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# Implementation Plan for DOE Order 435.1

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Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the  
U.S. Department of Energy under Contract DE-AC06-96RL13200

**Fluor Hanford**

P.O. Box 1000

Richland, Washington

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Fluor Hanford, Inc.

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## GLOSSARY

ALARA	as low as reasonably achievable
BHI	Bechtel Hanford, Incorporated
CERCLA	<i>Comprehensive Environmental Response, Compensation and Liability Act of 1980</i>
CO	company
CRD	contractor requirements document
CSB	Canister Storage Building
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DynCorp	DynCorp Tri-Cities Services, Inc.
ERDF	Environmental Restoration Disposal Facility
ETF	200 Area Effluent Treatment Facility
FAR	federal acquisition regulation
FFTF	Fast Flux Test Facility
FH	Fluor Hanford
HIC	high integrity container
HNF	Hanford Nuclear Facility (document identifier)
INEEL	Idaho National Environmental Engineering Laboratory
IP	implementation plan
LDR	land disposal restrictions
LERF	Liquid Effluent Retention Facility
LLBG	Low-Level Burial Grounds
LWPF	Liquid Waste Processing Facilities
MYPP	multi-year program plan
PFP	Plutonium Finishing Plant
PNNL	Pacific Northwest National Laboratory
PUREX	plutonium-uranium extraction
RCP	River Corridor Project
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RWMB	radioactive waste management basis
SNF	spent nuclear fuel
S/RID	standards/requirements identification document
TA	technical authority
Tri-Party Agreement	<i>Hanford Federal Facility and Consent Order</i>
TRUPACT	transuranic package transporter
TSD	treatment, storage, and/or disposal

WESF	Waste Encapsulation and Storage Facility
WMP	Waste Management Project
WRAP	Waste Receiving and Processing Facility

The following definitions are from DOE Manual 435.1.

1. **AUTHORIZATION BASIS.** Those aspects of the facility design basis and operational requirements relied upon by DOE to authorize operation. They are considered to be important to the safety of the facility operations. The authorization basis is described in documents such as the facility Safety Analysis Report and other safety analysis; Hazard Classification Documents, Technical Safety Requirements, DOE-issued safety evaluation reports, and facility-specific commitments made in order to comply with DOE Orders or policies. [Adapted from: DOE Glossary, DOE 5480.21 and DOE 5480.23]
2. **BYPRODUCT MATERIAL.** (1) Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. [Source: Atomic Energy Act of 1954, as amended, section 11(e)]
3. **CANISTERED WASTE FORM.** High-level waste form in a sealed canister. [Source: EM-WAPS, DOE/EM-0093]
4. **CLOSURE.** Deactivation and stabilization of a radioactive waste facility intended for long-term confinement of waste. [No other source of definition identified]
5. **COMPOSITE ANALYSIS.** An analysis that accounts for all sources of radioactive material that may contribute to the long-term dose projected to a hypothetical member of the public from an active or planned low-level waste disposal facility. The analysis is a planning tool intended to provide a reasonable expectation that current low-level waste disposal activities will not result in the need for future corrective or remedial actions to ensure protection of the public and the environment. [Adapted from: Revised Interim DOE Policy on Management Direction and Oversight of Low-Level Radioactive Waste Management Disposal]
6. **CONFINEMENT.** The control or retention of radioactive materials within a designated boundary. Primary confinements are process enclosures and other spaces normally containing radioactive material. Secondary confinement surrounds one or more primary confinement systems. [Adapted from: DOE 6430.1A]
7. **CONTAINER.** See WASTE CONTAINER.
8. **DEACTIVATED HIGH-LEVEL WASTE FACILITY.** A high-level waste facility that has been put into a stable condition through the removal of readily retrievable hazardous and radioactive materials to protect the worker, public health and safety, and the environment, thereby limiting the long-term cost of surveillance and maintenance. A facility in a deactivated status has not had all necessary decontamination performed, e.g., removal of contamination remaining in fixed structures and equipment after deactivation. [Adapted from: DOE O 430.1A]
9. **DEFENSE-IN-DEPTH.** The practice of using physical systems and administrative systems in a structure of mutual reinforcement to avoid exposure of the public, the workforce, and the environment to nuclear radiation and to radioactive materials. [Source: DNFSB/TECH-6]

10. **DEPARTMENTAL ELEMENTS.** First-tier organizations at Headquarters and in the Field. First-tier at Headquarters is the Secretary, Deputy Secretary, Under Secretary, and Secretarial Officers (Assistant Secretaries and Staff Office Directors). First-tier in the Field is Managers of the eight Operations Offices, Managers of the three Field Offices, and the Administrators of the Power Marketing Administrations. Headquarters and Field Elements are described as follows: (1) Headquarters Elements are DOE organizations located in the Washington, DC, Metropolitan Area; and (2) Field Elements is a general term for all DOE sites (excluding individual duty stations) located outside of the Washington, DC, Metropolitan Area. [Source: DOE Glossary]
11. **DESIGN BASIS.** Information that identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or range of values chosen for controlling parameters as reference bounds of design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or (2) requirements derived from analyses (based on calculations and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals. [Adapted from: 10 CFR Part 50]
12. **DISPOSAL.** Emplacement of waste in a manner that ensures protection of the public, workers, and the environment with no intent of retrieval and that requires deliberate action to regain access to the waste. [Adapted from: DOE 5820.2A]
13. **DISPOSAL AUTHORIZATION STATEMENT.** Documentation authorizing operation (or continued operation) of a low-level waste disposal facility resulting from the DOE Headquarters review and acceptance of the facility's performance assessment, composite analysis, and other information and evaluations. The disposal authorization statement constitutes approval of the performance assessment and composite analysis, authorizes operation of the facility, and includes conditions the disposal facility must meet. [Adapted from: Revised Interim DOE Policy Management Direction and Oversight of Low-Level Radioactive Waste Management and Disposal]
14. **DISPOSITION.** Those activities that follow generation of a waste and which constitute completion of the life cycle of management of the waste, including, but not limited to, stabilization, deactivation, disposal, decommissioning, dismantlement, and/or reuse. [Adapted from: DOE O 430.1]
15. **EFFLUENT.** Any treated or untreated air emission or liquid discharge at a DOE site or from a DOE facility. [Source: DOE 5400.1]
16. **FACILITY.** See RADIOACTIVE WASTE MANAGEMENT FACILITY.
17. **FIELD ELEMENT.** See DEPARTMENTAL ELEMENTS.
18. **FIELD ELEMENT MANAGER.** See DEPARTMENTAL ELEMENTS.
19. **GENERATOR.** Organizations within DOE or managed by DOE whose act or process produces radioactive waste or, for the purposes of the generator requirements in this Order and Manual, transfer radioactive waste to a treatment, storage, or disposal facility. [Adapted from: 40 CFR Part 270]
20. **GRADED APPROACH.** A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with (1) the relative importance to safety, safeguards, and security; (2) the magnitude of any hazard involved; (3) the life cycle stage of a facility; (4) the programmatic mission of a facility; (5) the particular characteristics of a facility; and (6) any other relevant factor. [Source: 10 CFR 830.3]

21. **HAZARD.** A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to an operation or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation). [Source: DOE M 411.1-1]
22. **HIGH-LEVEL WASTE.** High-level waste is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. [Adapted from: Nuclear Waste Policy Act of 1982, as amended]
23. **LESSONS LEARNED.** The process for communicating a "good work practice" or innovative approach that should be implemented or an adverse work practice or experience that should be avoided. [Adapted from: DOE M 232.1-1A]
24. **LIFE CYCLE.** The life of a waste from generator planning through generation, storage, treatment, and disposal. [Adapted from: DOE O 430.1A]
25. **LOW-LEVEL WASTE.** Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e.(2) of the Atomic Energy Act of 1954, as amended), or naturally occurring radioactive material. [Adapted from: Nuclear Waste Policy Act of 1982, as amended]
26. **MAINTENANCE.** Day-to-day work, including preventive and predictive maintenance, that is required to maintain and preserve plant and capital equipment in a condition suitable for it to be used for its designated purpose. [Source: DOE O 430.1A]
27. **MIXED WASTE.** Waste that contains both source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component subject to the Resource Conservation and Recovery Act. [Adapted from: Federal Facility Compliance Act of 1992]
28. **NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM).** Naturally occurring materials not regulated under the Atomic Energy Act of 1954, as amended whose composition, radionuclide concentrations, availability, or proximity to man have been increased by or as a result of human practices. NORM does not include the natural radioactivity of rocks or soils, or background radiation. [Adapted from: January 1997 Draft Part N, Regulation and Licensing of Naturally Occurring Radioactive Material, Conference of Radiation Control Program Directors, Inc.]
29. **NEAR SURFACE DISPOSAL.** Disposal of radioactive waste on or near the earth's surface. The term encompasses a wide range of methods, including disposal in earthen trenches several meters deep, disposal in engineered structures constructed on or below the surface, and disposal in structures or rock caverns tens of meters below the earth's surface. Near surface disposal does not include disposal in a deep geologic repository. [Adapted from: IAEA Safety Standard No. 111-S-3]
30. **NECESSARY AND SUFFICIENT PROCESS.** The sets of standards which are the product of the "Necessary and Sufficient Process" of DOE M 450.3-1. That process establishes the sets of agreed upon standards to ensure adequate protection of the safety and health of workers and the public and the protection of the environment against the hazards associated with performing the work of the Department of Energy. [Adapted from: DOE G 450.3-1]
31. **OVERSIGHT.** The responsibility and authority assigned to line management to assess the adequacy of DOE and contractor performance. Independent Oversight refers to the responsibility and authority

assigned to the Assistant Secretary for Environment, Safety and Health to independently assess the adequacy of DOE and contractor performance. [Adapted from: DOE M 411.1-1]

