

NRC INSPECTION MANUAL

RDB

INSPECTION PROCEDURE 83750

DECOMMISSIONING OCCUPATIONAL RADIATION CONTROL

Effective Date: 07/01/2025

PROGRAM APPLICABILITY: IMC 2561 A

83750-01 INSPECTION OBJECTIVES

- 01.01 To observe radiological work activities to assess licensee control and conduct of decommissioning.
- 01.02 To ensure adequate protection of worker health and safety from exposure to radiation or radioactive material at permanently shut down reactors.

83750-02 GENERAL GUIDANCE

10 CFR Part 20 contains most of the applicable regulations for this procedure.

The requirements are split into an annual inspection effort, a variable radiation protection topical requirement, and problem identification and resolution.

Inspections for sites in SAFSTOR should include a site tour as described in requirement 03.01.b and the level of effort of the other requirements should be scaled accordingly for co-location considerations, presence of spent fuel in the spent fuel pool, and any site activities. Walkdowns and work activity observations required by the procedure should be performed together, to the extent practical.

83750-03 INSPECTION REQUIREMENTS AND GUIDANCE

03.01 Radiological Work Planning and Execution

- a. **Conduct work observations to verify the licensee is identifying and assessing the magnitude and extent of radiological hazards and is adequately implementing radiological controls.**

Specific Guidance

The guidance below is split into two sections: work planning and work execution. Inspection activities should be conducted, to the extent practical, during radiologically significant work activities to maximize observation of radiation protection (RP) control/work practices in real time.

During each onsite inspection, inspectors should consider implementing this requirement based on the risk significance of work activities while balancing the need to inspect other

topical areas. While on-site, observations of work activities are preferred and should be done, however, inspectors are not limited only to those activities taking place while on site. Inspectors should consider in-office review of radiologically significant activities as they feel appropriate.

The inspector should emphasize work with the potential for high individual and/or collective exposures, such as work typically performed during major dismantlement and decontamination activities that require greater exposure or unusual work practices. Risk-significant work activities typically take place in contaminated, high radiation, locked high radiation, or posted very high radiation areas. Inspectors should consider inspecting any licensee activity conducted in actual very high radiation area conditions. Also, work activities that involve hard-to-detect radionuclides, alpha contamination and/or respirable radiation hazards should be evaluated. Examples of other areas that may be examined are adequacy of licensee controls and monitoring of contractor work standards, equipment, and practices; review of special (non-routine, seldom used, or new) procedures and infrequent evolutions that have the potential for creating radiological hazards; and use of engineering controls, such as temporary ventilation systems to minimize the need to use respiratory protection equipment.

Work Planning

For the selected activities, determine whether the licensee's planning was commensurate with the risk of the work and identified appropriate dose reduction techniques, defined reasonable dose goals, and identified appropriate radiation protection hold or verification points. Inspections should be scheduled to coincide with major decommissioning activities, as available. Consider radiological administrative, engineering and operational controls, including procedures, radiation work permits (RWPs), As Low As Reasonably Achievable (ALARA) Plans, Total Effective Dose Equivalent – As Low As Reasonably Achievable (TEDE-ALARA) evaluations, work orders, etc.

Review RWPs and other documentation the licensee uses to control access to radiological hazards and evaluate instructions and controls. Review plant Technical Specifications to determine the requirements for entry and work in HRAs (e.g., authorization to enter into HRAs, electronic alarming dosimeter (EAD) set points, pre-job briefings, continuous job coverage, and stay time limitation). Review TEDE-ALARA evaluations or equivalent to determine if respirators are appropriately being assigned for the radiological hazards. Consider how the licensee determines that the level of protection provided by the respiratory protection devices during use is at least as good as that assumed in the licensee's work controls and dose assessment. For example, consider if the licensee has established adequate air sampling, surveys, and bioassays, as necessary, to estimate doses and evaluate actual intakes. These evaluations may also consider factors other than the exposure to radioactive materials (e.g., worker acceptance, contamination control, heat stress, and exposure to other Occupational Safety and Health Administration hazards).

