final compliance with the dose limit.
    - The licensee has committed to using site- and radionuclide-specific DCGLs and will ensure that the total dose from all radionuclides will meet the requirements of 10 CFR Part 20, Subpart E, “Radiological Criteria for License Termination,” by using the sum of fractions.
- In addition, for site-specific analyses:
    - The licensee has adequately characterized the source and applied a technically defensible source term.
    - The licensee has analyzed the appropriate exposure scenario(s) and found that the exposure group(s) adequately represents a critical group.
    - The mathematical method and parameters used are appropriate for the exposure scenario and parameter uncertainty has been adequately addressed.

  - For deterministic analyses, the peak annual dose to the average member of the critical group for the appropriate exposure scenario(s) for the option is less than (or equal to) 0.25 mSv (25 mrem) or was used to calculate $DCGL_W$.
  - For probabilistic analyses, the "peak of the mean" or "mean of the peaks" dose to the average member of the critical group for the appropriate exposure scenario(s) for the option is less than (or equal to) 0.25 mSv (25 mrem) or was used to calculate $DCGL_W$.

NUREG-1569, Section 6.3

The procedures for removing and disposing of waste materials are acceptable if they meet the following criteria:

- A program is in place to control residual contamination on equipment.
- Measurements of radioactivity on the interior surfaces of equipment will be determined by making measurements at all appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the equipment.
- Surfaces of equipment that are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement are presumed to be contaminated in excess of the limits. Before release of equipment for unrestricted use, the licensee makes a comprehensive radiation survey to establish that contamination is within the limits specified in standard review plan Section 5.7.6, "Contamination Control Program," of NUREG-1569, and obtain NRC approval.
- A contract between the licensee and a waste disposal operator exists to dispose of source material.
- The applicant commits to providing final (detailed) decommissioning plans for each site of operations to the NRC for review and approval before the planned commencement of decommissioning of these sites. The final decommissioning plan includes a description of site, and associated residual radioactivity, to be decommissioned, a description of planned decommissioning activities and release criteria, a description of methods to be used to ensure protection of workers and the environment against radiation hazards, a description of the planned final radiation survey, and an updated detailed cost estimate. The plan should also include a description of responsibility for materials remaining at a site that cannot meet unrestricted release criteria. A license condition will be established to this effect.

NUREG-1569, Section 6.4

The procedures for conducting decommissioning radiological surveys are acceptable if they meet the following criteria:

- Background radionuclide concentrations are determined using appropriate methods as described in Section 2.9, "Background Radiological Characteristics," of this standard review plan. If there are large variations in the background radionuclide concentrations within a given site, the licensee may assign different background radionuclide concentrations to different areas of the site, provided that the licensee properly justifies the background concentrations selected for each area.

- The survey method for verification of soil cleanup is designed to provide 95-percent confidence that the survey units meet the cleanup guidelines. Appropriate statistical tests for analysis of survey data are described in NUREG–1575, Revision 1, “Multi-Agency Radiation Survey and Site Investigation Manual” (NRC, 2000).

REFERENCES

NUREG-1556, Volume 12, Revision 1, Consolidated Guidance about Materials Licenses, Program Specific Guidance about Possession Licenses for Manufacturing and Distribution, May 2018.

NUREG-1556 Volume 18, Revision,1, Consolidated Guidance about Material Licensees, Program Specific Guidance about Service Provider Licenses, August 2017.

NUREG-1569, Standard Review Plan for In Situ Leach Uranium Extraction License Applications, June 2003.

NUREG-1575, Revision 1, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), August 2000.

NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, August 2003.

NUREG-1757, Volume 2, Revision 2, Consolidated Decommission Guidance – Characterization, Survey, and Determination of Radiological Criteria, July 2022.

NUREG-2126, Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, Draft Report for Comment, November 2014.

Regulatory Guide 4.14, Revision 1, Radiological Effluent and Environmental Monitoring at Uranium Mills, April 1980.

Regulatory Guide 4.15, Revision 2, Quality Assurance for Radiological Monitoring Programs (Inception through Normal Operations to License Termination) -- Effluent Streams and the Environment, July 2007.

Regulatory Guide 8.2, Revision 1, Administrative Practices in Radiation Surveys and Monitoring, May 2011.

Regulatory Guide 8.13, Revision 3, Instruction Concerning Prenatal Radiation Exposure, June 1999.

Regulatory Guide 8.29, Revision 1, Instruction Concerning Risks from Occupational Radiation Exposure, February 1996.

Regulatory Guide 8.30, Revision 1, Health Physics Surveys in Uranium Recovery Facilities, May 2002.

Regulatory Guide 8.31, Revision 1, Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be as Low as Is Reasonably Achievable, May 2002.

Regulatory Guide 8.34, Revision 1, Monitoring Criteria and Methods To Calculate Occupational Radiation Doses, August 2022.

Regulatory Guide 8.36, Radiation Dose to the Embryo/Fetus, July 1992.

Regulatory Guide 8.37, ALARA Levels for Effluents from Materials Facilities, July 1993.

Regulatory Information Summary 2012-06, NRC Policy Regarding Submittal Of Amendments For Processing Of Equivalent Feed At Licensed Uranium Recovery Facilities, April 2012.