32. **PERFORMANCE ASSESSMENT.** An analysis of a radioactive waste disposal facility conducted to demonstrate there is a reasonable expectation that performance objectives established for the long-term protection of the public and the environment will not be exceeded following closure of the facility. [Adapted from: DOE 5820.2A]
33. **PROGRAM SECRETARIAL OFFICER.** Head of a Departmental Element who has responsibility for a specific program or facility(ies). These include the Assistant Secretaries for Defense Programs, Energy Efficiency and Renewable Energy, Environmental Management, and Fossil Energy; and the Directors of the Offices of Civilian Radioactive Waste Management, Science, and Nuclear Energy; and (2) a Cognizant Secretarial Officer is a DOE official at the Assistant Secretary level who is responsible for the assignment of work, the institutional overview of any type of facility, or both, and the management oversight of a laboratory. [Source: DOE M 232.1-1A]
34. **RADIOACTIVE MIXED WASTE.** See MIXED WASTE.
35. **RADIOACTIVE WASTE.** Any garbage, refuse, sludges, and other discarded material, including solid, liquid, semisolid, or contained gaseous material that must be managed for its radioactive content. [Adapted from: 40 CFR Part 240]
36. **RADIOACTIVE WASTE MANAGEMENT BASIS.** The radioactive waste management controls applied to DOE facilities, operations, and activities to provide near- and long-term protection of public, workers, and the environment. The radioactive waste management basis consists of controls and analyses such as facility waste certification programs, facility waste acceptance requirements, low-level waste disposal facility closure plans, performance assessments, composite analyses, and other facility-specific processes, procedures, and analyses made to comply with DOE O 435.1 and its Manual. [No other source of definition identified]
37. **RADIOACTIVE WASTE MANAGEMENT FACILITY/OPERATIONS/ACTIVITIES.** All land, structures, other appurtenances, and improvements on the land which generate, treat, store, or dispose of radioactive waste, and the operations and activities associated therewith. [Adapted from: DOE 5820.2A]
38. **RECORD.** A completed document or other medium that provides objective evidence of an item, service, or process. [Source: 10 CFR 830.3]
39. **RELEASE.** Any discharging, dumping, emitting, emptying, escaping, injecting, leaching, leaking, pouring, pumping, spilling of radioactive substances into the environment including abandoning any type of receptacle containing radioactive substances, but does not include disposal in a permitted disposal facility. [Adapted from: DOE Glossary]
40. **RELEASE OF WASTE.** The exercising of DOE's authority to release property that has been declared waste from its control after confirming that residual radioactive material on the waste has been determined to meet the guidelines for residual radioactive material in accordance with DOE 5400.5, Radiation Protection of the Public and the Environment, and other applicable radiological requirements. [Adapted from: DOE 5400.5]
41. **SITE.** A geographic entity comprising leased or owned land, buildings, and other structures required to perform program activities. [Source: DOE O 430.1A]

42. **SOURCE MATERIAL.** (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of (i) uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material. [Source: 10 CFR Part 40]
43. **SPECIAL NUCLEAR MATERIAL.** (1) Plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which is determined, pursuant to the provisions of section 51 [of the Atomic Energy Act of 1954, as amended], to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material. [Source: Atomic Energy Act of 1954, as amended]
44. **SPENT NUCLEAR FUEL.** Fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. Test specimens of fissionable material irradiated for research and development only, and not production of power or plutonium, may be classified as waste, and managed in accordance with the requirements of this Order when it is technically infeasible, cost prohibitive, or would increase worker exposure to separate the remaining test specimens from other contaminated material. [Adapted from: DOE 5820.2A]
45. **STAGING.** Storing waste for the purpose of accumulation to facilitate transportation transfer, treatment and/or disposal. [Adapted from: Surplus Plutonium Disposition Draft Environmental Impact Statement, July 1998]
46. **STORAGE.** The holding of radioactive waste for a temporary period, at the end of which the waste is treated, disposed of, or stored elsewhere. [Adapted from: 40 CFR Part 260]
47. **STORAGE FOR DECAY.** Storage of radioactive waste for a period of time sufficient for radionuclide(s) of concern to be reduced in concentration, by radioactive decay, to a level of lower concern. [Source: DOE 5820.2A]
48. **SYSTEMS ENGINEERING.** A total systematic approach for the development of systems in response to a defined need. It involves a comprehensive, structured and disciplined approach to all life-cycle phases. Systems Engineering employs a multi-discipline team to iteratively define and refine solutions to problems throughout the system life cycle. Preferred alternatives are selected based on cost, schedule, performance and risk. Management of risk is integral to the process. Progressive verification, from individual components up through the total system, is required. [Source: EIA-632, Systems Engineering]
49. **TRANSURANIC WASTE.** Transuranic waste is radioactive waste containing more than 100 nanocuries (3700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61. [Source: WIPP Land Withdrawal Act of 1992, as amended]
50. **TREATMENT.** Any method, technique, or process designed to change the physical or chemical character of waste to render it: less hazardous; safer to transport, store, or dispose of; or reduce its volume. [Source: DOE 5820.2A]

51. **WASTE ACCEPTANCE CRITERIA (WAC).** Waste acceptance criteria are the technical and administrative requirements that a waste must meet in order for it to be accepted at a storage, treatment, or disposal facility. [Adapted from: DOE 5820.2A]
52. **WASTE ACCEPTANCE REQUIREMENTS.** Waste acceptance requirements are waste acceptance criteria, and all other requirements that a facility receiving radioactive waste for storage, treatment, or disposal must meet to receive waste (e.g., waste acceptance program requirements, receiving facility operations manual). [Adapted from: DOE O 5820.2A]
53. **WASTE CHARACTERIZATION.** The identification of waste composition and properties, by review of acceptable knowledge (which includes process knowledge), or by nondestructive examination, nondestructive assay, or sampling and analysis, to comply with applicable storage, treatment, handling, transportation, and disposal requirements. [Adapted from: DOE Glossary ("Characterization" definition) and Federal Register, Vol. 62, No. 224]
54. **WASTE CERTIFICATION.** A process by which a waste generator affirms that a given waste or waste stream meets the waste acceptance criteria of the facility to which the generator intends to transfer waste for treatment, storage, or disposal. [Adapted from: DOE 5820.2A]
55. **WASTE CONTAINER.** A receptacle for waste, including any liner, shielding, or material that is intended to accompany the waste in disposal. [Adapted from: DOE 5820.2A]
56. **WASTE MANAGEMENT.** The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities. [Source: DOE 5820.2A]
57. **WASTE STREAM.** A waste or group of wastes from a process or a facility with similar physical, chemical, or radiological properties. [Adapted from: DOE 5820.2A]

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## SUMMARY

The U.S. Department of Energy issued U.S. Department of Energy Order 435.1, *Radioactive Waste Management*, and U.S. Department of Energy Manual 435.1, *Radioactive Waste Management Manual*, on July 9, 1999, to replace U.S. Department of Energy Order 5820.2A. Compliance is required by July 9, 2000, where compliance is defined as "implementing the requirements, or an approved implementation, or corrective action plan".

This implementation plan identifies the status of each requirement for Hanford Site contractors, and provides the plan, cost, and time for achieving full implementation.

The U.S. Department of Energy, Richland Operations Office contractors (Fluor Hanford, Incorporated, DynCorp Tri-Cities Services, Bechtel Hanford, Inc., and Pacific Northwest National Laboratory) conducted a line-by-line review of DOE Order 435.1 and associated manuals to determine which requirements were new, and which requirements already are used for compliance with DOE Order 5820.2A or other requirements. The *Gap Analysis for DOE Order 435.1* (HNF-5465) identified compliance gaps, along with other issues that would impact efforts for achieving compliance. The gap analysis also contained a series of assumptions made by the various projects in determining compliance status. The details and section-by-section analysis are contained in Appendix A.

Some of the DOE Order 435.1 requirements invoke sections of other DOE Orders not incorporated in various U.S. Department of Energy, Richland Operations Office contracts. Those additional DOE Orders are identified by contractor and will be left for evaluation in accordance with each contractor's requirements. No attempt was made to evaluate all of those orders at this time, although in many cases, contractors follow a similar older DOE Order, which is cited.

In some areas, the interpretation of the requirement is not clear, so clarifying assumptions have been made to assist U.S. Department of Energy, Richland Operations Office in understanding the path forward planning basis. The assumptions and interpretations form the basis for the compliance gap analysis, as well as for the implementation plan itself as noted in Section 2.2. In some cases, the interpretation is essentially an exemption from a requirement, with the basis stated and justified. Some of the critical items in this area relate to the following:

1. Pre-existing waste
2. Staging and storage
3. Exemption of *Comprehensive Environmental Response, Compensation and Liability Act of 1980* remediation areas
4. Contingency and confinement requirements for old facilities.
5. Siting and design requirement exemption for limited-lifetime facilities
6. Waste with no identified path to disposal
7. Characterization, packaging, storage, certification, and monitoring requirements that might not satisfy the letter of DOE Order 435.1 but are justified fully in related safety, environmental, or monitoring documents.