Engineering controls include temporary and permanent (e.g., lead, tungsten, and water) shielding, system flushing, permanent and portable ventilation systems, glove bags, tents, etc. Operational controls include work sequencing and scheduling. The inspector should review the applicable documents for each work activity selected and determine if the licensee has appropriately planned the work for the expected hazards, including

changing conditions and the potential for spread of contamination. The inspector should note that these expected hazards can change over time as scaling factors change and an increase in alpha and beta hazards affect necessary controls. The inspector should review whether the licensee appropriately incorporates internal lessons learned and any industry operational experience as applicable.

10 CFR 20.1101(b) requires licensees use, to the extent practical, procedures and engineering controls based on sound radiation protection principles to achieve occupational doses that are ALARA. Performance in this area is judged on whether the licensee has taken appropriate measures to track, and if necessary, to reduce exposures and not on whether each individual exposure and dose represent an absolute minimum, or whether the licensee has used all possible methods to reduce exposures.

If available, evaluate the work controls and dosimetry for activities where dose rate gradients can be severe (i.e., underwater diving, steam generator entries, work under the reactor head, etc.), thereby increasing the necessity of providing multiple dosimeters and/or enhanced job controls.

Work Execution

Observe pre-job briefs for risk-significant activities while also considering variety. Consider whether appropriate information regarding command and control, coordination across organizational boundaries, lines of communication, stop work situations, response actions for abnormal or emergency situations, management and quality assurance oversight, and radiation protection considerations are discussed. Consider if the licensee informs workers of changes in work operations and conditions that could significantly impact radiological hazards.

Consider if radiological controls before and during work are implemented commensurate with the radiological hazard. Adequate radiological controls include performing required surveys (e.g., radiation, contamination, and airborne), radiation protection job coverage (e.g., audio and visual surveillance for remote job coverage), contamination controls and stop work criteria. Observe radiation protection technicians performing radiation surveys and consider if the instruments are being used correctly (i.e., survey technique and correct instrument for application).

Consider whether the workers are cognizant of radiological conditions and safety considerations, which would indicate the level of organizational communications and effectiveness. Workers should be able to remember their work restrictions established on the RWPs and as instructed in pre-job briefs (i.e., where they are allowed to work, what they are allowed to do and what they are not allowed to do). In addition, workers should be knowledgeable of stop work conditions (e.g., contact HP prior to system breach or worker actions that may cause a change in radiological conditions) and location of low-dose waiting areas. Consider if personnel radiation monitoring devices are placed on the individual's body consistent with the method the licensee is employing to monitor dose from external radiation sources and applicable regulatory requirements.

When possible, observe work in potential airborne areas, and consider if air samples are representative of the breathing air zone when used to assess dose. As available, review RWPs for work within airborne radioactivity areas to guide inspection scope. Consider airborne radioactivity controls and monitoring, for jobs with the potential for significant

airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, reactor cavities).

When possible, observe work in Alpha Level II and III areas as these areas are more risk significant from an internal exposure perspective. Substantial internal dose may be received from alpha contamination prior to detection by instrumentation designed to detect beta and gamma radiation, which is typically in use. Procedures and work instructions should address if/when contamination surveys and airborne radioactivity surveys require alpha analysis, respiratory protection requirements, internal monitoring requirements, and contamination/airborne radioactivity minimization controls (i.e., grinding in an alpha II area may require more controls than a work evolution not expected to create an airborne hazard and work instructions may require wiping down of the area frequently to prevent buildup of contamination).

- b. Perform plant tours, including of the spent fuel pool area and the control room when spent fuel is in the spent fuel pool, the containment or the drywell, other radiologically controlled areas (RCA), and of the general site to verify appropriate radiological postings and controls, and evaluate material conditions.**

Specific Guidance

The inspector should conduct a plant walkthrough inspection and assess the general material condition of the site with focus on structures, systems and components associated with the safe storage of spent fuel, radiological effluent controls, and radiation protection. The inspector should evaluate if ambient radiological conditions are consistent with radiological postings and physical controls. Consider accompanying a radiation protection technician and/or an operator on rounds.

