
INSPECTION PROCEDURE 83801

INSPECTION OF REMEDIAL AND FINAL SURVEYS AT PERMANENTLY SHUTDOWN REACTORS

Effective Date: 01/01/2021

PROGRAM APPLICABILITY: IMC 2561 Appendix A

83801-01 INSPECTION OBJECTIVES

01.01 To verify that permanently shutdown power reactor sites have been decontaminated to acceptable residual radioactivity levels in accordance with License Termination Plan (LTP) requirements for unrestricted or restricted use, as specified in Subpart E, "Radiological Criteria for License Termination," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation."

01.02 To verify that the licensee's implementing procedures, radiological measurements, decommissioning surveys, and documentation of decommissioning surveys comply with the submitted or approved LTP.

01.03 To conduct sufficient confirmatory or verification surveys so that the U.S. Nuclear Regulatory Commission (NRC) inspection program can verify and conclude that the licensee's decommissioning activities and survey program have been implemented in a manner that provides confidence in the results that the site does not pose an undue risk to public health and safety.

83801-02 INSPECTION REQUIREMENTS

02.01 Remediation Activities and Final Status Surveys (FSS)

- a. Review the LTP, if approved, and the licensee's procedures that govern performance of Remedial Action Support Surveys (RASS) and FSSs, chain of custody, access control to FSS areas, survey data collection and data management, survey quality assurance requirements, and records retention requirements. Review the NRC's Safety Evaluation Report (SER) that approved the LTP and assess whether items for further review were identified in the SER. Determine whether the licensee has adequately addressed these items, as applicable.
- b. Review changes, as applicable, made to the LTP that did not require prior NRC approval.
- c. For radiological instruments used in support of RASS or FSS, verify that the instruments are calibrated and appropriate to detect the radionuclides of concern

(ROC). Determine whether the selected instruments are appropriate for the ROC actions levels and Derived Concentration Guideline Levels (DCGLs). Evaluate whether the instruments have sufficient Minimum Detectable Concentrations (MDCs) to detect action level concentrations and whether the scan MDCs are sufficient.

- d. For laboratory instruments used by the licensee to count samples, review the quality control charts for maintaining radiation measurement instrument status and actions taken for potential degrading detector performance. If the licensee uses a vendor laboratory to analyze Radiological Environmental Monitoring Program (REMP) samples, consider if the vendor's quality control program, including inter-laboratory comparison programs, is adequate.
- e. Select areas, based on survey unit classification and risk significance, for review of the licensee's remediation activities, RASSs, and FSSs.
- f. Observe, if possible, the licensee performs RASS and FSSs. Verify that the licensee:
 - 1. Has developed a survey and sampling plan appropriate to the area being remediated and consistent with the LTP and classification of the survey unit.
 - 2. Individuals are qualified to perform the survey and they are conducting surveys consistent with the applicable survey procedures and plans.
 - 3. Surveyed the required percentage of the area to be scanned and acquired the number of samples required in the survey plan. Review the method for determining the background radioactivity level for the survey and verify that the method is consistent with the LTP.
 - 4. Implemented the required quality controls specified in the LTP for gathering, assessing, and reporting survey results. Review the licensee's survey results for the survey unit(s) selected and determine whether it meets the release criteria specified in the LTP.

02.02 Verification and Confirmatory Surveys

Develop a comprehensive plan to perform independent verification or confirmatory surveys, as warranted, such that the NRC can effectively assess the adequacy of the licensee's results. Coordinate with the Office of Nuclear Material Safety and Safeguards (NMSS) project manager to integrate potential independent laboratory analysis support via contracted work. Specifically:

- a. Identify the areas that will be surveyed or sampled.
- b. Determine the type of survey that will be conducted, the samples that will be collected, and when the survey will be performed.
- c. Develop a plan for performing the surveys or collecting samples such that the NRC can assess the adequacy of the licensee's survey results.
- d. Perform the verification or confirmatory survey, collect samples as applicable.
- e. Evaluate the results of the verification or confirmatory survey.

02.03 Problem Identification and Resolution

Verify that the licensee is identifying problems related to safety reviews, design changes and modifications at an appropriate threshold and entering them into its corrective action program. If applicable, for a sample of problems documented in the corrective action program, verify that the licensee has identified and implemented appropriate corrective actions.

