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**IMPLEMENTATION
GUIDANCE
FOR DOE ORDER 5820.2A**

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I. INTRODUCTION

A. Purpose and Scope of Guidance

The U.S. Department of Energy (DOE) Order 5820.2A, "Radioactive Waste Management," establishes policies, guidelines and minimum requirements for managing radioactive and mixed wastes and contaminated facilities. This Order constitutes the revision and replacement of DOE Order 5820.2, dated 2-6-84. The requirements in the revised Order reflect the Department's determination to issue a more prescriptive regulation for managing DOE wastes, much like counterpart regulations promulgated by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA). This guidance document does not attempt to address all parts of the revised Order, but rather emphasizes the sections which received the greatest amount of revision (i.e., Chapter III), or provisions that are critical pathways for compliance (e.g., radiological performance assessments). DP-12 will continue, in consultation with EH-1 and appropriate Headquarters program organizations, to provide updated waste management guidance as necessary. This document contains guidance for site implementation plans as mentioned in Paragraph 10 of the Order.

The purpose of this guidance is to clarify the roles and responsibilities of both Headquarters and Field Organizations in the implementation of DOE Order 5820.2A; in particular those areas of radioactive waste management which have expanded in scope from the previous Order. This guidance is applicable to all DOE elements that must comply with the Order. Documentation requirements for compliance with the Order are described in Section III. B.

Guidance specific to the conceptual development and format requirements for the Implementation Plan are contained in Section III.C and ATTACHMENT I - Implementation Plan Format. Section IV provides topical summary guidance on low-level waste (LLW) disposal site radiological performance assessments and the documentation of site waste generation reduction programs.

The following introductory sections provide the background for DOE's decision to revise the Order and highlight the major changes that were made.

B. Background

The Department launched an effort to revise the LLW chapter of DOE 5820.2 in early 1986, in response to criticism that the existing Order was general and non-prescriptive. The objective established at the start of the revision effort was to produce a detailed, prescriptive and objective-oriented Order. The scope later widened to include revisions of chapters on high-level waste (HLW) and transuranic waste (TRU). The remaining two chapters, Management of Wastes Containing AEA 11e(2) Byproduct Material and Naturally Occurring and Accelerator Produced Radioactive Material, and Decommissioning of Radioactively Contaminated Facilities, were also revised but required fewer changes.

The goal throughout the comment and response cycle was to incorporate as many comments as possible consistent with maintaining the original objectives of the revision. Of the 500 comments received, 75% of the essential, and 65% of the suggested comments were accepted in principle. The in-depth reviews received from all elements of the DOE complex strengthened the Order by pointing out weaknesses and ambiguities; these have now been corrected.

C. Changes Highlighted

(1) Chapter I - Management of High-Level Waste

The Department has recognized the unique hazards of HLW and instituted conservative waste management practices centered on containment and monitoring. These practices, although designed for intensely radioactive liquid wastes, are closely allied with the Resource Conservation and Recovery Act (RCRA) requirements for the handling and storage of hazardous waste. Following its survey of the Department's HLW facilities, the EPA Mixed Energy Waste Study Task Force determined that DOE's HLW operations were generally equal to or superior to RCRA standards. The new HLW chapter substantially expands the topics of interim storage, treatment and disposal. It also addresses design requirements for new facilities, design review of existing facilities, waste characterization, storage and transfer operations, monitoring and leak detection, contingency planning, training, administrative controls, waste minimization, and waste treatment. For purposes of regulation, all DOE HLW is considered to be mixed waste.

(2) Chapter II - Management of Transuranic Waste

The driving force in the management of defense TRU waste is implementation of the Department's policy to move from long-term retrievable storage to disposal at the Waste Isolation Pilot Plant (WIPP). TRU wastes that are also mixed wastes are subject to the requirements of both RCRA and the Order. The issues associated with mixed TRU waste management will be resolved through negotiations with federal, state and regional EPA authorities.

Revisions of Chapter II emphasize the detailed requirements of waste certification, packaging, and shipping that are the prerequisites for acceptance of waste at the WIPP. These requirements are supported by a network of documented criteria which have been independently reviewed. The balance of the Chapter addresses policies and procedures for interim storage, waste minimization, waste classification and the management of buried TRU-contaminated waste. Applicable laws, orders, and regulations are referenced in order to strengthen and support these requirements.