The inspector should consider asking for a list of infrequently entered (HRA, LHRA, VHRA) areas and selecting several areas to enter. The selection of these areas should be risk-informed by a review of corrective action program entries, systems, and previous inspection reports while adhering to ALARA considerations (i.e., don't enter VHRA conditions without significant cause). The inspector should strive for a variety of areas; however, consideration should be given to any changing plant conditions to verify the appropriate radiological controls, including postings and control points. The inspector should consider reviewing the licensee's controls for accessing infrequently entered areas to include high radiation areas, locked high radiation areas, and very high radiation areas, including key control, and briefings. Additionally, consider reviewing the RP logbook or equivalent to determine whether the site implements site requirements for ensuring LHRAs and VHRAs remain locked (typically a periodic, i.e., weekly check).

Additionally, as a general matter, inspectors should consider lighting, electrical distribution, fire protection equipment, housekeeping, combustible materials, and material condition during walkdowns. This review includes items covered in other inspection procedures but will provide insight into the resources and level of ownership applied to maintain the power reactor site in a manner commensurate with plant and personnel safety.

03.02 Occupational Radiation Exposure Topical Areas

Evaluate occupational radiation exposure topical areas using a risk-informed approach.

Specific Guidance

The below guidance is grouped by topical area for convenience, not all topical areas are required to be reviewed annually, depending on the consideration of the factors described in the paragraph below. Guidance below each topical area includes examples of items to review that are most applicable to the areas being reviewed. Topical areas include dosimetry (external, internal, and special), airborne monitoring and respiratory protection, contamination control, instrumentation, and source term characterization.

The level of effort for this requirement is expected to vary significantly dependent on the inspection category of decommissioning as described in IMC 2561, Appendix A, the level and type of site activities, licensee performance, considerations on whether the site is co-located, and the use of a risk-informed approach. Inspectors should review past inspection reports to inform their selection. Additionally, inspectors should inform topical area selection by considering whether there were events involving actual or potential internal dose, contamination issues involving discrete radioactive particles (DRPs), and/or source term changes since the last inspection. Inspectors may select any number of topical areas below to review based on the above guidance.

a. Dosimetry

See 10 CFR 20.1502, "Conditions requiring individual monitoring of external and internal occupational dose" and 10 CFR 20.2106, "Records of individual monitoring results."

The regulation in 10 CFR 20.2206(c) requires that, on or before April 30 of each year, licensees submit to the NRC an annual report containing the results of individual monitoring (when required by 10 CFR 20.1502) carried out by the licensee for the previous year's collective exposure. The inspector should review the annual report and determine if the doses received appear commensurate with the activities conducted on a macro scale. On a micro scale, the inspector should review the licensee's dose estimates for individual jobs as described in section 03.01.a of this guidance.

1. External Exposure Dosimetry

- (a) National Voluntary Laboratory Accreditation Program (NVLAP). Obtain the NVLAP certification documentation. Determine whether the licensee's personnel dosimeters—that require processing—are processed by a NVLAP accredited processor and that the approved radiation test categories for each type of personnel dosimeter are consistent with the types and energies of radiation present and the method of dosimeter use. Verify that the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present, and the way that the dosimeter is being used.
- (b) Passive Dosimeters (e.g. thermoluminescent dosimeter (TLD), Optically Stimulated Luminescent (OSL)). Consider whether storage of dosimeters prior to issuance and after the monitoring period (prior to processing) should be in a low

dose rate area. Dosimeters in use that are stored in racks on-site during non-wear periods are in a low dose rate area with control dosimeters. For issued dosimeters not stored on-site during the wear period, guidance should be provided to workers on acceptable storage conditions (e.g., to avoid hanging from rear view mirrors, excessive heat (cars/trucks), and storage on granite countertops).