83801-03 INSPECTION GUIDANCE

General Guidance

The inspector should review licensee records to identify the radionuclides of concern, the occurrence of any significant safety issues during the operation or decommissioning of the facility, and any unique or special concerns about the site expressed by the headquarters project manager (PM), NRC staff, or other stakeholders. This information may be found in the licensee's Historical Site Assessment, Scoping and Characterization Reports, and LTP. These documents will assist the inspectors with understanding the scope of facility contamination and the licensee's decontamination, remediation survey, and FSS programs. If the licensee does not have an approved LTP, the inspectors should review the licensee's procedures for performing these tasks and discuss them with the headquarters PM and health physicist to ensure their adequacy to eventually meet the applicable license termination requirements. In these discussions, the NRC staff should consider whether the licensee intends to follow NRC endorsed guidance in NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" and NUREG-1757, "Consolidated Decommissioning Guidance." Without an approved LTP that establishes the permissible residual radioactivity levels, the licensee is at risk while performing remediation and FSS activities. If the licensee performs activities to the unapproved version of the LTP, the licensee is performing these activities at risk since the NRC may not approve of the methods described in the draft, which may require additional work by the licensee. Power reactor licensees must ultimately demonstrate compliance with the criteria for license termination, as specified in 10 CFR 20, Subpart E "Radiological Criteria for License Termination."

Inspectors should work closely with the assigned headquarters PM and health physicist and consider the following when determining the scope of this inspection. Sites that have experienced any of the following may require additional oversight and inspection including more extensive in-process verification or confirmatory surveys to be performed.

- Significant weaknesses in the site corrective action program, safety culture, or management oversight.
- Unresolved weakness in the radiation protection, characterization, or FSS programs, or repetitive radiation protection or FSS violations.
- Licensee performance or completion of FSSs prior to approval of the LTP. Increased oversight is warranted where the licensee has weaknesses in complying with the LTP as submitted for approval.
- Partial site releases that include impacted areas or unimpacted areas, as appropriate.
- Records of spills or unusual occurrences involving the spread of contamination during operating or decommissioning activities at the site.
- A history of releases with higher levels of radioactivity, such as hot particles.

- Allegation history, especially if concerns include improper decontamination practices or other associated decommissioning improprieties.
- New radiation detection or measurement technologies or using established technologies in new ways.
- New methodologies are used that are outside established NRC guidance (NUREG 1757) for performing surveys, sampling or statistical approaches to demonstrating compliance.

Using a risk informed approach, inspectors should coordinate with the headquarters PM and focus inspections of licensee remediation activities and confirmatory and verification surveys on survey units with the highest potential for residual radioactive material as classified in accordance with NUREG-1575. For example, it is reasonable to perform more inspections of remediation activities and confirmatory or verification surveys in Class 1 survey units rather than Class 2 or 3. Inspectors should also ensure that survey units have been properly classified or reclassified as a result of decommissioning activities.

Definitions

Scoping Surveys (Licensee Performed) – surveys that are performed by the licensee to augment the historical site assessment (HSA) in areas with the potential for residual radioactive contamination. Scoping surveys are used to provide input into characterization survey design and support appropriate classification of the impacted areas of the site.

Characterization Surveys (Licensee Performed) – surveys that are performed (by the licensee or contractor) prior to any soil remediation or structure dismantling and decontamination activities to determine the extent and types of contamination at the site. Characterization surveys are performed to support HSA conclusions, and to establish a plan to conduct remediation activities and design an FSS program. Inspectors should consider performing surveys and sampling to confirm licensee identification and accuracy of radionuclides detected and concentrations.

Remedial Action Support Surveys (Licensee Performed) – surveys that are performed by the licensee after soil remediation activities or structure dismantling and decontamination activities have been completed. RASS are performed to support remediation activities, as a pre-requisite to verify that the area has been properly decontaminated and prepared for the FSS to be implemented, and to provide data for planning the FSS. RASS typically include verification that there is no significant contamination-at-depth either in soil or in structures, cracks, crevices, footers and floor-wall interfaces, and that there is no significant loose surface contamination on structures.