(3) Chapter III - Management of Low-Level Waste

Chapter III has been expanded most extensively. Changes in this chapter reflect a trend within the Department toward conformance with the spirit of the NRC's LLW regulations and the adoption of NRC concepts and methodologies toward LLW management practice. Whereas the previous version was directed almost exclusively toward waste disposal, the revised chapter embodies other important aspects of LLW management. It includes requirements for waste generation reduction, waste characterization, waste treatment, shipping and storage, environmental monitoring, and the maintenance of a record-keeping system based on waste manifests. Following the lead of environmental protection orders, the revised LLW chapter also addresses ground-water protection.

Most importantly, the revised LLW chapter requires the conduct and maintenance of site-specific radiological performance assessments as a means of demonstrating compliance with LLW management objectives in the Order. These evaluations are a critical step in designing a disposal system that will meet the ground-water and inadvertent intruder protection requirements. Specific implementation guidance and references for the site radiological performance assessment requirement appear in Section IV. A. of this document.

Each field organization is also responsible for examining the combination of waste management practices within its cognizance, using a waste management system performance assessment. Background and guidance for performing waste management system performance assessments is provided in reference. In the Order, Section 3. C. (2) of Chapter VI, "Waste Management Plan Outline," recommends that the findings of the system performance assessment be factored into overall planning of waste management activities.

Other major changes in the revised LLW chapter are explained below.

Waste Generation

Chapter III contains new requirements for LLW generators to establish waste generation reduction programs, assure proper segregation of LLW, and incorporate waste minimization design features into all new processes or process changes. An appendix to the annual Waste Management Plan (WMP) will describe site waste reduction programs. Guidance on program organization and the format for this appendix appears in Section IV. B. of this document.

Waste Characterization

LLW generators must characterize their waste with sufficient accuracy to assure proper segregation, treatment, storage and disposal. Waste characterization is the first step in developing a radiological performance assessment for a site- and waste-specific disposal system, and is necessary to implement a LLW certification program as required by paragraph 3.e.(3) of Chapter III. The Defense LLW Management Program is in the process of finalizing guidance for identifying and quantifying the radionuclide content of LLW packages (see reference 2).

Waste Treatment

The need for waste treatment facilities is closely linked to the outcome of the disposal site radiological performance assessment and to waste reduction objectives. The revised chapter contains documentation requirements for treatment facility design and operation.

Waste Shipment

Requirements in Chapter III address the minimization of waste shipments and the need for proper coordination between shipping and receiving facilities. Generators are required to certify, prior to shipment, that their waste meets the receiving facility's waste acceptance criteria. Each waste package must be properly labeled to identify its physical and chemical characteristics and radionuclide content.

Waste Acceptance Criteria (WAC)

LLW generators are now required to implement a LLW certification program to assure that the WAC of any LLW treatment, storage or disposal facility used by the generator are met. Facility operators will periodically audit generator certification programs. Waste disposal facilities are required to develop and maintain formal waste acceptance criteria.

Waste Disposal

The site- and waste-specific radiological performance assessment will identify the need for engineered enhancements (e.g., stabilization, packaging, burial depth, barriers) for specific waste types and compositions (e.g., fission products, induced radioactivity, uranium, thorium, radium) for each disposal site. As a result of the performance assessment, site specific waste classification limits may be developed if operationally useful in determining how specific wastes should be managed. Disposal practices will be driven by the need to meet the performance objectives for specific disposal site characteristics and waste compositions.

Disposal Site Closure/Post Closure

The revised Chapter III requires field organizations to address closure of new and existing disposal sites within a 5-year period after the site ceases receipt and disposal of waste. Closure planning shall conform to the requirements of the National Environmental Policy Act (NEPA) process. Inactive disposal facilities, disposal sites, and disposal units shall be managed in compliance with the applicable provisions of the RCRA or CERCLA/SARA.

Records and Reports

The revised chapter identifies the LLW manifest as the permanent record that accompanies each waste package from generation through disposal. Development of a DOE wide manifest is needed and will be addressed by the Defense LLW Management Program. In the interim, each field organization is required to develop and maintain a temporary waste manifest recordkeeping system.

(4) Chapter IV - Management of Waste Containing Atomic Energy Act AEA #11e(2) Byproduct Material and Naturally Occurring and Accelerator Produced Radionuclides

The revision of Chapter IV was coordinated closely with Nuclear Energy (NE) to which this section has the greatest application. This chapter pertains to byproduct materials as defined by the AEA 11e(2) and Naturally Occurring and Accelerator Produced Radioactive Materials (NARM), a waste class included by the EPA in its proposed LLW standards (40 CFR 193). In addition, the chapter extends to similarly contaminated residues derived from DOE remedial actions. Chapter IV relates DOE policy to store, stabilize in-place, and/or dispose of these materials consistent with the guidelines in 40 CFR 192.