- (c) Active Dosimeters (Electronic Alarming Dosimeters). Determine if and how bias has been determined to correct the response of the electronic alarming dosimeter (EAD) as compared to TLD/OSL and consider if the correction factor is based on sound technical principles. Consider if correlations between EADs and passive dosimeter measurements are being performed, and if substantial discrepancies are investigated.

2. Internal Exposure Dosimetry

Consider whether the affected personnel were properly monitored with calibrated equipment and if data were analyzed and internal exposures properly assessed in accordance with licensee procedures.

(a) In Vivo Bioassay

- (1) Review procedures for assessing internal dose that address methods for 1) determining if an individual is internally or externally contaminated; 2) whether the contamination was ingested or inhaled; 3) the release of contaminated individuals; and 4) assignment of dose. A common method for determining the location of personnel contamination is identifying the contaminated area via a hand-held frisker and identifying the zone where the beta contamination monitor alarms.
- (2) Prompt whole body counts (WBCs), as well as follow-up WBCs can be used to determine if residual contamination levels follow the retention functions in NUREG/CR-4484 inhalation or ingestion models. Contamination removal from skin may occur by showering and skin layer sloughing. If the licensee routinely uses whole body counting (WBC) to verify, or quantify, the intakes of radionuclides, consider if the frequency of such measurements is consistent with the biological half-life of the potential nuclides available for intake. Be especially mindful of instances following personnel entry into a high airborne radioactivity area or following the use of respiratory protection equipment.
- (3) If the licensee uses a method other than whole body counting for screening intakes, consider if the minimum detectable activity (MDA) is adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation. Some licensees have procedures for the use of personnel contamination monitors in lieu of routine WBCs. Review licensee evaluations to determine if the passive monitoring can identify intakes exceeding the evaluation level defined in RG 8.9 of 2% of an annual limit on intake (ALI), or 100 mrem committed effective dose equivalent (CEDE). This review should include any potential HTD contribution to CEDE as this will not be detected by passive monitoring.

- (4) WBC systems and gamma spectroscopy systems commonly have different radionuclide libraries for different exposure conditions and / or analytical needs. Selectively review the radionuclide libraries to verify that the licensee has analytical capabilities for their radionuclides of concern and natural occurring radioactive material. The inspector should review that the system used in each had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest; that the appropriate nuclide library was used; that HTD radionuclides are accounted for in the dose assessment, and that any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. Inspectors should review the methods and sources used to perform WBC functional checks before use of the instrument to determine whether the check source(s) are appropriate for the site isotopic mix. Review whether alpha and beta producing radionuclides were appropriately considered in the selection of WBC and that other methods were used if necessary.
- (b) In Vitro Bioassay. Determine whether the licensee has the capability to do assessments by verifying that the licensee has the appropriate collection kits on hand, appropriate guidance for when and how to collect a sample, a contracted laboratory, and appropriate staff or contractors to interpret the results, as appropriate.

The licensee's sample collection procedures should ensure the following:

- (1) Collection and preservation of samples in a manner such that the loss of activity on the walls of the container is minimal and sample contamination is prevented,
- (2) A sample of adequate size for each type of analysis requested, including adequate amounts to allow verification or additional analysis if needed,
- (3) Containers that are free of external and internal contamination,
- (4) Precautions to ensure the integrity of the container and prevent leakage from the container and/or cross-contamination of samples during the shipment and storage of samples, and
- (5) Accurate and unambiguous identification of samples. In addition, the licensee should specify the required LLDs and the reporting requirements, including standard error or confidence interval estimates, and alert the service laboratory of potentially "highly contaminated" samples, samples that may contain additives and/or preservatives, or samples that may contain extremely insoluble material.

In addition to the references cited above in Section 03.03.a, Regulatory Guide (RG) 8.26, "Applications of Bioassay for Fission and Activation Products," and RG 8.32, "Criteria for Establishing a Tritium Bioassay Program," provide relevant guidance for in vitro monitoring programs.

