

**Assessment Plan for the**

**Fermi Lab**

**Occupational, Environmental and Public Radiation Protection Programs**

May 2022

Approved:

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  | Date |

**Acronyms and Abbreviations**

ALARA As Low As Reasonably Achievable

BAT Best Available Technology

CFR Code of Federal Regulations

CH Chicago

Ci Curie

CAS Contractor Assurance System

CFR Code of Federal Regulations

CRAD Criteria, Review, and Approach Document

DAC Derived Air Concentration

DOE U.S. Department of Energy

DOELAP Department of Energy Laboratory Accreditation Program

DPM Disintegrations Per Minute

DCS Derived Concentration Standard

EMS Environmental Management System

EPA Environmental Protection Agency

ERPP Environmental Radiological Protection Program

GERT General Employee Radiological Training

HC Hazard Category

ISC Integrated Support Center

ISMS Integrated Safety Management System

Lc Critical Level

LOI Lines of Inquiry

MCL Maximum Contaminant Levels

MDA Minimum Detectible Activity

NRC Nuclear Regulatory Commission

O Order

OR Oak Ridge

RWP Radiation Work Permit

pCi Picocurie

SC Office of Science

RPP Radiation Protection Program

PPE Personal Protective Equipment

SCMS Office of Science Management System

STD Standard

TED Total Effective Dose

TENORM Technologically Enhanced Naturally Occurring Radioactive Material

# 1.0 INTRODUCTION

The Assessment Team assigned to conduct the assessment will evaluate select elements of the SC Laboratory’s Site Contractor’s Radiation Protection Program (RPP). The RPP will be assessed for compliance with applicable requirements in 10 Code of Federal Regulations Part 835, *Occupational Radiation Protection* (10 CFR 835) DOE O 458.1, *Radiation Protection of the Public and the Environment* and 10 CFR 830*, Nuclear Safety Management*. The assessment will be conducted from May 2-5, 2022.

The Assessment Team includes the following individuals:

* Team Leader – Derek Favret (DOE HQ, SC-4)
* Team Member – Craig Booker (DOE Consolidated Service Center – Oak Ridge)
* Team Member – George Chiu (DOE HQ, EHSS-11)
* Team Member – Mike Stewart (DOE HQ, EHSS-22)
* Team Member – Noreen Brachman (Argonne Site Office)
* Team Member – Sandra Snyder (Pacific Northwest National Laboratory)

# 2.0 SCOPE

The scope of the assessment is to examine the implementation of portions of the SC Laboratory’s Site Contractor’s Radiation Protection Program (RPP) and Environmental Radiation Protection Program (ERPP) and the effectiveness of the programs in protecting the workers, the public, and the environment. Elements of the programs to be assessed will be determined based on consultations between the Assessment Team and Site Office personnel. The assessment is intended to assess:

* Whether Fermilab has an RPP that meets the requirements of 10 CFR 835, *Occupational Radiation Protection*;
* Whether Fermilab has an ERPP that meets the requirements of DOE O 458.1, Chg.4, *Radiation Protection of the Public and the Environment*;
* Whether Fermilab protect workers, onsite residents and the visiting public from potential radiation exposure per 10 CFR 835, *Occupational Radiation Protection* and DOE O 458.1, Chg.4, *Radiation Protection of the Public and the Environment*;
* Whether Fermilab has an effective on-site contamination control procedures and processes in place per 10 CFR 835, *Occupational Radiation Protection;*
* Whether Fermilab has an effective release and clearance of property procedures and processes in place per DOE O 458.1, Chg.4, *Radiation Protection of the Public and the Environment*; and
* Whether SC Laboratory Site Office oversight of the Site Contractor is performed in accordance with DOE P 226.2, *Policy for Federal Oversight and Contractor Assurance Systems* and DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*.

Specific assessment criteria are provided in Section 4.0.

# 3.0 CATEGORIZATION OF ASSESSMENT RESULTS

The results of the assessment will be expressed as strengths or weaknesses. The weaknesses will be compiled into statements of findings relative to the Office of Science Management System (SCMS) criteria contained in the SCMS Quality Assurance and Oversight Management System.

Weaknesses identified will be categorized as Level 1, 2, or 3 Findings. This categorization identifies the significance the team places on the finding as well as indicating to contractor and DOE management the level of rigor that should be applied in addressing the finding. The categories of finding levels delineated in SCMS are as follows:

* Level 1 (L1) Finding - An issue of major significance that warrants a high level of attention on the part of line management. Typically, such an issue reflects a gap in addressing requirements or a systemic problem with implementing the requirements. If left uncorrected, this level of finding could negatively impact the adequacy of operations and/or accomplishment of the SC mission.
* Level 2 (L2) Finding - An issue that represents a nonconformance or deviation with the implementation of a requirement. Multiple issues at this level--when of a similar nature--may be rolled up together into one or more Level 1 Findings.
* Level 3 (L3) Finding - An issue in which it is recognized that improvements can be gained in the process, performance, or efficiency already established for meeting a requirement. This level of finding should also include minor deviations observed during oversight activities that have been promptly corrected on the spot and verified as completed.

Positive attributes in the Site Contractor Radiation Protection Program or its implementation cited during the assessment will also be reported. They will be categorized as either Strengths or Noteworthy Practices.

* Noteworthy Practice - A positive observation--based on objective assessment data--of a particular practice, procedure, process, or system considered so unique or innovative enough that the entire Department might find it beneficial. Mere compliance with mandatory requirements is not considered to be a noteworthy practice.
* Strength - A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities, and resources.