(5) Chapter V - Decommissioning of Radioactively Contaminated Facilities

Chapter V, formerly titled "Decontamination and Decommissioning of Surplus Facilities," has been revised to reflect changes in departmental policies with regard to management of these facilities. The requirements in this chapter have been expanded to reflect the current operational framework of DOE's Surplus Facilities Management Program. In particular, project activities must meet applicable requirements of the NEPA and the RCRA, as well as adhere to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) protocol. Chapter V facilitates the transfer of contaminated facilities from one program organization to another, and the admission of "orphan" facilities to the DP and NE decommissioning programs.

(6) Chapter VI - Waste Management Plan Outline

The outline for the annual site WMP was reorganized and expanded during the revision process and is now contained in a separate chapter of the Order. The new outline reemphasizes the plan's role as the core document in waste management operations and provides descriptive text to guide plan writers through each section of the document.

The scope of the new outline is expanded to encompass radioactive, mixed and hazardous waste operations but does not include reporting on remedial action projects or decontamination and decommissioning operations. A new section in the WMP outline requires sites to report the status of DOE Order 5820.2A implementation. In addition, new appendices in the WMP require sites to account for waste management documentation requirements and report on waste minimization activities.

II. ROLE OF HEADQUARTERS IN IMPLEMENTATION

A. Primary Responsibilities

Each of the Headquarters program offices (DP, NE, ER) bears responsibility for implementing the requirements of DOE Order 5820.2A in waste management facilities and operations. These responsibilities are shared with the needs of field organizations who must also assure that their waste management activities are in compliance with the Order. Headquarters program offices provide the check and review function for waste management practices in the field.

Specifically, DP-12 interprets waste management policy for the defense waste complex and is responsible for reviewing and approving alternative waste management practices. DP-12, in consultation with EH-1, bears approval authority for all proposed exemptions to the requirements of the Order.

Through its role, EH-1 provides independent overview of radioactive waste management and decommissioning programs. EH-1 is responsible for determining compliance with DOE environmental, safety and health requirements and applicable EPA and state regulations. EH-1 will advise the Secretary of the status of Department compliance with the requirements of the Order.

B. Resolving Compliance Issues

Headquarters recognizes that the successful implementation of 5820.2A as a detailed and prescriptive Order will require the reevaluation of current site practices and funding needs. At the same time, Headquarters realizes that field organizations may need further clarification or interpretation of certain requirements in the Order so that they can plan the correct set of actions to achieve compliance. Assistance will be available in the form of technical guidance issued by the technology lead offices (HLW Lead Office at Richland; Transuranic System Integration Office in Carlsbad; LLW Management Program in Idaho Falls); other issues will require Headquarters' resolution. Field Offices should identify waste management issues and direct them to their appropriate Headquarters program office contact. Waste management issues will be funneled from the sites; Headquarters will solicit technical assistance, when required, and respond appropriately. DP-12 will be the lead office at Headquarters for resolving such issues and will consult with other program offices, field organizations, technical experts and EH-1, as appropriate. Headquarters views this as an iterative process; concurrence will be attained from all affected programs. Guidance on the resolution will then follow.

Guidance will then be transmitted to all affected parties. Headquarters is responsible for the review and approval of new or alternative waste management practices as well as exemptions from requirements of the Order.

C. Tracking Implementation Progress

Implementation Plans will be submitted six months after the issuance of the Order to the appropriate Headquarters program offices for approval and to DP-12 and EH-1 for review and comment. Headquarters will remain in contact with the field offices during the development of

their Implementation Plans and will be available to review draft plans as necessary. Once the Implementation Plans are submitted, Headquarters program offices should assess the implementation requirements for all sites under their cognizance and factor these into program planning and budget formulation processes. The annual update of each site Waste Management Plan will allow Headquarters to track progress achieved in implementing the Order.

D. Oversight and Peer Review Panel

Chapter III of the Order calls for the creation of an Oversight and Peer Review Panel of technical specialists to assure that the approach taken to develop site radiological performance assessments is technically sound and defensible across the DOE complex. DP-12 is responsible for establishing this panel by selecting nominees, one each from the six field offices with a major LLW disposal site and one from the waste generators viewpoint. One panel member will also be appointed by the Office of Environment, Safety and Health (EH). The Office of Nuclear Energy (NE), the NRC and the EPA will each be invited to appoint an observer who may attend meetings of the panel.

Once selected, an organizational meeting of the panel members will be held at Headquarters to formulate a charter and working agenda. The Panel will submit quarterly status reports to DP-12 with a summary of findings and recommendations. DP-12 will distribute additional guidance on radiological performance assessments (see reference 3).