3. Special Dosimetry Situations. For the special dosimetry situations reviewed in this section, evaluate how the licensee assigns dose of record for total effective dose equivalent, Shallow Dose Equivalent (SDE), and lens dose equivalent.

- (a) Declared Pregnant Workers. If available, review the exposure results and the monitoring controls employed by the licensee for declared pregnant workers and verify the monitoring program to assess the dose to the embryo/fetus. Consider if the licensee informs the worker, as appropriate, of the risks of radiation exposure to the embryo/fetus; the regulatory aspects of voluntarily declaring a pregnancy; and the specific process for voluntarily declaring a pregnancy. See 10 CFR 20.1208 Dose equivalent to an embryo/fetus and additional guidance can be found in RG 8.36, "Radiation Dose to the Embryo/Fetus," RG 8.13, "Instruction Concerning Prenatal Radiation Exposure," and RG 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses."
- (b) Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures (EDEX). Consider the licensee's methodology and verify adequate criteria and implementation for monitoring external dose in situations in which non-uniform fields are expected or large dose gradients will exist.
- (c) Shallow Dose Equivalent. Consider the licensee's method for calculating SDE from distributed skin contamination or discrete radioactive particles and determine whether clear criteria were established for releasing personnel with imbedded radioactive particles. SDE is the dose averaged over the 10 square centimeters of skin receiving the highest exposure. This should combine contributions from distributed skin contamination, gamma contributions from clothing contamination (if significant), as well as Discrete Radioactive Particles (DRPs), into one dosimetric quantity. If licensees are keeping track of DRP dose separately from SDE, then they are not meeting the intent of the 2002 rule change to SDE evaluation. See the Federal Register notice dated April 5, 2002 (67 FR 16304), for a more detailed discussion.
- (d) Neutron Dose. Typically, only applicable at decommissioning sites while fuel is in the spent fuel pool. Determine whether instrumentation and dosimetry used during neutron exposure situations has the appropriate sensitivity for the expected neutron spectra, calibration, and usage. Evaluate neutron timekeeping and associated technical basis document and correction factor use, as appropriate. See guidance on neutron dosimeters in ANSI N13.52-1999 (Reaffirmed August 2010), "Personnel Neutron Dosimeters (Neutron Energies Less Than 20 MeV)."

b. Airborne Monitoring and Respiratory Protection

1. Review the licensee's use of controls as described in Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1701 and determine if the use of other controls, including any respirator use, as described in 10 CFR 20.1702 is appropriate.
2. Consider if individuals qualified to use respiratory protection devices have been deemed fit to use the device(s) by a physician. Medical physicals and tests can be administered by a non-physician medical practitioner. The medical practitioner may even sign the documentation that the subject has passed the physical. However, the tests administered, acceptance criteria, and the basis for judging the individual fit to use a respirator should be established by a licensed physician. Note: Only review records used by a physician or non-physician medical practitioner documenting the individual is medically fit to use respiratory protection equipment. Do not request or

review workers' personal medical records unless the licensee has the physician's judgement records comingled with these medical records.

3. As available, consider observing respirator fit testing. If observation opportunities are not available, consider reviewing fit-testing procedures. Consider sampling individuals assigned to wear respiratory protection devices and observe them donning, doffing, and functionally checking the device as appropriate.
4. For any dose assessments based on airborne monitoring, consider air sampling and derived air concentration (DAC)-hour monitoring. Consider if flow rates and/or collection times for fixed head air samplers or lapel breathing zone air samplers are adequate to ensure that appropriate LLDs are obtained. Review the adequacy of procedural guidance used to assess dose when, if using respiratory protection, the licensee applies protection factors. Consider if the licensee's DAC calculations are representative of the actual airborne radionuclide mixture, including HTD radionuclides, as appropriate.
5. During plant tours and work observations, be alert to continuous air monitors or grab air samplers, specifically considering temporary monitors to determine whether they are appropriately positioned relative to the radiation source(s) or area(s) they are intended to monitor and compare response with actual area conditions for consistency.

