MANUAL CHAPTER 2401

NEAR-SURFACE LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY INSPECTION PROGRAM

NOTE: This document was last reviewed on 10/05/01 (last revision was 02/28/97). Since NRC is not currently engaged in the activities addressed in this document, no revision is deemed necessary at this time. The document will be maintained in its original form until NRC program changes warrant an update of the document coincident with NRC requirements and policy for NRC use.

2401-01 PURPOSE

This chapter establishes the radiological safety inspection program for near-surface low-level radioactive waste (LLW) disposal facilities licensed and regulated under 10 CFR Part 61. Included in the program are inspection procedures (IPs) related to all phases of LLW facility activity: construction, pre-operations, operations, closure, and post-closure. IPs presented cover both those facilities licensed and regulated in their entirety by NRC and those facilities that are licensed and regulated by NRC for special nuclear material (SNM) only, and which are otherwise regulated by the Agreement State pursuant to Subsection 274b of the Atomic Energy Act of 1954, as amended. The primary purpose of the inspection program is to determine that LLW facilities are managed throughout their entire life cycle in a manner that provides protection from radioactivity to employees, members of the public, and the environment.

2401-02 OBJECTIVES

- 02.01 To establish general policy and priorities for the inspection of LLW disposal facilities.
- 02.02 To establish a uniform process for the inspection of LLW disposal facilities.
- 02.03 To define specific requirements for inspection of LLW disposal facility licensees.

2401-03 PROGRAM APPLICABILITY

This program has been developed to respond to existing and developing needs for: (1) IPS for NRC-licensed SNM disposal operations at facilities regulated in all other aspects by Agreement States; and (2) procedures related to construction, pre-operation, operations, closure, and post-closure for sites licensed by NRC in non-Agreement States. Where LLW disposal sites are operating under Agreement State regulation, except for SNM disposal, it is expected that responsibility for regulation and inspection of closure and post-closure activities at those sites will continue to reside with the Agreement States. The only

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procedure applicable to those cases where NRC only regulates SNM disposal (such as the Hanford and Barnwell LLW facilities) is IP 84100.

It is noted that existing IPs from other NRC programs can be applied, in full or in part, to many aspects of LLW facility inspections, and that additional LLW IPs specific to disposal technology and phase of on-site activity can be developed and employed incrementally, as needed.

Table 1 provides a listing of procedures that are either currently available or in preparation, and includes comments concerning their applicability. Minimum and normal frequencies of inspection are listed; adoption of the minimum frequency of inspection should be tailored to both the level of disposal activity and to the performance of the licensee.

2401-04 PROGRAM DESCRIPTION

04.01 <u>General</u>. The LLW disposal facility inspection program has been divided into five parts. The parts are designed to respond to the various inspection needs during the different phases of disposal facility life: construction, pre-operations, operations, closure, and post-closure. Each phase of the inspection program varies with respect to applicable IPs, inspection frequency, and degree to which a given procedure may be applied. The inspection programs for each phase are discussed in narrative form in Section 2401-07. Table 1 presents information for the operations and closure phases. Information related to the construction, pre-operations, and post-closure phases will be developed later.

04.02 <u>Adjustments</u>. The program provides regional offices the flexibility to adjust the frequencies of inspections within the various program areas based on an evaluation of the inspection findings and enforcement experience with a particular licensee. Alternate frequencies of inspection for various procedures are specified in Table 1. Under certain conditions, the inspection frequency may be further extended as outlined below. The higher frequency of inspection specified for the procedure shall be the normal inspection frequency for the program. There is no maximum frequency expressed in Table 1. It is expected that any level of effort (i.e., frequency of inspection) above that specified as the normal frequency would be established at a level commensurate with whatever is needed to resolve identified problems and their importance to safety.

04.03 <u>Decrease of Inspection Frequency</u>

The inspection frequency shall be decreased (lengthen the interval between inspections) beyond that specified in Table 1 on the basis of good licensee performance. The main consideration in decreasing the inspection frequency should be evidence of well-managed and effective radiation and criticality safety programs that show a history of compliance. Specifically, the inspection frequency shall be decreased, for licensees meeting the following conditions:

- the violations identified during the licensee's current and preceding inspections met the criteria for documentation on an NRC Form 591 and no more than two violations per inspection are Severity Level IV or more severe; and
- 2. the licensee has not had a significant program change since the preceding inspection. Significant program changes should relate to changes in the scope or type of operations, changes in the authorized materials or possession limits, changes in key personnel, or changes in locations of use. (NOTE: Extension should not be considered for licensees that have undergone significant program changes, to ensure that the licensees can maintain adequate performance over the next inspection period.)