# 4.0 ASSESSMENT CRITERIA

| **Criterion Number** | **Criterion** |
| --- | --- |
| RP-1 | DOE activities undertaken are conducted in compliance with a documented RPP approved by the DOE. |
| RP-2 | Routine and non-routine radiological surveys and monitoring are performed for external radiation, fixed and removable contamination, and airborne radioactivity, as needed to characterize radiological conditions and ensure safety of personnel. |
| RP-3 | Areas, equipment, materials are posted and/or labeled to inform workers of radiological conditions, to prevent unauthorized access to radiological areas, and to avoid unnecessary radiological exposures. |
| RP-4 | The Site Contractor has developed and implemented radiological controls sufficient to prevent the inadvertent release of radioactive materials and contamination to uncontrolled areas. |
| RP-5 | The Site Contractor has developed and implemented access controls sufficient to prevent individuals from unauthorized access to radiological areas, to prevent inadvertent and unplanned exposure to radiation or radioactive material, and to maintain exposure ALARA. |
| RP-6 | Radiological work planning processes are formally defined, designed, and implemented in a manner that completely and accurately defines work scopes, integrates with other safety and health disciplines, minimizes the potential for spread of contamination, and ensures radiological exposures to personnel are maintained ALARA. |
| RP-7 | Radiological training programs have been established and implemented such that only qualified individuals perform radiological work. |
| ERP-1 | The site has established and maintains an Environmental Radiological Protection Program that complies with DOE O 458.1. |
| ERP-2 | DOE radiological activities, including remedial actions and activities using TENORM, are conducted so that exposures to members of the public demonstrate compliance with the public dose limit. |
| ERP-3 | The Site Contractor has developed and implemented documented ALARA processes to optimize control and management of radiological activities so that doses to members of the public (both individual and collective) and releases to the environment are kept as low as reasonably achievable. |
| ERP-4 | The Site Contractor ensures the release of radioactive material to the atmosphere are conducted in accordance with DOE O 458.1 requirements. |
| ERP-5 | The Site Contractor has established plans and procedures to ensure release and clearance of real and personal property are compliant with DOE O 458.1. |
| ERP-6 | The Site Contractor utilizes historical and/or process knowledge for initial decision regarding disposition of materials and equipment. |
| ERP-7 | The Site Contractor has approved Authorized Limits established in accordance with DOE O 458.1 for all release and clearance of real and personal property. |
| ERP-8 | The Site Contractor performs radiological monitoring or surveys in support of clearance of property accordance with requirements in DOE O 458.1. |
| ERP-9 | The Site Office has established an Independent Verification Program in accordance with requirements in DOE O 458.1. |
| OA-1 | SC Site Office has developed and implemented written plans and schedules oversight of the Site Contractor’s Radiation Protection Program and for radiological work performed under the RPP. |

# 5.0 ASSESSMENT METHODS

The assessment will be conducted in accordance with the SCMS Quality Assurance and Oversight—Assessments, Procedure 2, *Performing Assessments*.

Details on the schedule and logistics, lines of inquiry, assessment conduct, and assessment results reporting are included in the following sections.

## 5.1 Schedule and Logistics

The assessment will be conducted in accordance with the following schedule (*subject to change*):

|  |  |
| --- | --- |
| First document request to SC Site Contractor: | (April 1 – April 15) |
| Document review: | (April 1 – May 1) |
| Assessment in-brief: | May 2, 2022 |
| Field work (Virtual if necessary): | May 2 – 5, 2022 |
| Out-brief: | May 6, 2022 |

Multiple document requests are anticipated; however, the Assessment Team will attempt to batch all document requests to prevent burdening the SC Site Contractor personnel with excessive administrative tasks. By mutual consent between SC Site Contractor and the Assessment Team Leader, documents may be emailed to the team or placed on an SC Site Contractor file sharing platform such as Box or SharePoint. SC Site Contractor is requested to provide the Assessment Team with the documents listed in Attachment A of this assessment plan as soon as practical, but no later than April 15, 2022.

Daily briefings between the Assessment Team, the SC Site Office and SC Site Contractors may be held to discuss developing issues and unmet needs. A daily briefing may be canceled by mutual consent.

## 5.2 Assessment Criteria, Review, and Approach

Appendix A provides the Criteria, Review and Approach Document (CRAD) for each specific assessment criterion. Specific Lines of Inquiry (LOI) have been developed for each assessment criterion to ensure that the scope of the assessment, as defined in Section 3.0, is fully addressed. To the extent possible, all LOIs will be addressed during the assessment; additional LOIs may be developed during the course of the assessment at the discretion of the assessment team consistent with the assessment scope.

## 5.3 Assessment Conduct

The assessment will be performance-based in that SC Site Contractor programs, plans, and implementing procedures will be verified to be in compliance with relevant requirements, and effectively implemented.

Assessment approaches (e.g., document review, interviews, and field observations) are identified in Appendix A. Each team member will document the evaluation of the assessment criteria using the assessment form provided in Appendix B. All findings, noteworthy practices, or strengths will be documented on the assessment form as well.

# 6.0 REPORT

The results from the assessment will be published in a draft report no later than three weeks following the review and will be submitted to SC Site Office and to the SC Site Contractor for factual accuracy review. Factual accuracy is anticipated to be completed within one week of receipt; the report will be finalized and issued within 30 days of the factual accuracy review.

# Appendix A – CRADs & Lines of Inquiry

# Appendix B – Assessment Form

**Appendix A: Criteria, Review, and Approach Documents (CRAD)**

|  |  |
| --- | --- |
| **Assessment Criterion: RP-1** | **Assessment Team Member:** |
| **DOE activities undertaken are conducted in compliance with a documented RPP approved by the DOE.** | |