Final Status Surveys (Licensee Performed) – FSSs are performed by the licensee following the completion of decontamination activities in preparation for final release. The FSS is typically conducted to demonstrate that the potential dose from any residual radioactivity is below the release criterion for each survey unit per the LTP. This demonstration is often achieved through the usage of DCGLs, though either a dose assessment approach or a DCGL approach is acceptable if approved by the NRC staff. The results of these surveys are reported (Final Status Survey Reports) to the NRC for assessing whether the release criteria has been met.

As such, an FSS may utilize either DCGLs or a value associated with a dose assessment approach (both of which should be consistent with the approved LTP). Additional information on the two compliance approaches can be found in the NUREG-1757 series (Consolidated Decommissioning Guidance). Additionally, there may be situations where residual radioactivity

in a survey unit is indistinguishable from background, in which case an action level approved in the LTP would be used as the compliance value. For simplicity, the remainder of this procedure discusses only DCGLs as the compliance approach.

Verification Surveys (NRC Performed) – These surveys can be performed concurrent with the licensee’s activities (in-process) and may be conducted prior to completing remediation activities or FSSs. These surveys may include collecting judgmental smears, soil samples, or performing walk-over surveys and are intended to be for information purposes only to assess licensee performance and results. These surveys are designed to develop confidence in the licensee’s activities as the project progresses and are not relied upon to confirm or validate a licensee’s FSS survey results where a regulatory decision is being made regarding meeting the release criteria.

Confirmatory Surveys (NRC Performed) – Confirmatory surveys are typically performed after the licensee has completed its radiological survey measurements to validate the licensee’s procedures, findings and results of scoping, characterization, RASS, or FSS surveys and sampling activities. Confirmatory surveys are performed to validate the licensee’s survey program and to provide assurance that the survey unit meets residual radioactivity levels for release. These surveys are generally performed by the NRC’s independent contractor under supervision of the inspector or NRC HQ staff. It is important to plan the inspection to coordinate the effort as noted in Section 03.03. This is especially important, where the licensee intends to backfill excavated survey units.

Specific Guidance

03.01 Remediation Activities and Transition to FSS

Licensees may perform certain decommissioning activities and surveys, as permitted by regulations and the license, prior to the approval of the LTP. Any activities performed prior to the approval of the LTP are considered at risk as discussed in the general guidance above and may warrant additional inspection oversight and in-process surveys. Once the LTP is approved, it is a license requirement for compliance.

- a. In order to provide adequate oversight, inspectors must become familiar with the requirements in the LTP that specify how the licensee intends to meet the radiological release criteria. While reviewing the LTP, discuss with the licensee how these activities will be accomplished and their proposed schedule. Based on risk insights, consider what will be important for the NRC in performance of the remainder of this inspection and when these inspections must be performed. Keep in mind that some areas, or survey units, may eventually be inaccessible based on the licensee’s approach which may require proactive inspection planning. Additionally, the SER may contain items requiring the licensee to perform further exploration or review. For example, certain subsurface soils may be inaccessible while a structure remains. At the time the LTP is submitted, it may not have been possible to adequately characterize these areas; therefore, additional characterization requirements might be documented in the SER. For additional assistance in understanding the basis behind LTP requirements, the inspector is encouraged to closely coordinate with the headquarters PM and health physicist. The PM and supporting technical staff can assist with focusing inspection efforts on areas of importance.