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Licensees that meet the above criteria could have their minimum inspection frequency shown in Table 1 doubled (i.e. inspections would be performed every 2 years instead of annually).

The designated inspection priority for these licensees should not be changed in the licensing tracking system (LTS). However, the inspector is responsible for initiating the change in the "next inspection date" field in the LTS, which will contain the extended date for the next inspection. To identify the extended inspection date in the LTS, the letter "E" shall be entered under "Special Inspection Codes" on the "Inspection and Enforcement Screen" of the LTS.

To document the decrease in inspection frequency, a brief note (e.g., in the field notes) should be written by the inspector, approved and signed by the inspector's immediate supervisor, and placed in the licensing file.

The decision to decrease the inspection frequency should be made immediately after each routine inspection.

04.04 <u>Inspection Interface with Agreement States</u>. LLW facilities may be fully regulated by NRC, or regulated by NRC for disposal of SNM only, such that all other site activities are otherwise regulated by the Agreement State. Where Agreement State regulatory authorities are responsible for inspection of licensed activities related to disposal of source and byproduct material, the NRC program for inspection of SNM disposal operations may be condensed. The Agreement States then bear the major burden related to the inspection of such LLW facilities; NRC will then normally inspect only matters addressed by the NRC license for SNM disposal, whereas the Agreement State regulatory agency will undertake inspection for items governed by the State license. It is desirable that Agreement State and NRC inspectors coordinate inspection activities and, if possible, schedule inspections concurrently to maximize efficient use of inspector resources and to foster a mutual understanding of each other's inspection program. Where there is concern for the safety of employees, members of the public, or the environment, the scope of the SNM inspection by NRC can be increased to incorporate additional aspects of facility operations, in accordance with NRC regulations and the operating license of the facility.

2401-05 REVIEW OF EVENTS

All inspections should include, as appropriate, a review of licensee reportable and non-reportable events that involve contamination, releases, equipment malfunctions, or other similar events that have generic significance. The review should cover corrective actions taken by the licensee and follow-up actions taken to prevent recurrence.

Non-reportable events should continue to be examined during inspections, to determine appropriate corrective actions or follow-up: these events may involve safety issues that should be followed up by the Occupational Safety and Health Administration (OSHA), and existing or potential operational difficulties not otherwise reportable, such as bio-intrusion in disposal units, erosion or sloughing of trench walls, or uncontrolled wind erosion. Additional guidance on non-reportable events is contained in individual IPs.

2401-06 REGIONAL RESPONSIBILITY FOR LICENSEES

The responsibility for inspection resides with the regional office in which the licensee operation is located. For efficiency in resource use, the regional office may request another regional office or Headquarters to assist in the conduct of inspections when specialized technical expertise is needed and is not available within the responsible region. In some cases, a region may wish to transfer all or part of the inspection responsibility to another

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region or to Headquarters. These arrangements may be made with mutual agreement between the offices involved. If a permanent transfer of total inspection responsibility is involved, the affected regional offices should ensure that the appropriate changes are made to the computerized license data file by informing the Office of Nuclear Material Safety and Safeguards (NMSS) of the change in inspection responsibility for the license and requesting a change in the file. The regional office assuming inspection responsibility will be credited with the caseload in budgeting and allocating resources.

2401-07 INSPECTION DURING VARIOUS PHASES OF FACILITY LIFE

07.01 Part 1 - Inspection During the Construction Phase

This section is reserved for future use.

07.02 Part II - Inspection During the Pre-Operations Phase

This section is reserved for future use.

07.03 Part III - Inspection During the Operations Phase

a. <u>Purpose</u>

The purpose of this instruction is to provide guidance for planning and conducting inspections during the operations phase of facility life. Activities encompassed during the operations phase include receipt and inspection of incoming waste, retention of the LLW in secure temporary storage as needed, emplacement of the LLW for disposal, the placement of cover, and satisfaction of record keeping requirements in accordance with applicable management controls and quality assurance procedures.

b. Implementation

This inspection program begins upon issuance of the facility license and continues until the facility ceases active receipt and disposal of waste. Guidance and requirements for the closure phase are found in Part IV of this section.

Situations may arise in which inspection requirements specified in other parts of this section may apply concurrently with those specified here for the operations phase. For example, certain requirements contained under Parts I and II may apply in the construction, pre-operational checks, and startup of a major modification to the facility, in accordance with 10 CFR 61.25.