**Lines of Inquiry**

* Are radiological activities conducted in accordance with a DOE approved RPP?
* Does the RPP address all requirements of 10 CFR 835, commensurate with the scope of the activities performed at Fermilab?
* Does the RPP include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure?
* Does the scope of the RPP completely address all the radiological activities conducted?
* Are identified guides and technical standards, that are to be adopted as the means to meet 10 CFR Part 835, being followed?
* Does the RPP clearly identify any exemptions that have been approved from the subject requirements?
* If yes, are the conditions on the exemption decision being implemented?
* Are updates to the RPP submitted to DOE whenever a change or addition to the RPP is made and before the initiation of a task not within the scope of the RPP?
* Are internal assessments conducted such that all functional elements are reviewed no less frequently than every 36 months?
* Are internal audits conducted by qualified individuals who are organizationally independent from the organizations responsible for developing and implementing the RPP?
* Do internal audit reports show that the functional elements under review were comprehensively and objectively examined?
* Do individuals responsible for developing and implementing the RPP have the requisite education, training, and skills?
* Are written procedures developed and implemented as necessary to ensure compliance with the RPP and 10 CFR 835?
* Are procedures commensurate with the radiological hazards created by the activity? Are procedures technically correct, accurately scoped, and consistent with upper-level plans and policies?
* Are procedures consistent with the radiological hazards encountered by the worker accounting for the education, training, and skills of the individuals exposed to those hazards?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart B – *Management and Administrative Requirements.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Section 3.0, *Radiation Protection Programs.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-2** | **Assessment Team Member:** |
| **Routine and non-routine radiological surveys and monitoring are performed for external radiation, fixed and removable contamination, and airborne radioactivity, as needed to characterize radiological conditions and ensure safety of personnel.** | |

**Lines of Inquiry**

* Are survey frequencies and techniques documented in procedures or technical basis documents?
* Is area monitoring performed to: (a) document radiological conditions, including prior to work activities (b) detect changes in radiological conditions, (c) verify the effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure, and (d) identify and control potential sources of individual exposure to radiation and/or radioactive materials?
* Are individuals performing surveys trained on the instruments and techniques used to acquire radiological data necessary for the survey and on the response to off-normal survey results?
* Are the instruments and equipment used for monitoring: (1) periodically maintained and calibrated on an established frequency; (2) appropriate for the type(s), levels, and energies of the radiation(s) encountered; (3) appropriate for existing environmental conditions; and (4) routinely tested for operability?
* For the radionuclide being measured, are the field or laboratory instruments used to analyze surface swipes or to take direct surface contamination measurements sufficiently sensitive to detect the surface contamination at the levels specified in Appendix D of 10 CFR 835?
* Is airborne radioactivity monitored where an individual is likely to receive an exposure of 40 or more DAC-hours in a year?
* Is airborne radioactivity monitored as necessary to characterize the airborne radioactivity hazard where respiratory protective devices are required for protection against airborne radionuclides?
* Is real-time air monitoring performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material?
* Are packages received from transportation containing radioactive material exceeding a Type A quantity (as defined in 10 CFR 71.4) monitored for external radiation levels?
* Are packages received from transportation containing radioactive material (other than special form or gaseous materials) monitored for surface contamination?
* Is the monitoring of packages containing radioactive material described above completed as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package?
* For the radionuclide being measured, are the field or laboratory instruments used to analyze surface swipes or to take direct surface contamination measurements sufficiently sensitive to detect the surface contamination at the levels specified in Appendix D of 10 CFR 835?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart E – *Monitoring of Individuals and Areas,* §835.401 and §835.405*.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Section 10.0, *Air Monitoring.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-3** | **Assessment Team Member:** |
| **Areas, equipment, materials are posted and/or labeled to inform workers of radiological conditions, to prevent unauthorized access to radiological areas, and to avoid unnecessary radiological exposures.** | |

**Lines of Inquiry**

* Has the Laboratory developed and implemented procedures that require the posting of areas, and the labeling of equipment and items consistent with 10 CFR 835, Subpart G?
  + Are areas correctly defined and assumptions on exposure potential conservative?
  + Are there appropriate administrative and engineering controls in place to provide access control for entry into radiological areas including necessary signs, barricades, lights, locks, and/or interlock systems?
  + Do postings and labels include the standard radiation warning trefoil in black or magenta imposed upon a yellow background?
  + Are current radiological conditions and entry requirements to radiological areas posted and/or readily available to workers?
  + Are signs clearly and conspicuously posted and do they include radiological protection instructions?
  + Do site procedures adequately require posting and labeling consistent with 10 CFR 835?
* Are items and containers appropriately labeled?
* Do labels provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers, to take precautions to avoid or control exposures?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart G – *Posting and Labeling.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Section 12.0, *Posting and Labeling for Radiological Control.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-4** | **Assessment Team Member:** |
| **The Site Contractor has developed and implemented radiological controls sufficient to prevent the inadvertent release of radioactive materials and contamination to uncontrolled areas.** | |

**Lines of Inquiry**

* Does the Laboratory control the release of material and equipment with removable surface contamination levels on accessible or inaccessible surfaces exceeding the removable surface contamination values specified in Appendix D to 10 CFR 835?
* Does the site control the release of material and equipment if prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in 10 CFR 835?
* Does the site control the release of material and equipment with potential for release to the public (off-site) in accordance with DOE O 458.1, related guidance documents, or site-specific authorized limits?
* Are appropriate controls maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions?
* Is protective clothing required for entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in 10 CFR 835?
* Is the selection and use of the protective clothing appropriate for the hazard?
* Are individuals exiting contamination, high contamination, or airborne radioactivity areas monitored for the presence of surface contamination?
* Does the site implement appropriate monitoring and controls for the movement on-site from one radiological area for immediate placement in another radiological area of material and equipment with removable surface contamination values exceeding the values specified in 10 CFR 835?
* Does the site control material and equipment with fixed contamination levels that exceed the total surface contamination values specified in 10 CFR 835 which is released for use in controlled areas outside of radiological areas?
* Are removable surface contamination levels below the removable surface contamination values specified in 10 CFR 835?
* Is the material or equipment routinely monitored and clearly marked or labeled to alert personnel of the contaminated status?
* Are appropriate controls maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions?
* Are areas in which contamination levels exceed the values specified in 10 CFR 835 controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels?
* Are areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in 10 CFR 835 adequately controlled when located outside of radiological areas?
* Are the areas routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in 10 CFR 835?
* Are the areas conspicuously marked to warn individuals of the contaminated status?
* Is each accountable sealed radioactive source inventoried at intervals not to exceed six months?
* Does the inventory establish the physical location of each accountable sealed radioactive source, verify the presence and adequacy of associated postings and labels; and establish the adequacy of storage locations, containers, and devices?
* Is each accountable sealed radioactive source subject to a source leak test upon receipt, when damage is suspected, and at intervals not to exceed six months?
* Is the source leak test capable of detecting radioactive material leakage equal to or exceeding 0.005 microcuries?
* Are sources stored in a controlled location, subject to periodic inventory and subject to source leak testing prior to being returned to service?
* Are accountable sealed radioactive sources, found to be leaking radioactive material, controlled in a manner that minimizes the spread of radioactive contamination?
* Has the Laboratory developed and implemented procedures that address radiological source and inventory control?
* Is each accountable sealed radioactive source: (a) controlled, (b) leak tested when required, and (c) inventoried at intervals not to exceed six months?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart L – *Radioactive Contamination Control.*
* 10 CFR 835, *Occupational Radiation Protection,* Subpart M – *Sealed Radioactive Source Control.*
* DOE O 458.1*, Radiation Protection of the Public and the Environment.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Sections:
  + 11.0, *Radioactive Contamination Control; and,*
  + 15.0, *Sealed Radioactive Source Accountability and Control.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-5** | **Assessment Team Member:** |
| **The Site Contractor has developed and implemented access controls sufficient to prevent individuals from unauthorized access to radiological areas, to prevent inadvertent and unplanned exposure to radiation or radioactive material, and to maintain exposure ALARA.** | |