Review of DOE Order 435.1 showed that a major change in management philosophy has occurred since the issuance of DOE Order 5820.2A. Most authority and responsibility has been delegated to DOE Element managers, who now will have approval authority for many actions, subject to the broad requirements of the DOE Order 435.1, Manual, and guidance. The requirements lean heavily on the systematic identification of activities and processes to manage the waste over the entire life cycle, with final disposal as the driving objective. In fact, generation of new waste with no identified path to final disposal is prohibited. Characterization and acceptance criteria have a much larger role, and far more detail is expected. The overall disposal process continues to be focused on results of the performance assessment to ensure that future populations are protected to the level of the performance objectives.

Substantial costs will be incurred to fully implement the Order. Those costs are summarized in the main text and detailed in the Appendix. Total cost is estimated to be \$2.8 million.

## 1.0 INTRODUCTION

The U.S. Department of Energy (DOE) issued DOE Order 435.1, *Radioactive Waste Management* and DOE Manual 435.1, the *Radioactive Waste Management Manual*, on July 9, 1999, to replace DOE Order 5820.2A, *Radioactive Waste Management*. Compliance is required by July 9, 2000, where compliance is defined as "implementing the requirements, or an approved implementation or corrective action plan" (DOE M 435.1). The DOE, Richland Operations Office (DOE-RL) requested contractors to prepare impact assessments and related information necessary to provide an implementation plan (IP). Fluor Hanford (FH) was assigned the lead to coordinate a gap analysis to determine requirements already met by existing operations. Based on the impact assessment, FH also was requested to identify cost and operational changes needed to accomplish full compliance, and to prepare an IP for approval by DOE-RL by May 15, 2000. This IP is for Hanford Site contractors FH, DynCorp Tri-Cities Services, Inc.(DynCorp), Bechtel Hanford, Inc. (BHI), and Pacific Northwest National Laboratory (PNNL).

A gap analysis (HNF-5645) identified requirements not already met by DOE-RL contractors. For each entry with a gap, a short statement of the need or issue was provided. In cases where there were differences among the contractors' status, the contractor or facility was identified. Contractors prepared plans, schedules, and costs to implement the Order.

The major portion of this IP is the compliance analysis, which is provided in tabular form in Appendix A. The first column cites the section of the Order by number, while the second column is the complete text of that section. The third column is the compliance status identified during the gap analysis, such that 'no gap' means full compliance. The fourth column contains the plan and schedule for compliance, and the last column is the estimated cost. Responses could be divided further by major project or contractors.

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## 2.0 DISCUSSION

Responses for FH can include projects, including FH-WMP (waste management and analytical services project), PFP (Plutonium Finishing Plant), FFTF (Fast Flux Test Facility), SNF (spent nuclear fuel - stored in K-Basins), and RCP (River Corridor Project). Responses could be divided further for applicability to specific facilities, or groups of facilities, such as B Plant Complex, Canister Storage Building, 324 and 327 Buildings, LLBG (Low-Level Burial Grounds), WESF (Waste Encapsulation and Storage Facility), T Plant Complex, CWC (Central Waste Complex), WRAP (Waste Receiving and Processing Facility), PUREX Storage Tunnels, 242-A Evaporator, and others as noted. RCP manages a variety of facilities, including the 324/327 Buildings, 310/340 Buildings, and several accelerated deactivation facilities in the 200 and 300 Areas. Responses from other contractors are referred to as BHI for the environmental restoration programs, PNNL for the laboratory programs, and DynCorp for site services. The responses are combined in Appendix A, indexed according to the Manual citation number.

### 2.1 DOE ORDERS NOT IN ALL CONTRACTS

The compliance analysis noted that some DOE Orders cited as required by DOE Order 435.1 are not in all current contracts. The status for the three major contractors (FH, BHI, and PNNL) is given in Table 2-1 for Orders and directives cited in DOE Order 435.1. Standards also are included for completeness, although those Standards are considered to be guidance, rather than mandatory. Some of the directives apply to DOE, rather than to contractors as noted. Compliance with those Orders has not been evaluated at this time. An evaluation of compliance with those Orders will be made at the time the Orders are added to the existing contracts. The evaluation is not straightforward, because some contractors, which were previously under separate contracts, had differing sets of applicable Orders in their contracts. Those contracts recently have been combined under the FH management contract, so in principle the sets of Orders apply to all current FH activities. In the Appendix, the 'Status' column notes where there could be Orders cited that are not in all current contracts. In some cases, compliance is cited with existing Orders, which satisfy most of the requirements.

An additional temporary complication is that several FH facilities operate under Standards/Requirements Identification Documents (S/RIDs), which form the authorized safety basis for the facilities, and thus could exempt such facilities from later added Orders until the S/RIDs receive annual revision. The S/RIDs currently in effect are for FH-WMP, PFP, FFTF, WESF, SNF/Canister Storage Building (CSB)/K-Basins, and 324/327 Buildings. Any variability will be resolved over the next few months as the S/RIDs are revised.

### 2.2 BASIS, ASSUMPTIONS, AND INTERPRETATIONS

1. Approaches for dealing with waste pre-existing to implementation of DOE Order 435.1 include the following:
  - Low-level waste pre-existing to implementation of DOE Order 435.1 storage or staging clock requirements [IV N(2) and (7)] will be dispositioned in accordance to regulatory requirements, Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) and consent orders, and as funding is applied to the activity per the multi-year program plan (MYPP), or waste will be managed compliant with clock limits. A Tri-Party Agreement milestone is an example of work planning.

- Waste pre-existing to implementation of DOE Order 435.1 waste planning, characterization, certification, and packaging requirements [II K, L, M, and O; III, IV H, I, J, and L; and IV N (4)] will be accepted or remain accepted if already received for treatment, storage, or disposal (TSD) under DOE Order 5820.2A requirements. No action will be taken to comply with DOE Order 435.1 until the waste proceeds to the next step in management and the activity is required to meet the waste acceptance criteria of the receiving facility. For example, a mixed waste in storage at CWC before DOE Order 435.1 implementation must meet the acceptance criteria for the LLBG at the time of disposal but does not require evaluation or rework to comply with DOE Order 435.1 requirements for continued storage at CWC. Pre-existing waste will be prepared for disposal as funding allows.
2. Approaches for dealing with identification of the point of generation and staging of newly generated low-level waste include the following:
    - Radioactive material and radioactively contaminated material and equipment that are out of service or not being used are considered waste when processed in preparation for TSD. Processing typically involves placement of waste into a container for transport. For example, the processing vessels located in the T Plant Complex cells were flushed and do not contain waste; the vessels are stored as radioactive material and are not waste until action is taken to process the material for disposition as waste.
    - The 90-day clock for staging of newly generated post-DOE Order 435.1 low-level waste [IV N(7)] will be implemented as per Section 2.2.2.
    - The 90-day staging clock for newly generated waste could be extended beyond 90 days with documentation of DOE-RL approval. An extension request should be provided to DOE-RL and include the justification and the length of the extension.
  3. Approaches for dealing with the low-level waste TSD facility staging 90-day clock for waste staging [IV N(7)] pending acceptance or burial will correspond with requirements applied in accordance with the *Resource Conservation and Recovery Act (RCRA) of 1976* permit conditions include the following:
    - Waste will be received and staged for no more than 90 days until the waste is accepted for treatment or storage or placed for disposal at the LLBG
    - The 90-day staging clock for TSD staged waste could be extended beyond 90 days with documentation of DOE-RL approval. An extension request should be provided to DOE-RL and include the justification and the length of the extension.
    - The staging clock for placement of waste into high integrity containers (HICs) at the LLBG will be 1 year. A longer staging clock is necessary to allow the collection of enough category 3 waste to campaign the HICs emplacement in a cost-effective manner.
  4. Approaches for dealing with the application of the 1 year limit for low-level waste storage [IV N(2)] include the following:
    - The storage limit clock will start when the waste is accepted for storage. The acceptance for storage process will correspond with requirements applied in accordance with applicable RCRA permit conditions. The clock will end at the point that the waste is placed in transport to be treated or disposed. The clock is maintained if the waste is sent to another location for the purpose of storage. After treatment, if the treated waste is placed into storage, a new clock start date will be established.

Waste sent from storage for treatment or disposal will be staged until the activity occurs in accordance with the applicable RCRA permit.