E. Other Responsibilities

Headquarters program offices are responsible for establishing, implementing and maintaining plans and actions to assure the achievement of quality throughout the implementation process. These offices implement the Department's policy for quality assurance (QA) and fully integrate QA principles into their programs, projects and activities. Consistent with the elements in DOE Order 5700.6B, Headquarters shall retain appropriate QA measures to assure that the requirements of DOE Order 5820.2A are fulfilled and their activities remain consistent with applicable federal and state regulations. Headquarters program offices may delegate elements of their QA programs to be implemented by the field or project office.

Headquarters program offices, in cooperation with EH-1, are also responsible for independent audits of their field waste management organizations to assess compliance with the requirements of this Order. This independent overview will also encompass the status of Departmental compliance with applicable EPA and state regulations.

III. RESPONSIBILITIES OF FIELD OFFICES

A. Supplemental Radioactive Waste Management Requirements

As in the existing Order, the revised Order contains a requirement for heads of field organizations to "prepare supplements to this Order that identify specific detailed requirements for waste management practices and procedures conducted at their own sites." Field organizations are provided the flexibility to augment requirements in the parent Order with site-specific conditions, controls and allowances. In short, the field offices should use this opportunity to specify to their contractors and subcontractors, the ways in which their site will conduct business. However, sites should proceed with their implementation activities as required by the Headquarters Order rather than wait for the field office version to be issued. Headquarters will review the field office version of DOE Order 5820.2A.

As an example, each LLW disposal site is required to perform a site-specific waste-specific performance assessment to assure that the disposal design will meet the performance objectives required in the parent Order. Cognizant field organizations may, as a result of this exercise, establish site-specific waste packaging or treatment requirements or specific engineered modifications to disposal units. Field organizations should document these practices in their site-specific radioactive waste management orders.

Another example might involve a field organization's negotiated compliance with state agencies/EPA regarding applicability of federal or state regulations for the management of mixed waste operations. Where these negotiations resolve conflicting operating standards, and where this results in a change in the way a site conducts business (operational procedures), it is appropriate to specify the acceptable procedure in the field office supplemental order. These two examples are intended to show how field organizations are able to use this regulatory tier to reflect site-specific conditions.

B. The Implementation and Waste Management Plan

The Implementation Plan and the annual Waste Management Plan are the key documents required by 5820.2A. Heads of field offices must submit these plans to the appropriate Headquarters program organization for approval, and distribute copies to DP-12 and EH-1 for review and comment. In the past, sites have been required to produce several documents relevant to waste management practices (i.e., annual implementation plans for 5820.2 and 5480.2, annual Radioactive Waste Management Plans and Hazardous Waste Management Plans). DOE Order 5480.2, "Hazardous and Radioactive Mixed Waste Management," was cancelled on 10-5-87 by DOE Notice 1321.127. The Order will be replaced by 5400.5, "Hazardous and Radioactive Mixed Waste Program," which essentially requires DOE facilities to comply with RCRA. No new documentation will be required by 5400.5.

As explained in Chapter VI of the Order, the annual Waste Management Plan emphasizes radioactive, mixed and hazardous waste operations. The scope of the Waste Management Plan is consistent with the scope of the revised Order. Discussion of remedial action projects and decontamination and decommissioning operations are adequately covered in other program documentation and need not be included in the annual waste management plans. However, to provide adequate cross-referencing of waste management documentation, field offices should show

the status of these projects and reference other reports as appropriate. This could be done under the section entitled "Related Subjects" of the Waste Management Plan Outline (Chapter VI, section 3.g. in the Order).

In an effort to consolidate site waste management documentation required at the Headquarters level, the formats for the Implementation Plan and the Waste Management Plan have been revised and standardized. Table III-1 has been included to clarify the schedule, purpose, scope, format and parallel components of the Implementation Plan and the annual Waste Management Plan.