**Lines of Inquiry**

* Are personnel entry controls maintained for each radiological area?
* Do individuals have GERT equivalent prior to unescorted access to controlled areas [see 835.901(a)]?
* Is the degree of control commensurate with existing and potential radiological hazards within the area?
* Does access to radiological areas require training commensurate with the hazard(s)?
* Are one or more of the following methods used to ensure control?
  + Signs and barricades
  + Control devices on entrances
  + Conspicuous visual and/or audible alarms
  + Locked entrance ways
  + Administrative controls
* Are controls installed at radiological area exits such that they will not prevent rapid evacuation of personnel under emergency conditions?
* For each entry into a high radiation area:
  + Is the area monitored as necessary during access to determine the exposure rates to which the individuals are exposed?
  + Is each individual monitored by a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated deep dose equivalent during the entry?
* Are controls established (per 10 CFR 835.502(b)) for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed a deep dose equivalent to the whole body of 1 rem (0.01 sievert) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates?
* Are additional measures implemented (per 10 CFR 835.502(c)) to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart F – *Entry Control Program.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Sections:
  + 7.0 *Radiation Generating Devices;* and
  + 11.0, *Radioactive Contamination Control.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-6** | **Assessment Team Member:** |
| **Radiological work planning processes are formally defined, designed, and implemented in a manner that completely and accurately defines work scopes, integrates with other safety and health disciplines, minimizes the potential for spread of contamination, and ensures radiological exposures to personnel are maintained ALARA.** | |

**Lines of Inquiry**

* Has the Laboratory developed and implemented procedures for written authorizations to control entry into and perform work within radiological areas? (10 CFR 835.501(d))
* How do written authorizations provide a mechanism to integrate ALARA reviews of work tasks (i.e., numerical criteria and/or trigger points for determining when a formal ALARA review of planned radiological work activities is required)?
* Are administrative controls used to maintain radiation exposures ALARA for specific activities where use of engineered controls is demonstrated to be impractical? (10 CFR 835.1001(b))
* Are workplace controls for routine operations established such that the anticipated occupational dose to general employees does not exceed the limits established at §835.202; and the ALARA process is utilized for personnel exposures to ionizing radiation?
* Are RWPs required for:
  + Entry into radiological areas?
  + Handling of materials with removable contamination that exceed the values of 10 CFR 835?
  + Work in localized benchtop areas, laboratory fume hoods, sample sinks, and containment devices that has the potential to generate contamination in areas that are otherwise free of contamination?
  + Work that disturbs the soil in soil contamination areas?
  + Work that involves digging in underground radioactive material areas?
* Do the RWPs completely and accurately describe the:
  + Work activities?
  + Work area radiological conditions?
  + Dose rate?
  + Contamination levels?
  + Airborne levels?
  + Dosimetry requirements?
  + Pre-job briefing requirements?
  + Training requirements for entry?
  + Protective clothing and respiratory protection requirements?
  + Radiological Control coverage requirements and stay time controls?
  + Limiting radiological conditions that may void the RWP?
  + Special dose or contamination reduction considerations (ALARA reviews)?
  + Special personnel frisking considerations?
* Do the RWPs have authorizing signatures?
* Have radiological workers signed in on out on the RWPs as required?
* Is the Radiological Control Organization integrated into the site work planning and control process?
* Does the Radiological Control Organization participate in and have input into activity level work planning as appropriate?
* Do members of the Radiological Control organization participate in pre and post job briefings and daily tailgate meetings as necessary?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection*, §835.104 Written Procedures
* 10 CFR 835, *Occupational Radiation Protection,* Subpart F – *Entry Control Program.*
* 10 CFR 835, *Occupational Radiation Protection*, §835.1003 Workplace Controls
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection:*
  + Section 4.0, *ALARA; and,*
  + Section 11.0, *Radioactive Contamination Control.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: RP-7** | **Assessment Team Member:** |
| **Radiological training programs have been established and implemented such that only qualified individuals perform radiological work.** | |