- b. Review the license conditions for specifics on how changes to the LTP must be controlled. Determine whether 10 CFR 50.59 is applicable and whether the conditions to make a change without prior NRC approval are satisfied.
- c. Determine if the field and laboratory instrumentation is adequate and appropriate for scanning, direct measurements, and analysis for the radionuclides of concern (ROCs), the DCGLs, and the DCGL-Elevated Measurement Comparison (DCGL_{EMC}). Specifically evaluate whether instruments minimum detectable concentration (MDC) and scan MDC calculations are sufficient to detect any licensee specified action levels. Also consider differences between actual and required scan sensitivity based on field conditions. Consider whether the licensee adequately accounts for multiple radionuclides and any environmental factors that may influence instrument performance, such as temperature limitations, moisture concerns, or an elevated background from sources of radioactive material located nearby.
- d. If laboratory quality has been assessed in accordance with IP 84750, then the inspectors can credit those efforts for this inspection requirement. See IP 84750 section 02.03.f for additional detail. For evaluating licensee's gamma spectrometers, inspectors should consider requesting the licensee to count a standard in the same geometry as the samples being collected (e.g. count a 500mL Marinelli standard for soil samples analyzed in a 500mL Marinelli beaker). Inspectors can compare the resultant gamma spectrometer report to the standards certificate of calibration by converting the activity into the units of the source activity. The report should match the certificate of calibration which would provide reasonable assurance that samples are analyzed properly.
- e. Inspectors should select survey units in consultation with the headquarters PM and health physicist based on the general guidance provided regarding risk. Section 4.5 of NUREG 1757 Volume 2 provides additional guidance for selecting survey units for detailed reviews. Review the scope and conduct of any remediation activities performed by the licensee in the selected survey units prior to evaluating RASS or FSS results. This information will be important for assessing the quality of the RASS or FSSs as well as be important for risk informing the selection of survey units for verification or confirmatory surveys by the NRC. If the RASS or FSSs do not account for the remediation strategy, it's possible for residual radioactive material to be inadequately evaluated. For example, Cs-137 is less mobile in soil than Sr-90. Suppose a licensee has an area where Cs-137 is used as a surrogate to detect Sr-90 during characterization surveys and the licensee decides to remediate the area by removing six inches of soil. In doing so, they may remove all the Cs-137, but leave some Sr-90 behind. If Cs-137 is still used as a surrogate for Sr-90 during the RASS, then it is possible that Cs-137 will not be detected and could miss the Sr-90 that remains.

Inspectors should assess the radiological impact the remediation activities will have on the occupational radiation workers as well as members of the public. The licensee's characterization surveys should estimate the occupational and public health and safety impacts during decommissioning. Planned remediation should be effective and not endanger the remediation workers. For additional information, see NUREG 1757 Volume 2, Section 4.2, and IP 83750, "Occupational Radiation Exposure." As defined above, RASSs evaluate the effectiveness of remediation efforts in reducing residual

radioactive material to acceptable levels such that they are prepared for FSSs. For additional guidance, see NUREG 1757 Volume 2, Section 4.3.

- f. Consistent with a performance-based inspection approach, observing the licensee perform RASSs or FSSs is preferred; however, it may not be possible to directly observe all these surveys. If this is the case, a review of the licensee's survey documentation is also acceptable. When reviewing FSS reports, refer to NUREG 1757 Volume 2, Section 4.5, for additional guidance. The inspectors may choose to collect samples or perform verification surveys concurrent with the licensee's RASS or FSSs when performing the inspection requirements related to the following:
 1. Review the licensee's survey plan and supporting documentation. This may include items such as Visual Sample Plan files or other survey maps that identify the boundaries of the survey unit and the sample locations. When reviewing the licensee's RASS and FSS plans for remnant structures, review the procedures for performing surveys that determine contamination-at-depth in cracks, crevices, and floor wall interfaces. Evaluate that the plans for surveys or samples taken will verify that remnant structures were remediated to the appropriate depth. Additionally, the survey plans should determine the loose surface contamination is less than 10 percent (or other percentage consistent with the LTP or dose modeling) of the total residual radioactivity. Specific attention should be given to embedded or buried piping that the licensee intends to leave in place following license termination. See NUREG-1757, Volume 2, for additional guidance and contact the headquarters PM and health physicist for assistance in determining whether the licensee's procedures and survey plans are appropriate for remediating and assessing residual radioactive material left in embedded or buried piping or building foundations. For soil areas, review the surveys that demonstrate that the areas were remediated to the appropriate depth and verify that groundwater considerations have been evaluated and considered, as appropriate, as part of the RASS and FSS plan. If automated measurement systems are employed, a review of the licensee's technical bases documents, including calculations, validation tests, and software verification, may be performed. These systems may include portable in-situ gamma spectroscopy systems, conveyor-based monitors, bulk monitors, etc.