- The low-level waste storage limit could be extended beyond 1 year with documentation of DOE-RL approval. An extension request should be provided to DOE-RL and include the justification and the length of the extension.
  - The Liquid Waste Processing Facilities (LWPF) will not comply with the low-level waste 1 year storage limit or maintain a clock on waste solutions stored in the Liquid Effluent Retention Facility (LERF). The LERF is used to accumulate and blend waste ranging from several hundreds of gallons to 50 gallons per minute continuous feed streams. Waste in LERF is treated at 200 Area Effluent Treatment Facility (ETF) in campaigns that process millions of gallons and last several months. Programmatic issues require blending and storage of some waste solutions for longer than the 1 year limit.
  - The low-level waste stored in the CWC will be stored for the length of time necessary to disposition the waste in accordance to regulatory requirements, Tri-Party Agreement, and consent orders, and as funding is applied to the activity per the MYPP.
5. The existing exemption for use of non-DOE waste treatment provided by DOE-RL to the contractor complies with DOE Order 435.1 requirements [I 2.F(4)]. The exemption, letter 97-SWT-079 dated March 10, 1997, covers the Allied Technology Group (ATG) nonthermal mixed waste treatment contract.
  6. Mixed waste will be managed in accordance with a new Hanford Site mixed waste management program, which incorporates compliance with the land disposal restrictions (LDR) imposed by federal and state requirements. The program is described in the annual LDR report, to be issued July 31, 2000, which will include the mixed waste program implementation plan, as well as a progress report and the year 2000 LDR report.
  7. For activities conducted under *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980*, it is assumed that the Record of Decision is the controlling document, such that the requirements of DOE Order 435.1 do not apply within the CERCLA remediation boundary. Removal or remediation actions at CERCLA waste sites do not constitute a new activity. These sites are not waste management facilities (in the sense of DOE Order 435.1) and their excavation does not constitute generation or management of waste. The activities of collection, remediation, recovery, digging, etc., of waste material is not a new activity and does not constitute disposal of the material, so the disposal requirements of DOE Order 435.1 do not apply. The new or existing activity is the operation of the receiving facility Environmental Restoration Disposal Facility (ERDF), which is subject to the substantive requirements of DOE Order 435.1. For this IP, the only waste management facility operated by BHI is ERDF.
  8. The 'waste incidental to reprocessing' evaluation process requires a 'necessary and sufficient' determination that management as non-high-level waste adequately is protected. A RCRA permit, where applicable, might be deemed to satisfy this process.
  9. Mixed low-level waste managed under CERCLA will be subject only to the substantive requirements of RCRA and *Toxic Substances Control Act (TSCA)*.
  10. Approaches dealing with segregation of mixed waste from low-level waste [IV N(6)] at PUREX Storage Tunnels and LWFP include the following:

- PUREX Storage Tunnels will implement the segregation requirement at the time of waste retrieval. Segregation of waste stored in the PUREX Storage Tunnels is not in accordance with as low as reasonably achievable (ALARA) principles. The existing storage configuration is compliant with RCRA permit conditions and the safety basis, including exemption from inspection requirements.
  - LWPF will not implement the segregation requirement for waste solutions in the LERF basins. LERF is used to blend various types of waste for treatment at the 200 Area ETF. The waste undergoes the same treatment and discharge whether it is low-level or mixed waste.
11. The quality assurance requirements for high-level waste found in Chapter II, Section G and Record Keeping Requirements [I E(14)] apply to the final waste form for disposal at the national repository, not the high-level waste stored or treated at the following facilities: 242-A Evaporator, WESF, and PUREX Storage Tunnels. The treatment or storage of high-level waste at these facilities do not affect the final waste form and acceptance of high-level waste at the national repository.
  12. PUREX Storage Tunnels, 183-KW vault, and WESF comply with contingency action (II H, III, and IV E) and confinement systems [II Q(1)] requirements with existing facility and storage configurations. The WESF pool design and operation provide adequate contingency for ruptured capsules and confinement via pools in case of emergencies. The WESF RCRA permit requirements are being developed and will include measures for compliance with contingency actions and confinement systems. PUREX Storage Tunnels design, RCRA permit conditions, and safety basis provide adequate contingency and confinement. The 183-KW vault design and safety basis provide adequate contingency.
  13. Inspection of containers of stored waste [III N(3) and IV N(5)] will not occur at the 183-KW vault or PUREX Storage Tunnels. Inspection in these situations is not in accordance with ALARA principles. Storage is compliant without inspection under the safety basis and PUREX Storage Tunnels permit conditions.
  14. Waste generated and treated or stored at the facility of generation will employ a graded approach in applying treatment and storage requirements found in DOE Order 435.1. The waste acceptance, waste transfer, and waste certification requirements of the manual (II J, M, and N; III; and IV G, J, and K) will be implemented appropriately through facility operating procedures developed in compliance with the facility safety basis to govern these operations. Using the graded approach, a high level of documentation formality is not necessary when waste treated or stored does not change organization or facility control.
  15. The River Protection Project high-level waste sitewide radioactive waste program as documented in TWRS Systems Engineering Management Plan, HNF-SD-WM-SEMP-002, Rev. 1, includes WESF and 242-A Evaporator in compliance with requirements of Chapter II E.
  16. Waste currently received for TSD derived from high-level waste will be evaluated, per the process of Chapter II B, to be Incidental to Reprocessing. The evaluation process and subsequent waste classification will be accomplished before determining the disposition path.
  17. WESF stores high-level waste and PUREX Storage Tunnels and 183-KW vault store multiple waste types but will not transfer these waste types out of the facilities until some future time. The waste acceptance, waste transfer, and waste certification requirements of the DOE M 435.1 (II J, M, and N; III; and IV G, J, and K) will be implemented at the time these waste types are transferred from these facilities in compliance with applicable regulatory requirements.

18. Compliance with facility design [II P; III; and IV M(2)] and packaging [III L(1)(a) and (d) and IV L(1)(a) and (c)] requirements are accomplished by the implementation of the facility safety basis and permit conditions if appropriate. The safety basis documentation and permits, if appropriate, will be referenced in the radioactive waste management basis (RWMB) and serve as the document(s) identifying the design and packaging requirements necessary for safe operation, the requirements stated in the manual notwithstanding.
19. The impact of actions taken by DOE to comply with Chapter I Sections 2A through F cannot be determined at this time.
20. Existing earthen covered retrievably stored transuranic waste [III N(4)] does not invoke waste storage, design, packaging, and monitoring requirements [III Q, N, L(1), and M(2)]. It is not practical or in accordance with ALARA to impose these requirements given the storage configuration.
21. A no path forward waste is one without a route to and/or not possessing a final disposal facility, including either existing facilities or new facility construction that is a line item on the Congressional budget. Those waste types determined to be without a path forward are: non-defense related transuranic, TSCA-regulated transuranic, classified transuranic, transuranic items that cannot be packaged per transuranic packaging transporter (TRUPACT) II requirements, greater-than-category-3 low-level waste that cannot be demonstrated as compliant for disposal, and mixed waste that does not have a treatment path to disposal. For example, it is assumed that D001 through D003 transuranic waste can be processed by Idaho National Engineering and Environmental Laboratory (INEEL) and remote-handled transuranic waste can be processed by Oak Ridge and thus have a path forward. Plans to manage such waste are needed. The LDR plan (#6) is an example of such plan.
22. All of the LLBG are active status.
23. Compliance with generation, treatment, and storage facility monitoring [II T, III Q and IV R(1) and (2)] and packaging [III L(1)(a) and (d) and IV L(1)(a) and (c)] requirements is accomplished by the implementation of the facility safety basis, permit conditions, and monitoring plan (DOE/RL-91-50, Rev. 2). Safety basis, permit, and monitoring plan documents will be referenced in the RWMB and serve as the documents identifying the monitoring requirements necessary for safe operation, the requirements stated in the manual notwithstanding.
24. For CERCLA actions, the CERCLA process develops a waste management system that incorporates the substantive DOE Order 435.1 requirements as appropriate. Disposal facilities will develop a crosswalk to demonstrate substantive aspects are met.
25. The determination of high activity or high hazard liquid waste [IV E(1)] will be implemented per Section 2.2.1.
26. The waste characterization data quality objective process [II L(1); III; and IV I(1)] for waste treatment processes are satisfied by the facility safety basis and applicable permit conditions. The secondary waste from treatment processes, for example powders from the LWPF liquid treatment process or treatment feed stream waste characterization data quality objective are not satisfied by the treatment facility safety basis and permit conditions.

Work activities to implement DOE Order 435.1 requirements provided as part of this plan, except as specified otherwise, will be scheduled and executed in compliance with regulatory requirements, Tri-Party Agreement, and consent orders, and as funding are applied to the activity per the MYPP. Funding to implement DOE Order 435.1 is not identified in fiscal years 2001 and 2002 budgets. This

document provides implementation work scope, cost to execute, and elapsed time to complete in support of budget and work authorization processes.

### **2.2.1 Determination of High Activity and High Hazard Low-Level Liquid Waste Pursuant to DOE Manual 435.1-1 Chapter IV E(1)**

Certain contingency measures are required by the DOE Manual 435.1-1, Chapter IV, Section E(1) for "high activity or high hazard liquid low-level waste storage or treatment". High activity or high hazard liquid is waste that poses a potential impact to large numbers of onsite and offsite persons. Existing DOE safety programs under DOE Order 5480.23 as implemented by DOE-STD-1027-92 evaluate these potentials and forms the basis of the determination of whether a liquid is high activity or high hazard waste or not.

The definition of high activity or high hazard liquid waste under DOE Order 435.1 is equivalent to a Hazard Category 2 facility classification under DOE Order 5480.23 as implemented by DOE-STD-1027-92. So a high activity or high hazard low-level liquid waste is waste that would cause a facility to be classified as a Hazard Category 2 or 1 facility. In determining if the liquid is the basis of the facility categorization, facility segmentation (as identified in the DOE guidance documents DOE-STD-1027-92 and DOE-EM-STD-5502-94) will be employed.

In some case where a final facility hazard category has not been determined, an initial hazard classification will be performed until a final classification can be provided. The initial hazard classification will be determined per Section 2.1.2 of HNF-PRO-704 or an equivalent process.

### **2.2.2 Implementation of 90-Day Staging Clock for Newly Generated Waste**

This discussion describes the implementation of the DOE Order 435.1 requirement of less than 90-day staging time limit of low-level waste. As used in this section, the following terms have different meaning than those in the Glossary.