c. Contamination Control

1. Consider observing locations where the licensee monitors potentially contaminated material leaving the RCA. Observe workers exiting the RCA and performing contamination monitoring to verify the appropriate methods used for control, survey, and release from these areas are sufficient to prevent the unintended release of radioactive materials from the site, including adequate knowledge on how to respond to an alarm. Consider reviewing personnel contamination events to determine whether the licensee adequately followed their internal processes for handling the incident.
2. Inspectors should observe health physics personnel surveying and releasing material for unrestricted use to ensure that the work is performed in accordance with plant procedures as available and the procedures are sufficient to control the spread of contamination and prevent the unintended release of radioactive materials from the site. Review the licensee's criteria for the survey and release of personal items using small-article monitors (SAMs). Workers should be provided guidance on how to use the SAMs and they should be knowledgeable on how to respond to an alarm that indicates the presence of licensed radioactive material. If workers are permitted to self-frisk personal items, selectively consider observing one or two control points to ensure that workers are complying with applicable guidance and training. The inspector should review whether the periodic source checks of the PCMs and SAMs are performed in accordance with the manufacturer's recommendations and licensee procedures.
3. Consider background dose rates; they should not excessively interfere with the sensitivity of contamination monitoring equipment (e.g., friskers, personnel contamination monitors). Contamination monitoring equipment for free release of equipment and materials should be in a low background area. The licensee should

not have established a de facto "release limit" by raising the instrument's detection sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

4. Further guidance can be found in IE Circular 81-07, "Control of Radioactively Contaminated Material," IN 85-92, "Surveys of Wastes Before Disposal from Nuclear Reactor Facilities," December 2, 1985, HPPOS #221 (NUREG/CR-5569, Rev. 1, "Health Physics Positions Data Base," May 1, 1992), and HPPOS #250.
5. Consider temporary ventilation systems during plant tours, as available to verify that they are correctly configured to mitigate the potential for airborne radioactivity. Consider if the use of these systems, including features and components (e.g., flow paths, air flow capacity, alarms and set points), is consistent with licensee procedures. Determine whether the ventilation pathway correctly flows from lesser contaminated areas to more contaminated areas to lessen the spread of contamination. Determine if the licensee has appropriately evaluated and implemented the controls and systems necessary for the work being done in that location and any impacts on adjacent locations.
6. Consider reviewing the licensee's process for identifying and controlling discrete radioactive particles (DRPs). Consider reviewing any identified issues of spread of contamination involving DRPs, particularly if it involved spread of DRPs to the environment. Inspectors should consider observing RP technicians performing surveys to identify and recover DRPs if able and review associated paperwork. Inspectors should contact the NRC project manager for informational purposes if DRPs are identified in the environment. Further guidance on DRPs can be found in DUWP-ISG-03, "Contamination Control, Radiological Survey, and Dose Modeling Considerations to Support License Termination at Sites with Environmental Discrete Radioactive Particle Contamination" (ML24219A032).

d. Instrumentation

10 CFR 20.1501 describes the regulations for licensees to perform surveys.

1. Consider whether the licensee is ensuring the accuracy and operability of radiation monitoring instruments that are used to monitor areas, materials, and workers to ensure a radiologically controlled environment. Consider sampling spot checks of instruments in the field, observing daily checks of instrumentation, and reviewing calibration of instrumentation.
2. Consider conducting a walkdown to determine whether radiation detection equipment in use, or available for use can fulfill its intended function. For a sampling of portable survey instruments, check calibration and source check stickers are up-to-date, and assess instrument material condition and function. For in-field continuous air monitors (CAMs) determine whether they are appropriately positioned relative to the radiation source(s) or area(s) they are intended to monitor. For personnel contamination monitors (PCMs), portal monitors (PMs), and SAMs/TEMs, consider if the periodic source checks are performed in accordance with the manufacturer's recommendations and licensee procedures. Verification of instrument operability should be done by inspector observation of licensee source checks. If no opportunity for observation is available, verification can be made by reviewing the source check documentation.