The inspector should also review the licensee's investigation level and investigation process as described in the survey documents related to RASS and FSS. The investigation level is a radionuclide-specific concentration or activity level of radioactivity that: (1) is based on the release criterion, and (2) triggers a response, such as further investigation or cleanup, if exceeded. It is considered the level below which there is an acceptable level of assurance that the established DCGLs have been obtained. Appropriate use of the investigation level supports survey decisions that are consistent with the intent of MARSSIM in that the investigation level indicates when additional investigations may be necessary in a survey unit. The inspector should verify that the chosen investigation levels associated with each DCGL are reasonable and in accordance with the LTP, and that surveys are being conducted in accordance with the program. For surveys performed at risk, inspectors should be mindful of changes to investigation levels that were in place at the time of the licensee's at risk survey and the investigation levels established in the final NRC approved LTP.

Determine whether the ROCs are appropriately identified, the survey area is classified as stated in the LTP, and background measurements are being taken and accounted for as indicated in the LTP. Review the methods used to address the impact of multiple ROCs in FSS planning, as well as the methods to address hard-to-detect (HTC) radionuclides.

2. Review the LTP for requirements pertaining to the qualifications necessary for those developing survey plans, performing the surveys, and evaluating and reporting survey results. Select a sample of licensee personnel involved in the above activities and verify that their qualifications meet the requirements specified in the LTP.
3. For additional information pertaining to background reference areas, see NUREG 1757 Volume 2, Appendix A.3.
4. Review the quality assurance and/or quality control (QA/QC) program requirements for adequacy and completeness in the following areas: Organizational structure; QC surveillance program; document control and records management programs; equipment maintenance and control program; audits and corrective action program. Inspectors should determine whether the laboratory analytical procedures, sample chain-of-custody procedures, and data management procedures (including QA/QC) are acceptable, and if the results are adequately documented. Additionally, inspectors should ensure access and cross contamination control measures are followed for areas where FSS have been completed. Ensure that programs exist to detect any recontamination and these occurrences are tracked to resolution, such as by entering them into the CAP. Verify that appropriate re-survey protocols were followed for any areas that underwent remediation during or after an FSS, or for survey units that failed a statistical test for compliance. Ensure that re-surveys are performed in accordance with the LTP and/or applicable NRC guidance.

When reviewing the licensee's survey results, consider reviewing the following, as applicable:

- The appropriate statistical test was applied consistent with the LTP and survey plan.
- Survey data was transcribed correctly into survey reports.
- The correct action levels and DCGLs were applied to the ROCs.
- Surrogate ratios were applied correctly and as approved in the LTP.
- Scan and action levels were correctly selected.
- The correct number of systematic and judgmental samples were taken.
- The correct number of samples were sent for hard-to-detect radionuclide analysis as specified in the LTP.
- Scan survey results were below investigation levels, appropriate actions were taken for any results greater than action levels.
- The gamma spectroscopy results; note which ROCs were above MDCs and whether these activities approached DCGLs.
- Whether the mean and standard deviations were calculated and reported correctly.

- Whether the sum-of-fractions calculations were calculated correctly.
- Whether any measurements indicated areas of elevated activity. Assess whether these areas were properly evaluated consistent with the LTP.
- Whether the correct number of QA/QC samples were acquired and analyzed.

03.02 Verification and Confirmatory Surveys

In general, inspection activities for completed FSSs may include the collection of confirmatory samples or survey measurements to provide confidence that the licensee's FSS program is adequate. The independent collection of samples and performance of surveys is done to ensure that the survey results reported by the licensee are accurate and representative of the conditions at the facility.

Review the licensee's RASS and FSS design packages, and/or survey reports, as applicable to inform the planning of verification and confirmatory surveys. In-process verification surveys are intended to provide the NRC confidence that the licensee's survey results are accurate and representative of the conditions at the facility in a timely manner. Experience has shown that the in-process approach may result in significant savings in cost, assured more accurate surveys, and has had less impact on the licensee in maintaining survey unit accessibility for NRC inspectors (NUREG 1757 Volume 2, Appendix O, Lesson 4). An in-process approach should be considered when areas may become inaccessible, such as would occur after a building foundation or excavated area is backfilled. In this case, inspectors should consider performing surveys and sampling to assess licensee results of RASS, including assessing contamination-at-depth in soil, structures such as concrete and cracks, buried or embedded piping, and crevices and floor-wall joints.