- **Generator:** Operator of the facility who generates low-level waste during cleanup, upgrade, surveillance, monitoring, or maintenance activities.
- **Container:** Any container used to accumulate waste for transport, e.g., drum, box, plastic bag, or plastic wrapped item.
- **Full Container:** Container considered full per manufacturer, safety analysis report, or operating procedures as appropriate.

Generators are to accumulate low-level waste and transport to TSD facility within 90 days from the start of the staging clock. The staging date is established when the container is full or no longer needed. Waste can be collected in various size containers that meet the needs of generators. There will be no volume restriction. The volume will be limited to the size of the container only.

The generator will have the choice either to set up a container at each generation point to collect the waste or set up a centralized collection point where the waste will be collected from all the generating points and placed in containers. This is to meet the generators needs, to be cost effective, and to meet the waste minimization requirements. When a container is full or no longer needed, this establishes the 90-day staging clock start date. The generator will have 90 days to complete the characterization and transport the container to a TSD facility. For large size items that do not fit in a container and will be transported

under the flexible material safety analysis report for packaging, the staging clock start date is established when processing is initiated to prepare the item for disposition as waste. At that point, the generator has 90 days to transport the waste. The 90-day staging clock ends when the container is placed in transport to a TSD facility.

The 90-day staging time limit is applied to a container of waste, as classification is accomplished on a container basis, rather than to the waste components inside the container. During repackaging, if a waste item is removed and packaged into a different container, the start date of the 90-day staging clock for the new container will be when the container is full or no longer needed.

For bulk low-level waste, the 90-day staging clock start date will be established when the generator has a quantity of waste that can be transported or the activity generating the waste is completed. The quantity of waste to be transported will be determined on a case-by-case basis.

In cases where a waste package is reclassified due to repackaging, change in characterization, etc., the 90-day staging clock start date will be applied to the container as the date the reclassification determination was made without regard to the previous start date. If a waste package is not accepted and returned for further treatment, a new 90-day clock starts when the waste is treated and repackaged for retransport.

PNNL will develop plans procedures for staging their low-level waste that are consistent with the procedures for managing hazardous waste in less-than-90-day accumulation areas. The details of the plan for staging low-level waste will be documented in the PNNL radioactive waste management basis.

## 2.3 SIGNIFICANT IMPACTS AND ACTIONS

The new requirements are concentrated in the following few major areas. These areas contain the major costs associated with implementing the DOE Order 435.1.

1. A RWMB is required for all facilities. This is basically the statement of the safety and environmental basis for operation of the facility. Class 2 nuclear facilities have an Authorization Basis (AB), and Class 3 facilities have an Authorization Agreement (AA). The RWMB should contain or reference the ABs or AAs, safety documents (including any technical safety requirements (TSRs), such as safety analysis reports (SARs) and S/RIDs, environmental documents (including permits), monitoring plans (including the general sitewide monitoring plan), performance assessments, disposal authorization Statements, and any other documentation that provides the basis for concluding that the facility can operate with an appropriate level of protection of the public, workers, and the environment. A detailed crosswalk against the specific requirements of DOE Order 435.1 is not required. Instead, the RWMB simply should include a statement that the referenced documents provide the appropriate basis for operation.

Every facility will need a RWMB. It is expected that the RWMBs for many facilities could be addressed in a single document to reduce the cost and complexity of this effort.

2. Staging (90 day) and storage (1 year) limits are established to ensure that waste is characterized, packaged, and stored properly for the expected times of storage. All waste generators must evaluate staging and storage conditions for compliance.
3. 'Waste incidental to reprocessing' might be managed as transuranic or low-level waste, if so determined by citation or evaluation, and an adequate level of safety established for disposal other

than in a geologic repository. Those determinations by evaluation will require appropriate safety analyses.

4. Waste generators will need to have a planning process to ensure that requirements for characterization, handling, certification, and disposal can be met before new waste is generated. This is basically the life cycle asset management process applied to all waste management facilities.
5. Many older facilities (including, but not limited to, the PUREX Storage Tunnels) do not meet modern siting, design, engineering and operational requirements. It would not be cost effective to attempt to upgrade such facilities, and remediation already could be planned or in progress. Nevertheless, substantial procedural, administrative, analytical, and reporting requirements are added that increase cost of implementation.
6. Added requirements for characterization, packaging, storage, certification, operations, monitoring, and disposal all involve substantial additional costs. Some of these costs appear as modifications to documents (such as waste acceptance criteria, procedures, program plans, certification plans, training plans, materials, and others), or new documents for similar purposes, but the costs include additional actions required as well as the revision costs for the documents.
7. Documentation and records requirements are expanded, including the data quality objective process.
8. Contingency and corrective action planning requirements are extensive and expensive.
9. Extensive monitoring requirements are established. Many parameters are specified, which require additional equipment, unless exempted by a specific justification with comparison to the safety basis for the facility and existing monitoring plan. New equipment and justifications will add costs.

## 2.4 COSTS

Cost estimates developed for the actions identified in the IP, where possible, and are listed in each appendix. Costs are not included for compliance with DOE Orders not in contracts, or for actions that could result from future DOE actions required by DOE Order 435.1, as those actions and costs currently are unknown. Many of the costs involve revising existing documents, procedures, and training plans. To the degree possible, the new requirements will be added as part of the normal revision cycle for those documents, rather than doing separate revisions for the DOE Order 435.1. Costs cited are for the additional efforts required for the revisions, as well as the costs of compliance with the added requirements. Total cost estimate is approximately \$2.8 million.

Funding sources for these costs have not been identified, although new funding or displacement (or rescheduling) of current scope (by DOE directions) are possible sources. Thus, the time for implementing each requirement is listed as elapsed time after funding provided, rather than providing a specific completion date. For a few items (noted in the Appendix), the activity already is funded and a completion date is given. Some substantial potential costs have been eliminated by providing appropriate assumptions or interpretations (Section 2.2), with explanations to justify the exceptions taken. If these interpretations are found to be inappropriate, substantial additional costs could be incurred.

## 2.5 IMPLEMENTATION PLAN MAINTENANCE

This IP will be reviewed annually and revised whenever justified by substantive changes. The IP changes will be documented and approved.

Table 2-1. DOE Orders and Directives Listed in DOE Order 435.1.

DOE Directive	Title	Contract			Comment
		FH	PNNL	BHI	
DOE 4330.4B	Maintenance Management Program	Y	Y	Y	
DOE 400.1 11/09/88 Change 1 06/29/90	General Environmental Protection Program	Y	Y	Y	(Chapter II 2B, 4B, and 4C and Chapter III 2D and 3B cancelled by DOE Order 231.1)
DOE 5400.5 02/08/90 Change 1 06/06/90 Change 2 01/07/93	Radiation Protection of the Public and the Environment	Y	Y	Y	(Chapter II 1A(3)(A) cancelled by DOE Order 231.1)
DOE 5480.21		N	N	N	
DOE 5480.19 07/09/90	Conduct of Operations Requirements for DOE Facilities	Y	Y	Y	Currently not in PNNL contract
DOE 5480.20A 11/15/94	Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities	Y	Y	Y	
DOE 5480.22 02/25/92 Change 1 09/15/92 Change 2 01/23/96	Technical Safety Requirements	Y	Y	Y	(Cancels 5h, 7e(4), and 8d DOE Order 5480.5; paras 5v, 7e(4) and 8d of DOE Order 5480.6)
DOE 5480.23 04/10/92 Change 1 03/10/94	Nuclear Safety Analysis Reports	Y	Y	Y	Cancels DOE Order 5481.1B (nuclear facility only); para 7b(3), 7e(3), 8c of DOE Order 5480.6; para 51, 7b(3) and (4), 7e(3), 8a,...
DOE 5632.IC 07/15/94	Protection and Control of Safeguards and Security Interests	Y	Y	Y	
DOE 5633.3B 09/07/94	Control and accountability of Nuclear Materials	Y	N	Y	Cancelled by DOE Order 474.1 09/11/99 same title. Deleted from all but PNNL contracts.
DOE M 251.1-1A 01/30/98	Directives System Manual	N	N	N	Guidance for DOE in the preparation of DOE documents does not apply to contractors.
DOE M 411.1-1 10/08/97	Safety management Functions, Responsibilities and Authorities Manual	N	N	N	Applies to DOE only; replaced by DOE M 411.1-1A 10/18/99
DOE M 450.3-1 01/25/96	The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards	N	Y	N	
DOE O 151.1 09/25/95 Change 1 10/26/95 Change 2 08/21/96	Comprehensive Emergency Management System	Y	Y	Y	
DOE O 200.1 09/30/96	Information Management System	N	N	N	This order has a contractor requirements document and could be implemented in all contracts if desired.
DOE O 210.1 09/27/95 Change 1 10/26/95 Change 2 05/01/96	Performance Indicators and Analysis of Operations Information	N	N	N	The contractor requirements document for this document calls for actions by the contractor and could be implemented in the contracts if desired.
DOE O 231.1 09/30/95 Change 1 10/26/95 Change 2 11/07/96	Environment, Safety, and Health Reporting	N	Y	N	Para 5B(2) cancelled by DOE Order 470.2A. Contractor requirements are covered under DOE Order 232.1A.
DOE O 232.1A 07/21/97	Occurrence Reporting and Processing of Operations Information	Y	Y	Y	
DOE O 360.1 09/21/99	Federal Employee Training	N	N	N	Applies to federal employees only.
DOE O 414.1 11/24/98	Quality Assurance	Y	Y	N	

Table 2-1. DOE Orders and Directives Listed in DOE Order 435.1.