TABLE III-1 IMPLEMENTATION AND WASTE MANAGEMENT PLAN COMPARISON

Implementation Plan	Waste Management Plan
SCHEDULE	
One-time document, due at Headquarters six months after issuance of the Order. Attachment I is the suggested format.	Annual document, due at Headquarters by Jan 01 of each year. Current site specific format is acceptable for FY 89. New standardized format (5820.2A Chapter VI) is required for FY 90 and each year thereafter.
PURPOSE	
Addresses partial compliances and noncompliances with DOE Order 5820.2A; sets the cost and schedule baseline for achieving and maintaining compliance. Serves as key input for HQ funding decisions and assessments of regulatory impact.	Addresses current waste management operational practice and plans for modifying/enhancing current waste management systems. Serves as the core document for the site's waste management operations; references other documentation as appropriate.
SCOPE	
Encompasses radioactive and mixed waste management requirements as cited in DOE Order 5820.2A.	Encompasses the management of radioactive, mixed and hazardous wastes.
FORMAT	
The outline appears in this document as Attachment I.	The outline for the Waste Management Plan appears in DOE Order 5820.2A (Chapter VI).
PARALLEL COMPONENTS	
Implementation Summary Table (Section D of the Implementation Plan outline) is updated annually in:	Section 3.c.(3) of the Waste Management Plan "Implementation Requirements."
Waste Management Documentation Requirements (Appendix A of the outline) is updated annually as:	An attachment to the Waste Management Plan
Regulatory Interaction (Section C (1)) of the Implementation Plan outline is updated annually in:	Section 3. c. (3) of the Waste Management Plan "Implementation Requirements."

C. Development of the Implementation Plan

The implementation of the new Order 5820.2A is an integral part of long-range waste management planning strategy. The documentation of costs and schedules in the Implementation Plan is to provide guidance to management for programmatic and funding decisions on waste-related issues. The effectiveness of system-wide DOE waste management depends on the accurate identification and analysis of waste management needs at the site level.

The concepts required for the development of an Implementation Plan are:

1. Identification of needs.
2. Prioritization of needs.
3. Recommendations to meet needs.
4. Cost estimates of recommendations.
5. Schedule for implementation.
6. Identification of compliance issues requiring Headquarters review and decision-making.

DOE Order 5820.2A primarily addresses radioactive waste management; however, numerous provisions address EPA regulations. Field organizations are encouraged to view the implementation of this Order as a component of overall waste management planning, which includes compliance with EPA and state regulations. In the near term, the costs required to provide identified improvements in radioactive waste facilities may exceed available funding; therefore the primary near-term strategy is to accommodate the needs on a priority basis within the available resources. Priorities will also depend on interagency agreements. An understanding of overall environmental compliance issues will enhance comprehensive prioritization efforts.

The development of a comprehensive implementation plan for the management of radioactive wastes at a DOE site involves more than the identification of needs and development of recommendations. Other elements are to define a set of tasks that will effectively carry out the recommendations, group these tasks into projects compatible with the budgetary planning process, develop a budget, and upon allocation of funds, proceed with the engineering, equipment, and construction phases of implementation. The annual update of implementation requirements in the waste management plan is required in order to track overall progress.

Separate discussion of significant compliance issues and problems requiring HQ review and decision making is also required in the Implementation Plan and the annual Waste Management Plan.

D. Quality Assurance

Heads of field organizations are responsible for guaranteeing that quality assurance activities are established and implemented for all waste management operations under their purview, pursuant to the requirements of DOE Order 5700.6B. Field offices are required to manage a comprehensive quality assurance program which provides confidence that the requirements of DOE Order 5820.2A are being fulfilled. The proper documentation of waste management activities is of chief importance to attaining an adequate level of confidence.

Headquarters program offices, in cooperation with EH-1, will conduct independent audits of field office quality assurance programs and may also elect to participate in quality assurance audits of DOE laboratories and contractors under the field's direction.

IV. TOPICAL GUIDANCE

Two key topics in the revised Order deserve special attention: the conduct of site-specific radiological performance assessments for LLW disposal; and the establishment and maintenance of a waste reduction program. The following guidance is offered as introductions to each of these subjects; a more detailed treatment will be forthcoming in technical guidance developed by DP-12 with technical support from the Defense LLW Management Program.

A. Guidance for Radiological Performance Assessments Requirement III.3.b (1)

For each DOE LLW disposal site, a site-specific radiological performance assessment is the critical step in designing the disposal system so that compliance with the performance objectives in Chapter III, DOE Order 5820.2A, can be reasonably assured. This is a complex process and it includes a combination of scenario development, pathways analyses, dose projections, and modeling the response of both natural and engineered systems. The defense LLW Management Program has issued guidelines for conducting radiological performance assessments (reference 3). The following summarizes steps in the compliance process for this requirement.