- a. Inspectors should select survey units in consultation with the headquarters PM and health physicist based on the general guidance provided regarding risk. In this decision, consider the remediation approach used by the licensee and the likelihood of residual radioactive material remaining following remediation. Additional factors may also be relevant to this selection, such as the extent and quality of the characterization surveys, any historical records of spills or contamination in the subsoil, or the possibility of re-contamination of any areas for which a FSS had previously been completed. Inspectors should perform confirmatory surveys of all Class 1 and 2 survey units where the licensee has completed FSSs at risk prior to the approval of the LTP. A selection of Class 3 areas should be performed to validate the licensee procedures for Class 3 surveys.
- b. The inspector in consultation with the PM should determine if verification or confirmatory surveys are to be performed, when they will be performed (i.e. in-process or after FSS is complete), and to what extent. Additional considerations for conducting a more detailed technical review for a survey unit can be found in NUREG-1757, Volume 2, Section 4.5.3.2. The inspector, in conjunction with the headquarter PM and health physicist, should consider the following when planning inspection surveys:
 - Sites where verification surveys and sampling have not identified significant weaknesses in the FSS program may not require confirmatory surveys, and sampling may not be required in low risk survey units, non-impacted areas, or Class 3 areas. However, confirmatory surveys may be deemed necessary in all

survey units (Class 1, 2, 3) for sites where unresolved radiological program weaknesses were previously identified or where repetitive violations have occurred.

- Confirmatory surveys should be considered where there is historical information of spills or unusual occurrences involving the spread of contamination at the site and higher risk areas such as Class 1 and 2 areas.
- Confirmatory surveys should be considered in any survey unit where the licensee is planning to backfill the area with clean fill after remediation activities are complete. While MARSSIM applies to surface soils (not greater than 15 cm or 6 inch depth), inspectors need to ensure the residual activity in the bottom and sides of the excavation have been completely remediated by surveying throughout the excavation and ensuring residual radioactivity has been remediated at depths greater than 15 cm. Based on the radionuclides of concern, the surface surveys may only be applicable at depths less than 15 cm. Inspectors must remain attentive to the licensee's backfill schedule to ensure that confirmatory surveys can be completed while the area remains accessible.

If verification or confirmatory surveys are to be performed, determine if an NRC contractor should be used. Meeting any of the criteria listed below will, in general, justify the use of an NRC independent contractor:

- Licensee's FSS involves unique or complex technical issues (contaminant in background, core borings, pipe surveys, hard-to-detect nuclides).
- Confirmatory survey activity is expected to require more than one person-week of effort to complete field surveys and sampling.
- The inspection will involve a large number of survey units or large structures or land areas to be surveyed.
- NRC staff lack the equipment required to perform the surveys or sampling, and specialty equipment is required (concrete core bores, sub-surface soil sampling, in-situ counting, etc.).

If it is determined that an NRC contractor will be used to perform independent verification or confirmatory surveys, the inspector shall discuss and closely coordinate with the headquarters PM, and each with their respective Branch Chiefs, to obtain agreement. Upon agreement, the PM will develop a Request for Technical Assistance (RFTA) for approval by the NMSS DUWP Branch Chief responsible for the contracts to obtain the contractor services. The NRC Contracting Officer Representative (COR) will direct the contractor to obtain the requested services in accordance with the NRC Contract/Inter Agency Agreement. The contractor will develop a survey plan for inspector and PM approval for use during the inspection.

- c. The survey inspection plan should, at a minimum, outline the type of survey to be performed (verification or confirmatory), the survey units to be surveyed, and the date(s) of the surveys. In developing survey plans specific to a survey unit, the inspector should coordinate with the headquarters PM and health physicist to develop the plan. These specifics may include the types of measurements needed, necessary instrumentation, the number of samples to be taken, and the preparation of survey documentation. For confirmatory surveys, the inspection plan should include a survey plan that is consistent with the data quality objectives contained in the licensee's approved LTP or FSS plan, survey unit classification, and media sampling and survey

methods (see NUREG-1575 Chapter 2 and Appendix D for guidance on developing appropriate survey designs using the Data Quality Objective (DQO) process). For confirmatory surveys performed by a contractor, the contractor is responsible for preparation of the survey plan.