**Lines of Inquiry**

* Do individuals responsible for developing and implementing the RPP have the requisite education, training, and skills?
  + Does the training program require initial and continuing training of radiological workers and technicians?
  + Are formal job performance measures in place and used to evaluate the qualification of radiological workers and technicians prior to assignment to independently perform assigned tasks?
* Has each individual completed radiation safety training before being permitted unescorted access to controlled and before receiving an occupational dose at a DOE site or facility?
* Has each individual completed radiation safety training (including passing an examination), commensurate with hazards and required controls, including successful completion of an examination, prior to:
  + Being permitted unescorted access to radiological areas; and,
  + Before performing unescorted assignments as a radiological worker.
* At a minimum, commensurate with the degree of exposure to potential radiological hazards, does the radiation safety training include material on:
  + Risks of exposure to [radiation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=a2ef3439e7491d72c08cc040680bc2df&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) and radioactive materials, including prenatal [radiation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=a2ef3439e7491d72c08cc040680bc2df&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) exposure?
  + Basic radiological fundamentals and [radiation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=a2ef3439e7491d72c08cc040680bc2df&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) protection concepts?
  + Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage [doses](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=ede0f7526d10d89c547cd41ad3ff31e6&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) and maintain [doses](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=ede0f7526d10d89c547cd41ad3ff31e6&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) [ALARA](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=47735c4de9a18c0f30ff294646d6c36f&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901), including both routine and emergency actions?
  + [Individual](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=7f24cb087bf3b42ace7be26e1263c59a&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) rights and responsibilities as related to implementation of the facility [radiation](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=a2ef3439e7491d72c08cc040680bc2df&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) protection program?
  + [Individual](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=7f24cb087bf3b42ace7be26e1263c59a&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) responsibilities for implementing [ALARA](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=47735c4de9a18c0f30ff294646d6c36f&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) measures?
  + [Individual](https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=7f24cb087bf3b42ace7be26e1263c59a&term_occur=999&term_src=Title:10:Chapter:III:Part:835:Subpart:J:835.901) exposure reports that may be requested?
* When escorts used in lieu of training are used to access or perform work in radiological areas, are the individuals that perform the duties of an escort:
  + Qualified radiological workers in accordance with § 835.901(a-c)?
  + Responsible for ensuring that escorted individuals comply with the documented RPP?

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart J – *Radiation Safety Training.*
* DOE G 441.1-1C, *Radiation Protection Programs Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection,* Section 14.0*, Radiation Safety Training.*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-1** | **Assessment Team Member:** |
| **The site has established and maintains an ERPP that complies with DOE O 458.1.** | |

**Lines of Inquiry**

* Does the ERPP consist of a composite of plans, procedures, protocols and other documents describing the methods used to achieve compliance with DOE O 458.1 requirements?
* Is the ERPP tailored to the hazard or risk and particular radiological activities being conducted at the site and relevant requirements of the Order?
* If a requirement of the Order is determined to not be relevant at the Site, does the ERPP provide a sufficient basis for that determination which is appropriate to the hazard?
  + Is the basis documented?
* Is the ERPP reviewed and approved by the Field Element Manager or Site Office
* Does DOE provide documented directions to contractors necessary to correct any potential inadequacies or inappropriate determinations of relevancy?
* Does DOE ensure that long-term stewardship and institutional controls for protection of the public and environment are necessary to meet the requirements of the Order?
  + Are these documented?
  + Are these implemented, maintained, and periodically reviewed for adequacy and continued relevance?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.a., Environmental Radiological Protection Program

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-2** | **Assessment Team Member:** |
| **DOE radiological activities, including remedial actions and activities using TENORM, are conducted so that exposures to members of the public demonstrate compliance with the public dose limit.** | |

**Lines of Inquiry**

* Do analytical models (i.e., RESRAD), appropriate for their purpose, consider these likely exposure pathways:
  + Direct external radiation from sources located on-site?
  + External radiation from airborne radioactive material?
  + External radiation from radioactive materials deposited on surfaces off-site?
  + Internal radiation from inhaled airborne radioactive material?
  + Internal radiation from radioactive material ingested with water, and with food from terrestrial crops and animal products?
  + Internal radiation from radioactive material ingested with aquatic food and aquatic plants/algae?
  + External or internal radiation due to residual radioactive material on, or in, cleared real property?
  + Any other pathway unique to the DOE site or activity?
* Are values of assumed default or site-specific parameters used in calculations identified and included with documentation of the calculations?
* Are DOE-approved dose coefficients used to evaluate doses resulting from DOE radiological activities (e.g., DOE-STD-1196-2021)?
* Are doses from airborne effluents evaluated with the CAP-88 model or another EPA-approved model or method to demonstrate compliance with 40 CFR Part 61?
* Is environmental monitoring conducted to characterize routine and non-routine releases of radioactive material from radiological activities, estimate the dispersal pattern in the environs, characterize the pathway(s), and estimate doses to individuals/populations in the vicinity of the site?
* Does environmental monitoring include:
  + Effluent Monitoring?
  + Environmental Surveillance?
  + Meteorological Monitoring that is commensurate with the level of site radiological activities, the site topographical characteristics, and the distance to critical receptors?
* Are site-specific environmental monitoring criteria established to ensure that representative measurements of quantities/concentrations of radiological contaminants are conducted and that effects from DOE radiological activities are monitored sufficiently to demonstrate compliance with the Order?
* Are collective doses for members of the public calculated based on radiation emitted and radioactive materials released from DOE radiological activities only?
* Are collective doses for members of the public representative of the total dose and of adequate quality for supported comparisons, trending, or decisions?
* Consistent with a graded approach, are collective dose estimates truncated by distance (e.g., 50 miles) or individual dose level (e.g., 10 microrem) when integration beyond such thresholds do not significantly affect data quality objectives?
* Are collective doses for member of the public resulting from radon and its decay products released by DOE radiological activities calculated separately from other radionuclides?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.b., Public Dose Limits
* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.c., Temporary Dose Limits
* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.e., Demonstrating Compliance with the Public Dose Limit
* DOE-STD-1196-2021, *Derived Concentration Technical Standard*
* 40 CFR Part 61, *National Emission Standards for Hazardous Air Pollutants*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-3** | **Assessment Team Member:** |
| **The Site Contractor has developed and implemented documented ALARA processes to optimize control and management of radiological activities so that doses to members of the public (both individual and collective) and releases to the environment are kept as low as reasonably achievable.** | |