The LLW disposal-facility operations inspection program is defined by selection from among the list of procedures in Table 1. The areas covered during an inspection need not be limited only to those elements discussed in the procedures, but may need to include examination of other activities not expressly delineated or covered in existing procedures. In such cases, the inspector must exercise good professional judgment in modifying the inspection and in identifying to the program office the possible need for development of supplemental guidance. Conformance with the principles of ALARA should be a principal concern at all times. When a licensee is being inspected solely for conformance with an NRC license for disposal of LLW SNM, the inspection should be coordinated with the nuclear regulatory agency of the Agreement State.

For the normal inspection frequency, each procedure should be completed whenever possible for each specified frequency. In practice, part or all of an

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individual procedure may need to be examined during each inspection visit. Emphasis should be placed on physical examinations, observation of conduct of operations, independent measurements, and personnel interviews. Attention should be directed toward the availability of written procedures, the degree to which they are being followed, and the state of training of on-site personnel. When necessary, effort should be concentrated on areas of perceived concern. With the exception of the review of changes made under 10 CFR 61.25 and the tracing of lost or overdue shipments, which should be examined fully, review of records should otherwise involve only a sampling of those records important to safety of personnel and the general public. For example, if the organizational structure has not changed with respect to personnel and assigned functions and responsibilities, the inspector should not pursue the subject of organization in any detail, unless there is reason to believe that such is not the case. Discretion in such areas is left to the judgement of the inspector.

c. Regulatory Considerations

The inspector should be especially familiar with current license requirements; previous inspection reports; applicable codes, standards and guides; and the following regulations:

10 CFR Part 19	Notices, Instructions, and Reports to Workers: Inspection and Investigations
10 CFR Part 20	Standards for Protection against Radiation
10 CFR Part 61	Licensing Requirements for Land Disposal of Radio- logical Waste
10 CFR Part 70	Domestic Licensing of Special Nuclear Material
10 CFR Part 73	Physical Protection of Plants And Materials

d. Guidance for Use of Inspection Procedures During Operations

The IPs indicated in Table 1 (enclosed) for the Operations Phase are applicable to inspections conducted at LLW disposal facilities during operations. The inspection staff can determine the applicable elements of each procedure by reviewing the procedure, the facility license, and reports of previous inspections.

07.04 Part IV - Inspection During the Closure Phase

a. Purpose

The purpose of this instruction is to provide guidance for planning and conducting inspections during the period of closure of a LLW disposal facility. The term "closure," as used herein, encompasses those activities that must be carried out by the licensee after the cessation of waste receipt and disposal operations, to allow the Commission to formally issue a license amendment for disposal-site closure. In some cases, as specifically allowed or required by license condition, some closure activities may occur for some parts of a facility during active waste receipt and disposal operations at other parts.

Closure is dissimilar from decommissioning in that closure is followed by a period of post-closure observation and maintenance, followed by an institutional control period of 100 years, rather than release for unrestricted use.

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b. <u>Implementation</u>

This program is initiated when the licensee begins implementation of any portion of the approved site-closure plan. The foundation for planning and scheduling inspections will thus be the closure plan. The criteria for inspections will be license conditions and applicable regulations some of which will directly address closure activities. It is likely that in many cases, portions of the closure plan may be implemented for part of a site while active operations continue elsewhere on site. In these cases, the appropriate portions of this program should be implemented in conjunction with the operations inspection program. The closure plan itself, as amended during site operation, pursuant to 10 CFR 61.28, should be reviewed by the regional office to determine if procedural or scheduling modifications are necessary to enable planning of an efficient inspection program. The inspection program continues in effect until the licensee has implemented all elements of the closure plan, and NRC has approved the initiation of the post-closure observation and maintenance phase.

c. <u>Regulatory Considerations</u>

The information in Table 1 is designed to inspect programs for conformance with the following regulations:

10 CFR Part 20 Standards for Protection against Radiation

10 CFR Part 61 Licensing Requirements for Land Disposal of Radio-

active Waste

10 CFR Part 70 Domestic Licensing of Special Nuclear Material

d. <u>Guidance for Use of Inspection Procedures During Closure</u>

The IPs indicated in Table 1 (enclosed) are applicable (as noted in comments) to inspections conducted at LLW disposal facilities during facility closure. The inspection staff can determine the applicable elements of each procedure by reviewing the procedure, the facility license, and the licensee's closure plan.