- 1) Characterize the volume, radionuclide content, physical form and chemical characteristics of projected LLW for the disposal site. A useful guide for this step is described in Appendix D - Low-Level Waste Sources and Processing Options in the DEIS on 10 CFR 61 NUREG - 0782 Vol.3.
- 2) Select packaging, stabilization and disposal facility options for LLW, based on the type and source strength of radionuclide species.
- 3) Analyze the performance of the disposal system by selecting an appropriate family of critical path scenarios. For intruder scenarios, a ~~good guide~~ is the methodology reported in NUREG/CR 4370 Vol.1 (Section 4 and Appendix D). Performance objective 3.a. (3) of Chapter III of DOE Order 5820.2A requires that the annual committed effective dose equivalent received by individuals who inadvertently intrude into the facility will not exceed 100 mrem for continuous exposure or 500 mrem for a single acute exposure.
- 4) Federal and State regulations determine ground water protection requirements for the Department of Energy (Section III 3.a.(4)). Proposed LLW standards being developed by the EPA may require protection of ground water to the standard applied to public drinking water. Section III 2.a. of DOE Order 5820.2A states that the disposal of LLW shall ensure that no legacy will require future remedial action. In combination, the effect of these two requirements is that disposal facility design should provide containment of the waste so that migration of nuclides to the ground water beneath the facility will meet state and federal regulations. A mathematical model that considers waste volumes and radionuclide content, stabilization, packaging and intruder barriers, as well as site hydrology, must be used to evaluate performance of the disposal system with respect to ground water protection. An example of this type of evaluation is presented in reference 4.

- 5) If the performance objectives in the Order are not met in the performance assessment evaluation, the waste type and volume that is responsible for the failure must be identified. This waste segment may require additional protection (e.g., high integrity packaging, stabilization, engineered barriers, deeper burial), or storage to allow for radioactive decay, or processing to reduce its radioactivity content or inhibit the potential migration of critical radionuclides.
- 6) Interim reports describing accomplishments and schedule in this process should be provided to the Oversight and Peer Review Panel. As appropriate, the Panel will inform DP-12 of each site's progress. The Field Office will prepare and submit a summary report on the completed effort to the Field Office Manager and DP-12 for concurrence.

B. Waste Generation Reduction

One significant change to the Order is the recurring emphasis on waste minimization. Each major chapter now contains provisions that address the reduction of volumes of waste generated and/or the amount of radioactivity requiring disposal. These provisions align the Department's waste management practice with the letter and spirit of existing waste-related legislation, most notably, the Resource Conservation and Recovery Act as amended, and the LLW Policy Amendments Act of 1985. The combination of DOE Order 5820.2A and the RCRA regulations in particular, make waste minimization activities mandatory for DOE's radioactive, mixed, and hazardous waste. In addition, Headquarters is emphasizing waste minimization efforts to counteract the rising costs of waste disposal.

The responsibility for implementing waste reduction requirements rests both with waste generators and waste management organizations that operate treatment, storage and disposal facilities. An effective waste reduction program requires coordination between both parties since waste reduction techniques employed by the generator can significantly impact downstream activities (i.e., volume reduction treatment and disposal).

Headquarters will rely on field experience to organize and structure waste reduction programs and evaluate which combination of waste reduction techniques are the most effective for site-specific situations. Waste managers are encouraged to use current information resources (e.g., Waste Minimization Techniques compiled by the Defense LLW Management Program, guidelines on waste generation reduction published by the International Atomic Energy Agency, informal case studies) and disseminate their experiences through workshops and technical exchanges. Headquarters expects waste reduction programs to coordinate and address all types of waste generated, treated or disposed of at the individual sites.

Each site that generates radioactive waste should designate one individual to function as the site Waste Reduction Coordinator. The Waste Reduction Coordinator should report to a Site Waste Reduction Program Manager (DOE employee) who bears program implementation responsibilities

for all waste generation facilities at that site. In those cases where multiple sites report to one DOE field office, the Waste Reduction Program Manager oversees all site coordinators and attendant waste reduction activities. The Program Manager, as the head of the field organization, fulfills the responsibility for reviewing off-site waste minimization plans as cited in Paragraph 8j(4) of the Order.

Waste reduction programs are required to retain an appropriate level of documentation and accountability. The documentation of these programs should be designed to satisfy all requirements of the Waste Operations Quality Assurance Program at each field office. Once a year, the Program Manager will prepare a summary of waste reduction activities as an appendix to the site Waste Management Plan. This appendix provides status to Headquarters on waste reduction activities, program performance, and waste minimization goals and objectives. In preparing this appendix, the following outline should be used.

FORMAT

(1) Program Administration

Explain how the Site's Waste Reduction Program is structured. Include an organization chart that shows program participants and describe their relationships and interactions. Indicate how the program is documented and which organization is responsible for collecting and analyzing program data. Describe any plans to modify the program's administration.

(2) Program Description

Describe the combination of waste minimization techniques used in the various facilities and explain the relative merits of each. Highlight operating experience and successes realized during the past year. Indicate any administrative "background" radiation limits already applied in waste segregation efforts. Describe established incentive programs and explain their function and effectiveness.