**Lines of Inquiry**

* Does the site have a documented ALARA program or procedures?
* Is the ALARA process based on the principle of “Optimization” of dose rather than “Minimization” of dose?
* Is the process applied to the design and modification of facilities and conduct of activities that expose the public or the environment to radiation or radioactive material?
* Does the ALARA process:
  + Consider DOE sources, modes of exposure and all pathways which potentially could result in the release of radioactive materials into the environment or exposure to the public?
  + Use a graded approach?
  + Be coordinated with the 10 CFR Part 835 ALARA process, to the extent practical and when appropriate?
* Is the ALARA process applied to all routine radiological activities?
* Does the site’s ALARA process incorporate guidance from DOE-HDBK-1215-2014?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.d., As Low As Reasonably Achievable
* DOE-HDBK-1215-2014, *Optimizing Radiation Protection of the Public and the Environment for Use with DOE O 458.1, ALARA Requirements*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-4** | **Assessment Team Member:** |
| **The site contractor ensures the release of radioactive material to the atmosphere are conducted in accordance with DOE O 458.1 requirements.** | |

**Lines of Inquiry**

* Are airborne radioactive effluents evaluated using the ALARA process?
* Are activities conducted such that radon-222 flux rates do not exceed 20 pCi/m2 averaged over the surface area overlaying waste wherever radium-226 wastes are accepted for storage or disposal?
* Are activities conducted that meet compliance agreements under 40 CFR Part 61, Subparts H, Q, and T?
* Are activities conducted such that radon-220 and radon-222 decay product concentrations, including background, do not exceed 0.03 WL in buildings that are being released from DOE control?
* Are activities conducted which do not exceed 3 pCi/L annual average radon-220 and radon-222 concentrations, not including background, at the site boundary if DOE activities release radon-220 and radon-222 or their decay products?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.f., Airborne Radioactive Effluents
* 40 CFR Part 61, *National Emission Standards for Hazardous Air Pollutants*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-5** | **Assessment Team Member:** |
| **The Site Contractor has established plans and procedures to ensure release and clearance of real and personal property are compliant with DOE O 458.1.** | |

**Lines of Inquiry**

* Are Property control and clearance processes developed and implemented in accordance with the public dose limits in paragraph 4.b. under any plausible use of the property and the ALARA process requirements in paragraph 4.d. of DOE O 458.1?
* Are the following dose constraints for DOE residual radioactive material applied to each specific clearance of property for any actual or likely future use of the property (unless alternative dose constraints approved in accordance with 4.k(2) of the Order):
  + Real property – a TED of 25 mrem (0.25 mSv) above background in any calendar year
  + Personal property - a TED of 1 mrem (0.01 mSv) above background in any calendar year
* Is property potentially containing residual radioactive material not cleared from DOE control unless:
  + The property is demonstrated not to contain residual radioactive material based on process and historical knowledge, radiological monitoring or surveys, or a combination of these
  + The property is evaluated and appropriately monitored or surveyed to determine:

(1) The types and quantities of residual radioactive material within the property

(2) The quantities of removable and total residual radioactive material on property surfaces (including residual radioactive material present on and under any coating)

(3) That for property with potentially contaminated surfaces that are difficult to access for radiological monitoring or surveys, an evaluation of residual radioactive material on such surfaces is performed based on process and historical knowledge and monitored/surveyed to the extent feasible AND sufficient to demonstrate that applicable site-specific or pre-approved Authorized Limits will note be exceeded

* + That any residual radioactive material within or on the property is in compliance with applicable site-specific or pre-approved DOE Authorized Limits.
* Are written plans or procedures in place to clear materials and equipment that cannot be cleared on the basis of process knowledge determinations?
* Do plans or procedures include confirmatory surveys of items at warehouses/salvage yards?
  + Are measured data recorded on portable computer, tablet, or other automated collection systems and automatically recorded on a standardized survey form?
  + Are measure data recorded on a standard form or written log and entered into a permanent record or database?
  + Other?
* Has the site incorporated the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) or* the *Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME)* process (planning, implementing, assessing, documentation) into the radiological clearance program?
  + Are surveys performed through the use of MARSSIM/MARSAME statistical sampling approaches to determine the number of samples and evaluation of statistical data?
  + Is the MARSSIM/MARSAME survey classification system incorporated into the radiological clearance program?
  + Is MARSSIM/MARSAME terminology used throughout the program?
* Is real property under evaluation for clearance from DOE radiological controls evaluated against the need for maintaining institutional controls or impacting long-term stewardship of adjacent DOE real property? (NOTE: In situations where transfer of the real property to other use would impact long-term radiological protection of adjacent DOE properties, it must be demonstrated that the impact of the property clearance would not result in noncompliance for the adjacent property with the requirements of this Order, DOE O 435.1, current version, or other applicable statutes, regulations or Orders.)
* Is Clearance of Environmental Restoration (i.e., CERCLA), Deactivation and Decommissioning, and Other Cleanup Materials being used to meet the requirements of this Order (see DOE O 458.1, 4.k.(7))?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.k., Release and Clearance of Property.
* Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)
* Multi-Agency Radiation Survey and Assessment of Material and Equipment Manual (MARSAME)

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-6** | **Assessment Team Member:** |
| **The Site Contractor utilizes historical and/or process knowledge for initial decision regarding disposition of materials and equipment.** | |