3. Consider evaluating the methodology and results of calibrations and performance checks. Consider observing calibration of or reviewing calibration documentation for a sampling of portal monitors, personnel contamination monitors, portable survey instruments, air samplers, continuous air monitors, small article monitors/tool equipment monitors, whole body counters, and electronic alarming dosimeters. Consider whether the calibration is conducted in accordance with the manufacturer's recommendations and evaluate any inconsistencies.
4. For portable survey instruments and air samplers, consider reviewing detector measurement geometry, whether the instrument is calibrated for the range of dose rates expected to be encountered in the field, whether the measuring devices have been calibrated by a facility using National Institute of Standards and Technology traceable sources, and that correction factors for these measuring devices were properly applied by the licensee in its output verification. Consider for portable monitors, small article monitors/tool equipment monitors, and personnel contamination monitors whether the alarm set point values are reasonable under the circumstances to ensure that licensed material is not released from the site. Consider for whole body counters whether check and calibration sources are appropriate for the site's source term and if appropriate calibration phantoms were used.

e. Source Term Characterization

1. Determine whether the licensee has characterized the radiation types and energies being monitored and is appropriately implementing surveys and work practices. Licensees are required under 10 CFR 20.1501(a)(2) to conduct surveys that are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels; evaluate quantities of radioactivity; and evaluate potential radiological hazards. During tours of the facility and during discussion with workers, evaluate aspects of surveys and monitoring. The licensee should have knowledge of the gamma (photon) spectrum, the beta spectrum and average beta energy of the beta spectrum, the HTD component of beta/gamma activity, and the alpha transuranic component of the source term.
2. Knowledge of the types and energies of radiation being monitored are critical to the correct selection and use (calibration and/or dose assessment) of dosimeters. Additionally, the source term may have changed over the years as plants are in various stages of decommissioning. A review of the licensee's characterization of the current source term (radionuclide mixture) throughout the plant should include a plan that establishes specific survey points on components and for general areas to allow determination of the decrease or increase in levels of alpha, beta, and gamma emitting radionuclides. The inspector should be particularly cognizant of potential changes in the licensee's isotopic mix based on decommissioning activities and isotope half-lives and determine if the licensee is appropriately taking these into consideration.
3. Information Notice 2014-05, "Verifying Appropriate Dosimetry Evaluation," (ADAMS Accession No. ML14028A513) reminds licensees of their responsibility for ensuring that all applicable factors that may affect the accuracy of a dosimetry evaluation have been considered, including the proper characterization of the radiation fields that are to be monitored.

4. The inspector should review the types of surveys being done regularly and during specific jobs to determine if the licensee is appropriately evaluating the hazards. Review the licensee's assumptions on fixed versus removable contamination, particularly during work involving grinding and cutting.

03.03 Problem Identification and Resolution

Verify that the licensee is identifying problems at an appropriate threshold and that appropriate corrective actions are being implemented in a timely manner.

Specific Guidance

In determining risk-significance of corrective action program entries for review, consider reviewing personnel contamination events, high radiation area and locked high radiation area issues, instrumentation failures, potential or actual intakes of radioactive material, radiological spills or leaks, issues involving DRPs, electronic dosimeter alarms, stop work events, and airborne events.

83750-04 RESOURCE ESTIMATE

Note that for all decommissioning inspection activities, the frequency of performance, level of effort needed, and specific inspection requirements to be evaluated and verified vary based on the stage of decommissioning at the facility, the scope of licensee activities, and the overall decommissioning strategy chosen for the plant (i.e., SAFSTOR or DECON). IMC 2561 contains a discussion of the expected inspection frequency and resource estimates during each phase of decommissioning and should be used when planning resources to conduct this inspection.