DOE Directive	Title	Contract			Comment
		FH	PNNL	BHI	
DOE O 420.1 10/13/95 Change 1 11/16/95 Change 2 10/24/96	Facility Safety	N	N	N	Detailed contractor requirements document provided.
DOE O 425.1A 12/28/98	Startup and Restart of Nuclear Facilities	Y	Y	N	Implemented on FH and PNNL contracts March 30, 2000. Contractor requirements document needs tailoring for DOE-RL-specific requirements.
DOE O 430.1A 10/14/98	Life Cycle Asset Management	N	N	N	
DOE O 440.1A 03/27/98	Worker Protection Management for DOE Federal and Contractor Employees	N	N	N	
DOE O 451.1A 06/06/97	National Environmental Policy Act Compliance Program	N	Y	N	Implemented in PNNL contract where it should not be. Order specifically says not applicable to contractors, federal responsibility only.
DOE O 460.1A 10/02/96	Packaging and Transportation Safety	Y	Y	N	
DOE O 460.2 09/27/95 Change 1 10/26/95	Departmental Materials Transportation and Packaging Management	Y	Y	Y	
DOE O 470.1 09/28/95 Change 1 06/28/96	Safeguards and Security Program	Y	Y	N	
DOE O 5480.21 12/24/91	Unreviewed Safety Questions	Y	Y	Y	
DOE P 450.3 01/25/96	Authorizing Use of the Necessary and Sufficient Process for Standards-based Environmental, Safety and Health Management	N	N	N	Applicable to DOE, not contractors
DOE P 450.4 10/15/96	Safety Management System Policy	N	N	N	Applicable to DOE, not contractors
DOE P 450.5 06/26/97	Line Environmental, Safety and Health Oversight	N	N	N	Applicable to DOE, not contractors
DOE-EM-STD-5502		N	N	N	Standards are not contractual requirements; are for guidance only
DOE-STD-1027-92		N	N	N	Standards are not contractual requirements; are for guidance only
Exec. Order 12856		N	N	N	Issued 08/03/93; required to be implemented in federal acquisition requirement within 24 months. Covered in a federal acquisition requirement clause not in directives list.
Exec. Order 13101		N	N	N	Issued 09/14/98 to be in federal acquisition requirement within 180 days. Covered in a federal acquisition requirement clause not in directives list.
RW-033P	Quality Assurance Requirements and Descriptions	N	N	N	Standards are not contractual requirements; are for guidance only.
DOE/EM-0093		N	N	N	Standards are not contractual requirements; are for guidance only.
DOE/RW-0351P		N	N	N	Standards are not contractual requirements; are for guidance only.

**APPENDIX A**

**DOE ORDER 435.1 IMPLEMENTATION PLAN**

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
<b>INTRO INTRODUCTION</b>				
Intro. Para. 1	1. PURPOSE. This Manual further describes the requirements and establishes specific responsibilities for implementing DOE O 435.1, Radioactive Waste Management, for the management of DOE high-level waste, transuranic waste, low-level waste, and the radioactive component of mixed waste. The purpose of the Manual is to catalog those procedural requirements and existing practices that ensure that all DOE elements and contractors continue to manage DOE's radioactive waste in a manner that is protective of worker and public health and safety, and the environment.	NO ACTION REQUIRED – Statement of Purpose only	NO ACTION REQUIRED	None
Intro. Para. 2	2. APPLICABILITY. The requirements set forth in this Manual apply to DOE elements and contractors as set forth in DOE O 435.1, Radioactive Waste Management.	NO ACTION REQUIRED	NO ACTION REQUIRED	None
Intro. Para. 3	3. SUMMARY. This Manual is organized into four (4) chapters. Chapter I, General Requirements and Responsibilities, contains requirements and responsibilities which are applicable to all radioactive waste types and delineates responsibilities for radioactive waste management decision-making at the complex-wide and Field Element levels. Chapters II through IV contain those requirements that are applicable to high-level waste, transuranic waste, and low-level waste including the radioactive component of mixed low-level waste, respectively.	NO ACTION REQUIRED	NO ACTION REQUIRED	None

APP A-1

\* As documented in HNF-5465.

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

APP A-2

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
Intro. Para. 4	<p>4. IMPLEMENTATION. The requirements of this Manual apply to all new and existing DOE radioactive waste management facilities, operations, and activities. Implementation of the requirements shall begin at the earliest possible date, and all DOE entities shall be in compliance with this directive within one year of its issuance. Compliance with this directive includes implementing the requirements or an approved implementation or corrective action plan. If compliance with this Order cannot be achieved within one year of its issuance, the Field Element Manager must request approval to extend the compliance date to no later than October 1, 2001, from the cognizant Program Secretarial Officer (PSO). Failure to implement the requirements of this directive shall, through the appropriate lines of management, result in corrective actions including, if necessary, shutdown of radioactive waste management facilities, operations, or activities until the appropriate requirements are implemented. Any of the requirements in this Manual may be waived or modified through application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3 and DOE M 450.3-1 and DOE P 450.4, Safety Management System Policy, the applicable or relevant and appropriate requirements identification process for actions taken pursuant to the Department's CERCLA authorities, or by an exemption processed in accordance with the requirements of DOE M 251.1-1A, Directives System Manual.</p>	<p>DOE-RL will not be in full compliance by 07/09/00. Therefore, an implementation plan is required.</p> <p>BHI: It is assumed that the removal and/or remedial actions at legacy waste sites will not constitute a new activity and does not generate "newly-generated waste". The legacy waste sites are not 'waste management' facilities and their excavation does not constitute management of them. The activities of collection, remediation, recovery, digging, etc., of waste material is not a new activity in terms of the disposal of the material. No closure plans, performance assessments, composite analysis, or disposal authorizations are required for the collection activities. The new or existing activity is the operation of the receiving site, which is subject to 435.1 requirements.</p> <p>The only radioactive waste management facility operated by BHI is the Environmental Restoration Disposal Facility (ERDF).</p>	<p>Implementation plan is provided.</p> <p>Full implementation is planned. BHI to be complete 4 months after funding.</p>	None
Intro. Para. 5	<p>5. REVISIONS. Systematic planning, execution, and evaluation of radioactive waste management facilities, operations, and activities will provide the basis for evaluating the adequacy of and, if necessary, revising the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. The revision process will be based on DOE P 450.4, Safety Management System Policy, and will implement continuous improvement for management of radioactive waste. The process includes: identifying the functions necessary to execute radioactive waste management responsibilities; conducting an analysis of the hazards associated with performing those functions; developing and implementing the proper controls to mitigate any associated hazards; developing and implementing a periodic assessment of work performance; and providing feedback to revise the work processes and incorporate lessons learned, as appropriate. Administrative requirements of the Order and Manual will be revised as needed to support safe and efficient waste management.</p>	NO ACTION REQUIRED	NO ACTION REQUIRED	None

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1204

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
Intro. Para. 6	6. DEFINITIONS. Definitions for DOE M 435.1-1, Radioactive Waste Management Manual, are provided in Attachment 2.	NO ACTION REQUIRED	NO ACTION REQUIRED	None
Intro. Para. 7	7. REFERENCE. DOE O 435.1, Radioactive Waste Management, dated 7-09-99.	NO ACTION REQUIRED	NO ACTION REQUIRED	None
Intro. Para. 8	8. CONTACT. Call the Office of Waste Management at (202) 586-0370.	NO ACTION REQUIRED	NO ACTION REQUIRED	None
CHAPTER I CIII.I		GENERAL REQUIREMENTS AND RESPONSIBILITIES		
I. REQUIREMENTS				
CH.I.I.A.	A. Delegation of Authority. Managers charged with responsibilities within this Manual may delegate authority for these tasks to another manager. All delegations of authority shall be documented.	NO ACTION REQUIRED	NO ACTION REQUIRED	None
CH.I.I.B.	B. Use of Guidance. Additional information supporting the requirements in this Manual is contained in the Implementation Guide for use with DOE M 435.1-1, Radioactive Waste Management Manual. This Guide, DOE G 435.1-1, Implementation Guide for DOE M 435.1-1, shall be reviewed when implementing the requirements of this Manual. The Guide provides additional information and acceptable methods for meeting the requirements. Other methods may be used but must ensure an adequate level of safety commensurate with the hazards associated with the work and be consistent with the radioactive waste management basis.	The introduction to the Guide, on page I, states that "The material presented in this guide provides suggestions and acceptable ways of implementing DOE M 435.1-1 and should <u>not</u> be viewed as additional mandatory requirements." Guidance will be used as reference material only.	NO ACTION REQUIRED	None
CH.I.I.C.	C. Radioactive Waste Management. All radioactive waste subject to DOE O 435.1, Radioactive Waste Management, and the requirements of this Manual shall be managed as high-level waste, transuranic waste, low-level waste, or mixed low-level waste.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.I.I.D.	D. Analysis of Environmental Impacts. Existing and proposed radioactive waste management facilities, operations, and activities shall meet the requirements of 10 CFR Part 1021, National Environmental Policy Act Implementing Procedures; and DOE O 451.1A, National Environmental Policy Act Compliance Program. All reasonable alternatives shall be considered, as appropriate. Nothing in this Order is meant to restrict consideration of alternatives to proposed actions.	All facilities: No Gap  DOE O 451.1A is not in contract but all contractors have NEPA compliance activities.	NO ACTION REQUIRED	None