**Lines of Inquiry**

* For items offered for clearance, does the site provide a description of the use and radiological history of the item(s) and identify the generator/owner?
* For materials and equipment with a common use, operating history, or process knowledge (e.g., all materials or items from a building where process knowledge has demonstrated no contamination), has detailed information been compiled in a technical basis document for use in initial disposition determinations?
* Does the site require surveys for materials or equipment when historical or process knowledge is incomplete?
* Does the site forego the use of historical or process knowledge when determining how to disposition materials and equipment?
  + Does the contractor consider all material and equipment to be radiologically contaminated until they have been physically surveyed?
* Are confirmatory surveys performed to confirm process knowledge information based on a specified frequency and/or percentage of materials and equipment to be cleared using formal site procedures?
* Are formal plans in place to confirm historical or process knowledge information prior to its use and on a pre-determined percentage of materials and equipment on a regular basis?
* Are formal plans in place which utilize a graded approach to provide a consistent, verifiable method for identifying and responding to anomalous process knowledge determinations?
* What actions are taken by a site when it is discovered that materials and equipment that were determined to be clean based on historical or process knowledge is found to be contaminated?
  + If the level of contamination is below a pre-determined level, the object is removed from the lot and sampling is increased.
  + If the level of contamination is above a pre-determined level, the assessment of the entire lot is halted and the lot is re-evaluated.
  + Is sampling of the lot either increased or halted based on technical or professional judgement? NOTE: This process can result in inconsistencies. A formal plan is preferred.
  + Is material or equipment decontaminated and sampling of the lot continued without a change in approach? NOTE: This process increases the likelihood of missing a trend. A formal plan is preferred.
* Is an automated, electronic or hardcopy records system in place for archived disposition documentation for material and equipment available?
  + Does the system use standardized reports and forms?
  + Can the forms be viewed immediately and/or archived in a database?
  + In lieu of a centralized system, is a non-centralized system in place to maintain disposition documentation based on historical or process knowledge?
* Are steps taken to define the scope of or prevent a recurrence of an anomalous historical or process knowledge determination that is found by surveys?
  + Does the site maintain a process knowledge database and is it updated to reflect the new finding (i.e., lesson learned)?
  + Does the site review records of other materials and equipment cleared from that area or process that may also have been contaminated?
  + Does the site investigate the cause of anomalous determinations and take corrective actions to prevent a recurrence?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.k., Release and Clearance of Property.

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-7** | **Assessment Team Member:** |
| **The Site Contractor has approved Authorized Limits established in accordance with DOE O 458.1 for all release and clearance of real and personal property.** | |

**Lines of Inquiry**

* Are Authorized Limits established and approved for the clearance of any property with residual radioactive material to provide reasonable assurance that the requirements of paragraphs 4.k.(1) and 4.k.(2) are met?
* Are Authorized Limits based on the applicable dose constraint, supported by a complete exposure pathway analysis using appropriate methodologies, techniques, parameters and models (such as the RESRAD family of codes) that meet DOE quality assurance requirements under DOE O 414.1, *Quality Assurance?*
* Are Authorized Limits developed in accordance with the ALARA requirements in paragraph 4.d. of DOE O 458.1?
* Are Authorized Limits expressed in terms of concentration of radioactivity per unit surface area (e.g., dpm per 100 cm2), radioactivity per unit mass (e.g., pCi per gram) or volume (e.g., pCi per ml), total radioactivity, or DOE controls and restrictions, if applicable?
* Do Authorized Limits explicitly state any restrictions or conditions on future use of the property necessary to ensure the basic dose limit and applicable dose constraint are not exceeded?
* Do Authorized Limits include written notification of applicable Federal, State, or local regulatory agencies, or Tribal governments?
* Are Authorized Limits approved in accordance with paragraph 4.k.(6)(d)?
  + Are All Authorized Limits approved in writing?
  + Is the use of pre-approved Authorized Limits approved by the Field Element Manager?
  + Are site-specific Authorized Limits for **real property** approved by the Field Element Manager in consultation with the Cognizant Secretarial Officer?
  + Are site-specific Authorized Limits for personal property approved by the Field Element Manager and documentation provided to the Cognizant Secretarial Officer and the Office of Environment, Health, Safety and Security (AU) at least 45 working days prior to the intended implementation date of the Authorized Limits?
* For Authorized Limits found to be not protective, appropriate, or practical to apply for a specific type or portion of property, is further clearance for that specific type or portion of property halted pending the revision of Authorized Limits in accordance with paragraph 4.k.(6)(e)?
* Are Approved Authorized Limits and approved revised Authorized Limits and supporting documentation made available to the public?
* the procedures include confirmatory surveys of items at warehouses/salvage yards?
  + Are measured data recorded on portable computer, tablet, or other automated collection systems and automatically recorded on a standardized survey form?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.k., Release and Clearance of Property.

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-8** | **Assessment Team Member:** |
| **The Site Contractor performs radiological monitoring or surveys in support of clearance of property accordance with requirements in DOE O 458.1.** | |

**Lines of Inquiry**

* Do all radiological monitoring or surveys performed in support of clearance of property:
  + Use methodologies sufficient to meet measurement objectives such as those in the *MARSSIM or* the *MARSAME,* or other methodologies approved by DOE?
  + Meet Measurement Quality Objectives?
  + Use DOE-approved sampling and analysis techniques, if applicable?
  + Include an evaluation of non-uniformly distributed residual radioactive material, if applicable?
* Is radiological instrumentation used for radiological monitoring or surveys capable of detecting and quantifying residual radioactive material consistent with the applicable Authorized Limits?
* Is radiological instrumentation periodically maintained and calibrated?
  + Does the site have a documented maintenance and calibration frequency for radiological instrumentation?
  + Does the site’s instrument calibration and maintenance program have designated procedures that specify the control of test and measuring equipment?
  + Does the site’s instrument calibration and maintenance program have designated procedures for notification and resolution of “as-found” instrument calibration results?
  + If calibrated by outside vendors, is the QA body or accrediting entity identified?
  + Is in-field functional testing (i.e., battery check, calibration date, source response check, background check, etc.) performed and documented prior to use of an instrument?
  + Is there a system in place to ensure an instrument that is out of calibration cannot be checked out or used in a survey?
* Is radiological instrumentation appropriate for the type(s), levels, and energies of the radiation(s) encountered?
* Is radiological instrumentation appropriate for existing environmental conditions and routinely tested for operability?
* Is a process, which includes the following, in place to document survey results with a link to the instrument and to clearly identify the operator performing the survey?
  + An automated, system-based process that generates a standardized report in real time and that clearly identifies the instrument used (e.g., bar coding) and the operator.
  + A process in which hard-copy forms are scanned into an electronic format or manually transcribed into electronic form after the survey
  + A process in which hard-copy forms serve as the primary historical record
* Are survey forms and the method of recording information standardized across the site?
* Does the survey form (or survey report) capture the following survey information?
  + Expected source check value with indication of acceptable range
  + Background exposure levels
  + Clear indication of area of object surveyed and the results obtained
  + Type of radiation monitored
  + Associated information regarding physical form and radiochemical properties of the source term
  + Location and number of direct measurements
  + MDA
  + Technician/Operator identification
  + Date/Time of survey
* Is the survey reviewed and/or certified by a Radiation Control Supervisor and/or a Radiological Engineer before becoming final?
* Based on a current clearance practice, can site personnel produce complete documentation for cleared items according to the following schedule? NOTE: While it is recognized that records for items cleared many years ago may be incomplete, a site with a comprehensive up-to-date process knowledge system should be able to produce the radiological history of an item cleared under current practices according to the listed schedule.
  + Less than 1 week for clearance events less than 1 year old?
  + 1 week for clearance events from 1 to 3 years old?
  + 1 month for clearance events more than 3 years old?
* Does the site use bulk radiological detection equipment (e.g., gate monitors) as a final check before items leave DOE custody?
* Does the site conduct QA reviews of its materials and equipment clearance program to evaluate its compliance with DOE O 458.1?
* Which best characterizes the lines of responsibility at the site for **managing** the control and disposition of materials and equipment?
  + A single organization has ultimate responsibility for the disposition of materials and equipment (IDEAL)
  + Several organizations (e.g., Waste Management, Radiation Control, Program Operations, etc.) share responsibility for disposition of materials and equipment.