(3) Program Performance

Show the performance of the Waste Reduction Program. Describe which measures are currently used by the program to gauge performance and the factors that influence these parameters.

Performance information should be presented as a trend over previous years, data for the current year, and a projection or forecast that contains waste reduction goals and objectives for the future.

In addition to the parameters already evaluated by the program, the following parameters should be presented in this section:

- Volume of waste generated/disposed.
- Radionuclide concentration of waste generated and disposed (Ci/unit volume).
- Costs for waste generation (handling, packaging, shipping) and disposal; reported as \$/unit volume and \$/Ci.

References

1. DOE/LLW-63T of 9-87, "Guidance for Conduct of Waste Management Systems Performance Assessment," Defense LLW Management Program.
2. DOE/LLW-38T Revision I of 4-88, "Draft Guidance Document for Implementation of DOE Order 5820.2A Chapter III Management of Low-Level Radioactive Waste," Defense LLW Management Program.
3. DOE/LLW-62T of 7-88, "Guidance for Radiological Performance Assessment of DOE Low-Level Radioactive Waste Disposal Sites," Defense LLW Management Program.
4. E.L. Wilhite, "Concept Development for Saltstone and Low Level Waste Disposal," Proceedings of Waste Management '87, Vol. II, p.63, 1987.
5. NUREG-0782 of 9-81, Draft Environmental Impact Statement on 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."
6. NUREG/CR-4370 of 1-86, "Update of Part 61 Impacts Analysis Methodology."

ATTACHMENT I - IMPLEMENTATION PLAN FORMAT

There are two reasons for providing an Implementation Plan format: the first is to emphasize the role of the Implementation Plan as a document that summarizes site near-term and long-range implementation of radioactive waste management policy; the second is to increase the consistency of plans system-wide. This facilitates the headquarters review process and establishes a system wide baseline status to develop funding priorities.

Clearly, not all sections of the format will apply to all sites, but maintaining the same format simplifies the review of documents and the comparison of operations throughout the DOE system. It is suggested that sites retain all the section headings in their individual plans and indicate those which do not apply. Plan identification should be clear and complete including document number, year, and date of revision.

A. Executive Summary. An executive summary is mandatory for each site implementation plan. As a rule of thumb, limit the length of the executive summary to 10 percent or less of the length of the implementation plan. Summarize major implementation impacts and accomplishments and refer the reader to the "Implementation Summary Table" (Section d).

B. General Site Information

- (1) Site Description. Include a brief description of each waste management operation's site location, size, geographic features, climate, hydrogeologic conditions and its primary mission.
- (2) Organization and Administration. Indicate DOE field organization(s) and contractor(s) responsible for managing waste treatment, storage and disposal operations; discuss approval authorities and clarify DOE/contractor interfaces. Include relationships between contractor's operations if multiple contractors are involved.
- (3) Waste Management Documentation. Show the relationship between documents that guide and support the waste management program at the site, beyond those indexed in Appendix A "Waste Management Documentation Requirements." Identify the organization responsible for maintaining current copies of all reference documents at the field office level.

C. Radioactive Waste Management. Follow the format provided below for developing sections for HLW, TRU waste, LLW, NARM and D&D wastes functional groups and activities.

- (1) Identification of Needs. Identify the needs for waste operations to achieve and maintain compliance with the Order. Categories for identified needs ~~should follow the major section headings of the Order (e.g., storage operations, waste classification, waste acceptance criteria).~~ Provide enough description about your current practices to put the identified needs into context for an off-site reader.

Regulatory Interactions. Summarize interactions with state and federal regulatory agencies. Include a listing of outstanding issues, plans for resolution of issues and the status of all actions required to resolve regulatory issues. Update status annually in Section C. (3) of the Waste Management Plan.

Current Plans. Briefly describe the proposed corrections (e.g., waste characterization funding, replacement of monitoring equipment, schedule for development of radiological performance assessment).

- (2) **Cost and Schedule.** Give the estimated costs and schedules for the correction of non-compliances.

D. Implementation Summary Table. Summarize site compliance with the Order. The components are the same as in Section C (i.e., provision, actual practice, current plans and cost and schedules) and can be highly abbreviated. See ATTACHMENT II for an example format of an Implementation Status table. The summary will be updated in the annual WMP and carried over as "implementation Status" (section 3.c.(3)). At a minimum, all non-compliance and partial-compliance provisions should be included in the table. In the past, sites have adopted the approach of documenting compliance by describing current site practice on a provision-by-provision basis. Sites will continue to determine compliance status by addressing each provision, but due to the expansion of the Order, the documentation of compliance efforts should focus on addressing partial and non-compliance areas.