APP A-3

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

APP A-4

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.I.E.	E. Requirements of Other Regulations and DOE Directives. The following requirements and DOE directives are required for all DOE radioactive waste management facilities, operations, and activities as applicable. Any of the requirements for the following Departmental directives may be waived or modified through application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3 and DOE M 450.3-1 and DOE P 450.4, Safety Management System Policy, or by an exemption processed in accordance with the requirements of that directive or DOE M 251.1-1A, Directives System Manual.		NO ACTION REQUIRED	
CH.I.I.E.(1)	(1) Analysis of Operations Information. Data that measure the environment, safety, and health performance of radioactive waste management facilities, operations, and activities shall be identified, collected, and analyzed as required by DOE O 210.1, Performance Indicators and Analysis of Operations Information.	DOE O 210.1 not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation and cost when directed.	TBD
CH.I.I.E.(2)	(2) Classified Waste. Radioactive waste to which access has been limited for national security reasons and cannot be declassified shall be managed in accordance with the requirements of DOE 5632.1C, Protection and Control of Safeguards and Security Interests, and DOE 5633.3B, Control and Accountability of Nuclear Materials.	DOE Orders not in all contracts. Refer to Table 2-1	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(3)	(3) Conduct of Operations. Radioactive waste management facilities, operations, and activities shall be conducted in a manner based on consideration of the associated hazards. Waste management facilities, operations, and activities shall meet the requirements of DOE 5480.19, Conduct of Operations Requirements for DOE Facilities.	All Facilities: No Gap.	NO ACTION REQUIRED	None
CH.I.I.E.(4)	(4) Criticality Safety. Radioactive waste management facilities, operations, and activities shall be covered by a criticality safety program in accordance with DOE O 420.1, Facility Safety.	DOE O 420.1 not in all contracts. Refer to Table 2-1.  Instead of DOE O 420.1, FH-WMP and BHI facilities follow these DOE orders for implementation of their Criticality Safety Program: 5480.22, 5480.7A, 6430.1A, and 5480.24. PFP's criticality safety program is defined in FSP-PFP-5-8, Section 3.3, and in various criticality prevention specifications.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(5)	(5) Emergency Management Program. Radioactive waste management facilities, operations, and activities shall maintain an emergency management program in accordance with DOE O 151.1, Comprehensive Emergency Management System.	DOE O 151.1 not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Comments
CH.I.I.E.(6)	(6) Environmental and Occurrence Reporting. Radioactive waste management facilities, operations, and activities shall meet the reporting requirements of DOE O 231.1, Environment, Safety and Health Reporting, and DOE O 232.1A, Occurrence Reporting and Processing of Operations Information.	DOE Orders not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(7)	(7) Environmental Monitoring. Radioactive waste management facilities, operations, and activities shall meet the environmental monitoring requirements of DOE 5400.1, General Environmental Protection Program, and DOE 5400.5, Radiation Protection of the Public and the Environment.	DOE Orders not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(8)	(8) Hazard Analysis Documentation and Authorization Basis. Radioactive waste management facilities, operations, and activities shall implement DOE Standards, DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE 5480.23, Nuclear Safety Analysis Reports, and/or DOE-EM-STD-5502-94, DOE Limited Standard: Hazard Baseline Documentation, and shall, as applicable, prepare and maintain hazard analysis documentation and an authorization basis as required by DOE O 425.1A, Startup and Restart of Nuclear Facilities, DOE O 5480.21, Unreviewed Safety Questions, DOE 5480.22, Technical Safety Requirements, and DOE 5480.23, Nuclear Safety Analysis Reports.	DOE Orders not in all contracts. Refer to Table 2-1.  Evaluated gap at facilities following DOE-SD-1027-92, DOE-EM-STD-5502-94, DOE O 5480.21, DOE O 5480.22, and DOE 5480.23.  1. Some facilities have ISBs, but SARs are yet to be completed (except for WRAP) as required by 5480.23.  2. A Hazard Analysis has been completed for all nuclear facilities except, PUREX Storage Tunnels and WESF.  BHI: No Gap. ERDF has an approved Authorization basis and hazard Analysis.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.  The identified gaps to existing DOE directives are being corrected per FDH-9955894A,2.	TBD
CH.I.I.E.(9)	(9) Life-Cycle Asset Management. Planning, acquisition, operation, maintenance, and disposition of radioactive waste management facilities shall be in accordance with DOE O 430.1A, Life-Cycle Asset Management, and DOE 4330.4B, Maintenance Management Program, including a configuration management process to ensure the integrity of physical assets and systems. Corporate physical asset databases shall be maintained as complete, current inventories of physical assets and systems to allow reliable analysis of existing and potential hazards to the public and workers.	DOE O 430.1A not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(10)	(10) Mixed Waste. Radioactive waste that contains both source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component is also subject to the Resource Conservation and Recovery Act (RCRA), as amended.	All facilities: No Gap	NO ACTION REQUIRED	None

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.I.E.(11)	(11) Packaging and Transportation. Radioactive waste shall be packaged and transported in accordance with DOE O 460.1A, Packaging and Transportation Safety, and DOE O 460.2, Departmental Materials Transportation and Packaging Management.	No Gap.	NO ACTION REQUIRED	None
CH.I.I.E.(12)	(12) Quality Assurance Program. Radioactive waste management facilities, operations, and activities shall develop and maintain a quality assurance program that meets the requirements of 10 CFR 830.120, Quality Assurance Requirements, and DOE O 414.1, Quality Assurance, as applicable.	DOE Orders not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
CH.I.I.E.(13)	(13) Radiation Protection. Radioactive waste management facilities, operations, and activities shall meet the requirements of 10 CFR Part 835, Occupational Radiation Protection, and DOE 5400.5, Radiation Protection of the Public and the Environment.	All facilities: No Gap.	NO ACTION REQUIRED	None
CH.I.I.E.(14)	(14) Records Management. Radioactive waste management facilities, operations, and activities shall develop and maintain a record-keeping system, as required by DOE O 200.1, Information Management Program, and DOE O 414.1, Quality Assurance. Records shall be established and maintained for radioactive waste generated, treated, stored, transported, or disposed. To the extent possible, records prepared in response to other requirements may be used to satisfy the documentation requirements of this Manual. Additional records may be required to satisfy the regulations applicable to the hazardous waste components of mixed waste.	DOE Orders not in contract. WESF, PUREX Storage Tunnels, and 242-A Evaporator: There is a gap in the implementation status of the recordkeeping system and required in the following sections of DOE M 435.1-1:  Chapter I, Section 1.E(14) Records Management Chapter II, Section G. (1) and (2) Quality Assurance Program Chapter II, Section L. (1), (2), and (3) Waste Characterization Chapter II, Section M. (1), (2), and (3) Waste Certification Chapter II, Section N. (1), (2), and (3) Waste Transfer Chapter II, Section O. (1) Packaging and Transportation	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.  WESF, PUREX Storage Tunnels, and 242-A Evaporator NO ACTION REQUIRED. Refer to Section 2.2 for resolution.	TBD
CH.I.I.E.(15)	(15) Release of Waste Containing Residual Radioactive Material. Processes for determining and documenting that waste is suitable to be released and managed without regard to its radioactive content shall be in accordance with the criteria and requirements in DOE 5400.5, Radiation Protection of the Public and the Environment.	All facilities: No Gap.	NO ACTION REQUIRED	None
CH.I.I.E.(16)	(16) Safeguards and Security. Appropriate features shall be incorporated into the design and operation of radioactive waste management facilities, operations, and activities to prevent unauthorized access and operations, and for purposes of nuclear materials control and accountability, where applicable; and shall be consistent with DOE O 470.1, Safeguards and Security Program.	DOE Orders not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.I.E.(17)	(17) Safety Management System. Radioactive waste management facilities, operations, and activities shall incorporate the principles of integrated safety management as described in DOE P 450.4, Safety Management System Policy, and DOE P 450.5, Line Environment, Safety and Health Oversight, and meet the requirements of the safety management systems sections of 48 CFR Chapter 9, Department of Energy Acquisition Regulations and DOE M 411.1-1, Manual of Safety Management Functions, Responsibilities, and Authorities.	DOE Orders not in all contracts. Refer to Table 2-1.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.  Verified ISMS to be in place for FH by 09/30/00. PNNL meets 48 CFR 9.	TBD
CH.I.I.E.(18)	(18) Site Evaluation and Facility Design. New radioactive waste management facilities, operations, and activities shall be sited and designed in accordance with DOE O 420.1, Facility Safety, and DOE O 430.1A, Life-Cycle Asset Management.	DOE Orders not in contract. Instead of DOE O 430.1A, FH currently would be following one or more of the following orders: 1332.1A, 4010.1A, 4300.1C, 4320.1B, 4320.2A, 4330.4B, 4330.5, 4530.1, 4700.1, 4700.3, 4700.4, or 5700.2D. Instead of DOE O 420.1, WMH follows these orders: 5480.22, 5480.7A, 6430.1A, and 5480.24.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	None
CH.I.I.E.(19)	(19) Training and Qualification. A training and qualification program shall be implemented for radioactive waste management program personnel, and shall meet the requirements of DOE O 360.1, Training, and DOE 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities.	DOE O 360.1 is not in contract. Gap evaluated for compliance with 5480.20A which is in contract. All facilities, except LLBG, are compliant with 5480.20A.	Waste Services: Will revise existing classroom training materials and possibly HGET modules to include changes from 435.1 and comply with 5480.20A. Also might need to develop interim training to address major changes to rad waste management (e.g., storage, staging limitations).  RCP: Provide training on changes to EP-0063.	30K  25K
CH.I.I.E.(20)	(20) Waste Minimization and Pollution Prevention. Waste minimization and pollution prevention shall be implemented for radioactive waste management facilities, operations, and activities to meet the requirements of Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, and Executive Order 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, and DOE 5400.1, General Environmental Protection Program.	EO 13101 includes requirements for procurement of biobased products and for agency waste reduction goals that are not included in the current Project Hanford Management Contract (PHMC) (FR, 1998). Further study will be required to determine the impact of EO 13101 requirements that are included in amended contracts in the future. At this time, based on the current PHMC, additional resource burden associated with the implementation of these requirements that would require additional funding or other resource support is anticipated.  PNNL: Required plans in place.	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1204