07.05 Part V - Inspection During the Post-Closure Phase

This section reserved for future use.

END

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OPERATIONS PHASE

Procedures Number	Procedure Title	Inspection Min.	n Frequency Normal	Applicability of Procedure to Inspection of LLW Disposal Facility	Inspect. Free Min.	quen. Normal	Applicability of Procedure to Inspection of a LLW Disposal Facility
30703	Management Entrance/Exit Interview	Each Inspection	Each Inspection	LLW Inspectors should subscribe to the general principles established in this procedure.	Each Inspection	Each Inspection	LLW Inspectors should subscribe to the general principles established in this procedure.
36100	10 CFR Part 21 Inspection at Nuclear Power Reactors	As Necessary	As Necessary	Inspectors should be sensitive to the underlying principle driving this procedure as it may pertain to some LLW disposal facilities. Future guidance is appropriate related to specific types of disposal facilities.	As Necessary	As Necessary	Inspectors should be sensitive to the underlying principle driving this procedure as it may pertain to some LLW disposal facilities. Future guidance is appropriate related to specific types of disposal facilities.
83822	Radiation Protection	Annually	Twice per Year	This procedure is applicable in its entirety to inspections of LLW disposal facilities during facility operations. Some discretion should be exercised in using the guidance in section 3.07.	Each Inspection (Frequency may reduce as closure progresses.)	Each Inspection	The inspection staff should initially follow the entire procedure to determine that the approved program is being implemented and to establish the degree of potential for exposures. Subsequent inspections can be tailored to concentrate on identified areas of risk.
83890	Closeout Inspection and Survey	N/A	N/A	N/A	As Necessary during implementation of Closure Plan		This procedure is generally applicable toward the end of the closure phase of LLW facility life. Specific guidance should be developed in order to use the procedure as a "closure" procedure rather than a "decommissioning" procedure. The guidance will address the facts that 1) most if not all of the RAM will be disposed of on site and 2) the facility is not being returned to unrestricted use.

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Procedures Number	Procedure Title	Inspection Min.	Frequency Normal	Applicability of Procedure to Inspection of LLW Disposal Facility	Inspect. Free Min.	quen <u>.</u> Normal	Applicability of Procedure to Inspection of a LLW Disposal Facility
84850	Inspection of Waste Generator Requirements	Every other Year	Annually	This procedure has minimal applicability at a LLW disposal facility. It may be useful as a cross check of the means by which the facility operator verifies compliance by clients. It would also be applicable for inspecting the disposition of on-site generated waste.	N/A	N/A	N/A
84100	SNM Inspection at LLW Disposal Facilities	Annual	Annual	This procedure is specifically applicable to SNM inspections at LLW disposal facilities during operations.	N/A	N/A	N/A
84XXX	Operations Review of a LLW disposal facility (in development	Annual	Twice per year	This procedure is specifically applicable to inspections of operating LLW disposal facilities.	N/A	N/A	N/A
84XXX	Facility Engineering (in development)	Annual	Twice per year	This procedure is applicable to inspection of engineering and construction aspects of a LLW disposal facility being implemented during operations.	N/A	N/A	N/A
86750	Solid Waste Management & Transportation of RAM	Annually	Twice per year	This procedure has applicability during the inspection of operations at a LLW disposal facility. The inspector should verify that the facility operator confirms compliance with transportation requirements by customers. The procedure should also be employed if the operator ships RAM offsite for any reason (e.g., shipment of RAM to a lab for analysis).	As needed	As needed	Use procedure only if closure results in RAM to be transported off site. The specifics of the licensee's packaging and transportation activities should be reviewed to determine which elements of Procedure 86750 will be inspected. It would be prudent to discuss the regulations and the inspection procedure early with the licensee.

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88005	Management Organization and Controls	Annual	Twice per year	This procedure is applicable in its entirety to inspections of LLW disposal facilities. Section 3.05, Q/A Programs, should be supplemented with specific guidance applicable to LLW facilities.	Annually	Annually	Procedure Control. In most cases, the closure license application and license conditions will specify the procedures for cleanup operations, implementation of disposal of residual radioactive material, and radiation protection and administrative controls. Inspections should determine whether or not the approved procedure controls are being implemented, and if NMSS and the safety committee are properly involved with any changes made to the procedure.
							Records Control & Storage. The focus of this inspection is to determine that records of exposures, surveys, and the nature and quantity of removed contamination are properly managed. This independent assessment should be implemented even if not required by license condition.