APPENDIX A. WASTE MANAGEMENT DOCUMENTATION REQUIREMENTS

Discussion. This appendix to the Implementation Plan addresses the principal documentation requirements as identified in DOE Order 5820.2A. It is identical to Attachment VI-1 of the Order, and will be updated and included in the FY 89 Waste Management Plan. Sites are required to list and describe, where appropriate, the waste management documentation indicated below. Each of the following paragraphs refers to specific sections of this Order that require the preparation of waste management documentation. Reporting is limited to documents issued in the previous fiscal year, unless the most recent revision of an existing document was issued earlier. Where possible, this Appendix should retain a standard bibliographical format.

(1) Chapter I - High-Level Waste.

- (a) Paragraph 3a.** List titles and dates of issue of Safety Analysis Reports. Forecast schedule for preparation and issue date of planned Safety Analysis Reports.
- (b) Paragraph 3b(3)(c).** List titles and dates of documents supporting the periodic assessment of waste storage tank integrity.
- (c) Paragraph 3b(4).** Cite documentation of contingency actions of the past year. List schedule for completion of corrective actions.

(2) Chapter II - Transuranic Waste.

- (a) Paragraph 3c(3).** Cite the Transuranic Waste Certification Plan and dates of issue. If not issued, give schedule for preparation.
- (b) Paragraph 3g(2)(h).** Cite the closure plan for interim storage facilities. If not issued, give schedule for preparation.
- (c) Paragraph 3i.** Index major documentation developed under the Buried Transuranic - Contaminated Waste Program. Show schedule for preparation of documents in the current fiscal year.

(3) Chapter III - Low-Level Waste.

- (a) Paragraph 3b(1).** Cite documentation of radiological performance assessment of disposal facilities. If not issued, provide schedule for preparation in Section c(3) of the Waste Management Plan.
- (b) Paragraph 3e(1).** Cite Waste Acceptance Criteria for each low-level waste treatment, storage and disposal facility. List anticipated additions to this list for the current fiscal year.
- (c) Paragraph 3e(3).** Report the status of audits of certification activities by operators of disposal facilities. Report status of follow-up reports.
- (d) Paragraph 3g(2).** List document(s) forecasting waste to be shipped by generators to off-site disposal facilities.

- (e) Paragraph 3i(4)(d). List reports justifying on-site disposal of waste exceeding Class C limits. Such disposal cases anticipated for the next year should be forecast.
 - (f) Paragraph 3i(8). Cite major National Environmental Policy Act documentation (e.g., Environmental Impact Statement, Environmental Assessment) supporting selection of any new disposal sites. Give schedule of preparation for appropriate documentation for the next year.
 - (g) Paragraph 3j(1). Cite closure plans for low-level waste disposal sites and dates of issue. Give schedule of preparation for anticipated reports.
- (4) Chapter V - Decommissioning of Radioactively Contaminated Facilities.
- (a) Paragraphs 3a(1). Cite field organization documentation where the complete listing and the jurisdictional program responsibility for all contaminated facilities is recorded.
 - (b) Paragraph 3c(1). Cite the post-operational documentation that records the potential for reuse and recovery of materials and equipment and the schedule for decommissioning contaminated facilities.
 - (c) Paragraph 3d(3). List Decommissioning Project Plans and date of issue. Show schedule for preparation of Plans in the current fiscal year.
 - (d) Paragraph 3d(5). List final radiological and chemical survey reports and project final reports, and show dates of issue. Show anticipated additions to this list for the coming year.

ATTACHMENT II - EXAMPLE IMPLEMENTATION SUMMARY TABLE

EXAMPLE IMPLEMENTATION SUMMARY TABLE

DOE 5820.2A Requirement	Actual Practice	Current Plans	Estimated Cost and Completion Date	
Chapter III 3 I (4) Buried TRU Contaminated Waste	Buried waste is periodically monitored. Waste characterization program being developed. Site closure plan not in place.	Closure strategy contingent upon further analysis of waste characterization data. Waste migration studies currently planned; will need to install RCRA ground water monitoring wells.	Characterization Program	cost date
Chapter III 3 c (1) Waste Reduction	LLW Generation Reduction program not developed to an auditable stage.	Plan to coordinate with generators to establish goals and incentives to implement waste reduction techniques.	Waste Generation Reduction Program	cost date
Chapter III 3 b (1) Radiological Performance Assessment	Performance Assessment not developed for active disposal sites. Waste characterization data currently being accumulated.	Perform P.A. in three phases: I. II. III.	Phase I Phase II Phase III	cost date cost date cost date