83750-05 PROCEDURE COMPLETION

Inspection procedure completion is based on completion of the inspection procedure requirements at the frequency specified in IMC 2561, Appendix A. Inspection conclusions shall be documented in accordance with IMC 0610 and other relevant regional or headquarter instructions. Inspections resulting from allegations will be documented and dispositioned in accordance with Management Directive 8.8.

83750-06 REFERENCES

ANSI N13.1-1969 (R 1982), "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities"

ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration"

ANSI 323A-1997, "Radiation Protection Instrumentation, Test and Calibration, Portable Survey Instruments"

ANSI N323D-2002, "American National Standard for Installed Radiation Protection Instrumentation"

NRC Bulletin 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to the Environment"

NRC Circular No. 81-07, "Control of Radioactively Contaminated Material"

NRC Information Notice No. 82-49, "Correction for Sample Conditions for Air and Gas Monitoring"

NRC Information Notice No. 83-33, "Nonrepresentative Sampling of Contaminated Oil"

NRC Information Notice 24-01, "Minimization and Control of Contamination Involving Discrete Radioactive Particles at Decommissioning Facilities"

NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 — Standards for Protection Against Radiation"

NUREG/CR 5569, Rev. 1, "Health Physics Positions Data Base"

NUREG/CR-6204, "Questions and Answers Based on Revised 10 CFR Part 20"

RG 1.21, "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste"

RG 8.9, " Interpretation of Bioassay Measurements For Estimates of Intake"

RG 8.15, "Acceptable Programs for Respiratory Protection"

RG 8.26, "Applications of Bioassay for Fission Products and Activation Products"

RG 8.32, "Criteria for Establishing a Tritium Bioassay Program"

RG 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses"

RG 8.40, "Methods for Measuring Effective Dose Equivalent from External Exposure."

Regulatory Issues Summary 2003-04, "Use of the Effective Dose Equivalent in Place of the Deep Dose Equivalent in Dose Assessments"

END

Attachment 1: Revision History for IP 83750

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Numbers (Pre-Decisional, Non- Public Information)
N/A	9/30/1988 CN 88-014	Initial issuance for use in the Systematic Assessment of Licensee Performance (SALP) inspection program.	None Required	None
N/A	12/18/1989 CN 89-016	Revised to add guidance relating to licensee actions to control and recover areas that have become unusable as a result of an operational occurrence.	None Required	None
N/A	10/4/1990 CN 90-011	Revised to remove requirements and guidance relating to transportation to new IP 86750. Extensive changes were made to the requirements and guidance relating to ALARA and the guidance relating to training and qualifications. Inspection resource hours were reduced from 68 hours to 60 hours per year for a single unit site to reflect the reduced scope of the procedure.	None Required	None
N/A	3/15/1994 CN 94-006	Revised to reflect the requirements of the new 10 CFR Part 20 and to add a new section addressing the effectiveness of licensee controls.	None Required	None
N/A	6/6/2002 CN 02-023	Deleted IP 83750 from IMC 2800, "Materials Inspection Program." The requirements of this procedure for that program have been incorporated into the IP 87100-series of procedures.	None Required	None
N/A	ML19270D454 11/14/19 CN 19-036	The procedure is a complete re-write, and was updated to address recent revisions to IMC 2561, overall content and format changes, and to reflect additional lessons learned from ongoing decommissioning activities.	None Required	ML19270D452

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Numbers (Pre-Decisional, Non- Public Information)
N/A	ML20289A772 11/05/20 CN 20-059	Major re-write. This procedure was rewritten to refocus inspection efforts, to risk-inform the inspection and streamline the procedure based on inspector input. This revision was informed by the recently issued health physics procedures under IP 71124.	None Required	ML20289A773
N/A	ML25139A102 06/27/25 CN 25-022	Major re-write. The procedure was rewritten using lessons learned since the last revision. Greater inspection emphasis was placed on direct observation of work activities and site walkdowns. IMC 0040 exception granted to bold inspection requirements.	None Required	None