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<u>Procedures</u> <u>Number</u>	Procedure Title	Inspection Frequency Min. Normal	Applicability of Procedure to Inspection of LLW Disposal Facility	Inspect. Free	quen. Normal	Applicability of Procedure to Inspection of a LLW Disposal Facility Internal Review & Audit. The first consideration is whether or not the process for independent internal reviews and audits is being implemented in accordance with license conditions. The inspection staff should assure itself that the licensee is independently controlling the safety of all operations even if a program or system is not explicitly defined or required by license condition.
88005	Management Organization & Controls	See Previous Page	See Previous Page	Annually	Annually	Safety Committee. During closure operations, the safety committee may consist of one or two people. Even so, all cleanup and safety activities should be tracked, recorded and evaluated, and reviewed periodically by the Safety Committee. Quality Assurance Program Annual Review. The licensee's closure plan will include managerial and administrative controls to be used to ensure safe implementation. Although an inspection frequency other than annual may be appropriate, the controls should be inspected often enough to ensure that they are being implemented consistent with license conditions.
88010	Operator Training/ Retraining	Every Other Annual Year	This procedure is applicable in its entirety to a LLW disposal facility.	N/A	N/A	N/A

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88025	Surveillance Testing	Annual	Twice per year	The concepts presented in this procedure are applicable to LLW disposal facility operations. Specific guidance is required to address the different systems encountered at a LLW disposal facility.	Annually	Twice per year	These procedures are directed to operations, but the underlying concerns may be present during closure operations. Equipment that is being used to remove residual radioactive material could have limitations that if exceeded could result in dispersal of radioactive material. Such systems should be monitored and periodically tested. Instruments should be checked to ensure that established calibration frequencies have been met. The inspection should include both process and health physics instrumentation.
88035	Radioactive Waste Management	Annual	Twice per year	Sections 2.01-2.06 are generally applicable to inspections of LLW disposal facilities. Section 2.07 needs to be expanded to provide specific details related to the inspection of waste disposal at a facility whose purpose is waste disposal. Section 2.08 does not apply.	Annually	Twice per year	Sections 2.01-2.07 are generally applicable to inspections of LLW disposal facilities in the closure phase.
88045	Environmental Programs	Annual	Twice per year	This procedure is applicable in its entirety to the inspection of LLW disposal facilities. Furthermore, specific guidance regarding its implementation at such facilities is needed.	Annually	Twice per year	This procedure is applicable in its entirety to the inspection of LLW disposal facilities. Furthermore, specific guidance regarding its implementation at such facilities is needed.

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88045	Environmental Programs	See Previous	Page	License conditions will specify offsite monitoring and sampling locations, frequencies, and applicable limits on levels and concentrations of radioactivity.	See Previous Page		The potential for offsite release will be less during closure than during operations, but environmental impact is still a concern and must be inspected.
88050	Emergency Planning	Annual	Twice per year	This procedure is generally applicable to the inspection of LLW disposal facilities during facility operations. Inspector discretion is required regarding the degree to which all requirements are inspected against. The inspector should keep in mind that the nature and severity of an emergency at an operating LLW disposal facility is likely to differ from that at a fuel facility. The number of drills, number of trained individuals and the nature and amount of onsite emergency equipment is likely to differ from that expected at a Fuel Facility. Therefore, the inspector is cautioned to use existing guidance in this procedure advisedly.	Every two years	Annually	Because of the potential for dispersing radioactive materials, and of sustaining exposures and injuries during a fire, the fire prevention and protection program must be inspected. The frequency and depth of inspection are at the inspection staff's discretion and are dependent on the type of facility and the methods of closure.

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90712	In Office Review of Written Reports of Non- routine Events at Power Reactor Facilities	As Necessary	As Necessary	This procedure should be used conceptually and sparingly at LLW disposal facilities until an alternate procedure is developed. The concept of followup both by licensee and inspector on non-routine events is valid for LLW disposal facilities. However, nature and severity of non-routine events needs to be established specifically for LLW disposal facilities.	As Necessary	As Necessary	See guidance for Operations Phase
92701	Followup	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.	As Necessary	As Necess	Generic Procedure applicable to LLW Disposal.
92702	Followup on Violations/Deviations	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.
92703	Confirmatory Action Letters	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.
93007	OSHA Interface Activities	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.
94702	Participation in Licensee Meetings	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.	As Necessary	As Necessary	Generic Procedure applicable to LLW Disposal.