Consistent with the survey inspection plan and to validate the laboratory results, the inspectors should consider collecting side-by-side, split samples, or arrange for additional NRC sampling with the licensee for comparative purposes and should compare in-field instrument readings and sensitivities. In the additional NRC sampling approach, the samples are collected in the presence of the inspector, counted by the licensee or their laboratory vendor, and the inspector sends the samples to the NRC contracted laboratory for analysis using the appropriate chain of custody process. In addition to split-sampling, another method to validate the licensee's laboratory capability, is for the inspector to have the NRC's independent laboratory count samples previously collected and analyzed by the licensee.

- d. If the inspectors are gathering samples for shipment to an independent laboratory, it is imperative that quality procedures and instruments be used for the collecting, packaging, and shipment of the samples. When preparing and shipping samples, it is equally important to ensure that the chain of custody is maintained (see NRC Form 303, "Request for Analysis and Chain of Custody"). If support is needed, the inspector should contact the headquarters PM for additional assistance. For soil sampling, determine sampling depth requirements and sampling intervals. At a minimum, samples should be collected from anomalous or other judgmental areas, together with selected licensee-archived samples, for confirmatory analysis. The necessity for, and the specific numbers of, other random/systematic samples should be separately evaluated, using the DQO process.

For structure surfaces, consider performing direct measurement surveys or sampling, as able, to determine contamination-at-depth in cracks, crevices, and floor wall interfaces.

- e. Coordinate with the assigned headquarters PM and health physicist to establish an acceptable standard to compare the licensee's results to the NRC's verification or confirmatory survey results. Evaluate each anomaly identified during in-process verification or confirmatory surveys for compliance with the LTP Survey Plan requirements, the DCGL, and the DCGL_{EMC}. For each anomaly, determine the following:
 - Is it acceptable relative to size and concentration?
 - Has the licensee adequately addressed it?
 - Is it within the bounds of the survey unit classification?

Document in an inspection report a summary of the NRC verification and confirmatory survey results. The inspection report should have a level of detail consistent with the complexity of the surveys, sample data collected, and classification of the areas surveyed.

03.03 Problem Identification and Resolution

Additional guidance can be found in IP 71152, "Problem Identification and Resolution" and IP

40801, "Problem Identification and Resolution at Permanently Shutdown Reactors."

83801-04 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 particular 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.

83801-05 COMPLETION STATUS

Inspection findings, open items, follow-up items, and conclusions shall be documented in accordance with IMC 0610 and other relevant regional or NMSS instructions. Inspections resulting from allegations will be documented and dispositioned in accordance with Management Directive 8.8, "Management of Allegations."

83801-06 REFERENCES

NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)"

NUREG-1700, "Standard Review Plan for Evaluating Nuclear Power Reactor License Termination Plans"

NUREG-1757, Volume 2 "Consolidated Decommissioning Guidance"

NRC Inspection and Enforcement (IE) Circular No. 81-07, "Control of Radioactively Contaminated Material"

END

Attachment 1 – Revision History for IP 83801

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Accession Number (Pre-Decisional, Non-Public Information)
N/A	08/11/97 CN 97-012	IP 83801 (Inspection of Final Surveys at Permanently Shutdown Reactors) has been revised to be consistent with the dose-based criteria used in the license termination rule and MARSSIM guidance. The previous guidance was NUREG-5849, which was based on concentration limits. Therefore, to comply with 10 CFR 20 Subpart E, the licensee needs to do a dose analysis and follow MARSSIM guidance; the procedure has been updated to reflect the appropriate changes.	None Required	None
N/A	01/28/02 CN 02-003	Incorporated updated MARSSIM guidance.	None Required	None
N/A	09/05/06 CN 06-020	Major revision incorporating lessons learned from the decommissioning of Maine Yankee and Trojan.	None Required	ML061090058
N/A	ML15202A331 07/26/16 CN 16-018	The procedure was updated to address content and format changes, and reflect additional lessons learned from ongoing decommissioning activities.	None Required	ML16117A246
N/A	ML19322C630 11/26/19 CN 19-038	Appendix A incorporated into the procedure body, Clarified use of Contractor for verification surveys.	None Required	ML19324C789
N/A	ML20352A103 01/06/21 CN 21-002	Major revision to include actionable inspection requirements. Guidance was streamlined and reorganized to match up with the listed requirements. The types of surveys and when they could be used was expanded. The content of this procedure was updated to focus on the inspector's efforts on risk informing the inspection.	None Required	ML20352A104