**Requirements/References**

* 10 CFR 835, *Occupational Radiation Protection,* Subpart L – *Radioactive Contamination Control.*
* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.k., Release and Clearance of Property.
* DOE-HDBK-1216-2015, *Environmental Radiological Effluent Monitoring and Environmental Surveillance*.
* DOE O 414.1D, *Quality Assurance*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: ERP-9** | **Assessment Team Member:** |
| **The Site Office has established an Independent Verification (IV) Program in accordance with requirements in DOE O 458.1.** | |

**Lines of Inquiry**

* Has the DOE Site Office established an IV program that employs a graded approach to define the scope and rigor of the IV process, depending on:
  + The complexity or hazard of the activity?
  + The confidence/reliability of Contractor Assurance Program?
  + The end use or final disposition of the property?
* Is an entity other than the DOE Site Office responsible for the IV program? (NOTE: If an entity other than the Site Office performs IV, that organization’s role is to advise the Site Office; authority cannot be delegated to a third party.)
* Do IV techniques employed at the site include:
  + Paper/document review, with general operational awareness?
  + Shadow assessment of contractor assessment?
  + Periodic independent field observation and review?
  + Full assessment or audit process?
  + Independent sampling/monitoring/split samples (NOTE: except for highly complex or controversial personal property, this level of rigor is usually only necessary for clearance of real property)
* Does the documented DOE Site IV program include:
  + Clearly defined DOE staff responsibilities and authorities for IV activities?
  + The scope, rigor and mechanisms to be employed, based on risk and complexities?
  + The periodicity of IV reviews, based on risk (i.e., the graded approach)?
  + Process to ensure operational awareness of site property control/clearance activities?
* Does the DOE Site IV program ensure the review and assessment of the adequacy and effectiveness of the Contractor’s radiological clearance program to ensure that, at a minimum, it appropriately addresses:
  + Record-keeping/retrievability/reporting?
  + Quality Assurance?
  + The Site FRAM (Functions, Responsibilities and Authorities Manual)?
  + Site Oversight Program documentation?
  + The Site ISMS/EMS documentation?
  + DOE Staff position descriptions and performance standards?

**Requirements/References**

* DOE O 458.1, *Radiation Protection of the Public and the Environment,* 4.k., Release and Clearance of Property.

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

|  |  |
| --- | --- |
| **Assessment Criterion: OA-1** | **Assessment Team Member:** |
| **SC Site Office has developed and implemented written plans and schedules oversight of the Site Contractor’s Radiation Protection Program and for radiological work performed under the RPP.** | |

**Lines of Inquiry**

* Is oversight designed and conducted commensurate with the level of risk posed by radiological activities?
* Are higher priority and greater emphasis given to oversight of radiological activities with potentially high consequences?
* Do oversight activities include formal and informal assessments, surveillances, inspections, facility tours and walk-throughs, observations of work activities, meeting attendance, and observation of radiological work activities?
* Does the oversight process evaluate the Site Contractor’s CAS for effectiveness of performance?
* Are Site Office staff assigned to oversight of radiological activities technically qualified, trained, and possess the necessary experience relative to the scope of activities allowed by the RPP?

**Requirements/References**

* DOE P 226.2, *Policy for Federal Oversight and Contractor Assurance Systems*
* DOE 226.1B, *Implementation of Department of Energy Oversight Policy*

**Assessment Activities**

* (List activities or facilities observed.)
* (List individuals interviewed.)

**Documents & Records** **Reviewed**

* (List documents reviewed.)

**Appendix B: Assessment Form**

**Assessment Results Form**

|  |  |  |
| --- | --- | --- |
| **Functional Area:** | **Assessment Criteria ID:** |  |
| **Date:** |  |

**Assessment Criteria**

**Records Reviewed** (list document number, title, revision number, and issue date)

|  |  |  |  |
| --- | --- | --- | --- |
| **Doc Number** | **Title** | **Revision No.** | **Issue Date (MM/DD/YYYY)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Interviews Conducted** (list titles only)

**Activity Observations**

**Discussion of Results**

**Conclusion**

**Findings**

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance Objective Area** | **Finding Level (L1, L2, or L3)** | **Number** | **Description** |
|  |  |  |  |
|  |  |  |  |

**Noteworthy Practices and Strengths**

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance Objective Area** | **Noteworthy Practice or Strength** | **Number** | **Description** |
|  |  |  |  |
|  |  |  |  |

**Attachment A: Requested Documents**

**Documents Requested**