Citation	435.1.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.1.E.(21)	(21) Worker Protection. Radioactive waste management facilities, operations, and activities shall meet the requirements of DOE O 440.1A, Worker Protection Management for DOE Federal and Contractor Employees.	DOE Order 440.1A, <i>Worker Protection Management for DOE Federal and Contractor Employees</i> , is not in contracts and the gap analysis provided here is based on the equivalent old Orders. Those old Orders, which are specified in the contract, are: 5480.4, <i>Environmental Protection, Safety, and Health Protection Standards</i> 5480.7A, <i>Fire Protection</i> 5480.8A, <i>Contractor Occupational Medical Program</i> 5480.9A, <i>Construction Project Safety and Health Management</i> 5480.10, <i>Contractor Industrial Hygiene Program</i> 5480.16A, <i>Firearms Safety</i> 5483.1A, <i>Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated (GOCO) Facilities</i>	No action identified at this time. DOE directives not currently in the contract will be evaluated for implementation when directed.	TBD
<b>CH.I.2. 2 RESPONSIBILITIES</b>				
CH.I.2.A.	A. Program Secretarial Officers. Program Secretarial Officers with radioactive waste management facilities, operations, or activities are responsible within their respective programs for ensuring that the Field Element Managers meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.	All facilities: Potential gap – Depending on the outcome of implementation of complex-and sitewide requirements, facilities might need to modify radioactive waste management procedures and activities.	NO ACTION REQUIRED	None
CH.I.2.B.	B. Assistant Secretary for Environmental Management. The Assistant Secretary for Environmental Management is responsible for: (1) Complex-Wide Radioactive Waste Management Programs. Establishing and maintaining integrated Complex-Wide Radioactive Waste Management Programs for high-level, transuranic, low-level, and mixed low-level waste. These programs shall use a systematic approach to planning, execution, and evaluation to ensure that waste generation, storage, treatment, and disposal needs are met and coordinated across the DOE complex. (2) Changes to Regulations and DOE Directives. Ensuring changes to regulations and DOE directives are reviewed and, when necessary, incorporated into revisions of this Manual to ensure the basis for safe radioactive waste management facilities, operations, and activities is maintained.	Program Secretarial Officer responsibility.	NO ACTION REQUIRED	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1205

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.1.2.C.	<p>C. Assistant Secretary for Environment, Safety, and Health. The Assistant Secretary for Environment, Safety and Health is responsible for providing an independent overview of DOE radioactive waste management and decommissioning programs to determine compliance with DOE environment, safety, and health requirements and applicable Environmental Protection Agency (EPA) and state regulations, including:</p> <ol style="list-style-type: none"> <li>(1) Advising the Secretary of the status of Departmental compliance with the requirements of DOE O 435.1, this Manual, and applicable provisions of other DOE Orders.</li> <li>(2) Conducting independent appraisals and audits of DOE waste management programs.</li> <li>(3) Reviewing site Waste Management Plans with regard to compliance with DOE environment, safety, and health requirements.</li> </ol>	Program Secretarial Officer responsibility	NO ACTION REQUIRED	None
CH.1.2.D.	<p>D. Deputy Assistant Secretary for Waste Management. The Deputy Assistant Secretary for Waste Management is responsible for:</p> <ol style="list-style-type: none"> <li>(1) Complex-Wide Radioactive Waste Management Program Plans. Developing, implementing, and maintaining integrated Complex-Wide Radioactive Waste Management Program Plans for high-level, transuranic, low-level, and mixed low-level waste. Each plan shall, at the DOE complex-wide level, describe the functional elements, organizations, responsibilities, and activities that comprise the system needed to store, treat and dispose of radioactive waste in a manner that is protective of the public, workers, and the environment. In addition, the plans shall:               <ol style="list-style-type: none"> <li>(a) sent a waste management strategy that integrates waste projections and life-cycle waste management planning into complex-wide facility configuration decisions; and</li> <li>(b) Describe the approach to research and technology development being pursued to improve safety and/or efficiency in managing radioactive waste.</li> </ol> </li> <li>(2) Waste Management Data System. Establishing and maintaining a system to compile waste generation projection data and other information concerning radioactive waste management facilities, operations, and activities across the complex.</li> </ol>	Deputy Assistant Secretary responsibility.	NO ACTION REQUIRED. Evaluate if needed.	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1205

APP A-10

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.1.2.E.	<p>E. Deputy Assistant Secretaries for Waste Management and Environmental Restoration. The Deputy Assistant Secretary for Waste Management and the Deputy Assistant Secretary for Environmental Restoration are responsible for:</p> <p>(1) Disposal. Reviewing and approving, along with EH-1, transuranic waste disposal facility performance assessments and other disposal documents as required in waste specific chapters for which DOE is responsible for making compliance determinations. Reviewing and approving performance assessments and composite analyses, or appropriate CERCLA documentation, for low-level waste disposal facilities, and issuing disposal authorization statements. (a) The Deputy Assistant Secretaries shall establish a review panel consisting of DOE personnel to review low-level waste disposal facility performance assessments and composite analyses, review appropriate CERCLA documentation, recommend low-level waste disposal facility compliance determinations to the Deputy Assistant Secretaries, and develop disposal authorization statements. (b) The Deputy Assistant Secretaries shall issue disposal authorization statements containing conditions that low-level waste disposal facilities must meet in order to operate with an approved radioactive waste management basis.</p> <p>(2) Site Closure Plans. Reviewing and approving closure plans and other closure documentation for deactivated high-level waste facilities/sites and issuing authorization for closure activities to proceed.</p>	Deputy Assistant Secretary responsibility.	NO ACTION REQUIRED. Evaluate if needed.	None
CH.1.2.F.	F. Field Element Managers. Field Element Managers are responsible for:		NO ACTION REQUIRED	
CH.1.2.F.(1)	<p>(1) Site-Wide Radioactive Waste Management Programs. Developing, documenting, implementing, and maintaining a Site-Wide Radioactive Waste Management Program. The Program shall use a systematic approach for planning, executing, and evaluating the site-wide management of radioactive waste in a manner that supports the Complex-Wide Radioactive Waste Management Programs and ensures that the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.</p>	DOE-RL action.	No contractor action required.	None

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.2.F.(2)	<p>(2) Radioactive Waste Management Basis. Ensuring a radioactive waste management basis is developed and maintained for each DOE radioactive waste management facility, operation, and activity; and ensuring review and approval of the basis before operations begin. The Radioactive Waste Management Basis shall:</p> <p>(a) Reference or define the conditions under which the facility may operate based on the radioactive waste management documentation;</p> <p>(b) Include the applicable elements identified in the specific waste-type chapters of this Manual; and</p> <p>(c) Be developed using the graded approach process.</p>	<p>GAP: RWMB needed.</p> <p>BHI: A disposal authorization has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk between the ERDF CERCLA documentation and DOE O 435.1 to be submitted by June 25, 2000 to support a Disposal Authorization.</p>	<p>FH: Refer to waste type chapter.</p> <p>BHI: Crosswalk will be prepared and submitted to DOE-RL to transmit to HQ by the requested date.</p> <p>PNNL: Prepare RWMB 12 months after funding.</p>	84.2K
CH.I.2.F.(3)	<p>(3) Waste Minimization and Pollution Prevention. Ensuring implementation of waste minimization and pollution prevention programs.</p>	<p>GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.</p>	<p>Revision in progress.</p>	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

Citation	435.1-1 Manual Requirement	Compliance Status	Date Achieved/Compliance	Cost
CH.I.2.F.(4)	<p>(4) Approval of Exemptions for Use of Non-DOE Facilities. DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. If DOE capabilities are not practical or cost effective, exemptions may be approved to allow use of non-DOE facilities for the storage, treatment, or disposal of DOE radioactive waste based on the following requirements:</p> <p>(a) Such non-DOE facilities shall:</p> <ol style="list-style-type: none"> <li>1. Comply with applicable Federal, State, and local requirements;</li> <li>2. Have the necessary permit(s), license(s), and approval(s) for the specific waste(s); and</li> <li>3. Be determined by the Field Element Manager to be acceptable based on a review conducted annually by DOE.</li> </ol> <p>(b) Exemptions for the use of non-DOE facilities shall be documented to be cost effective and in the best interest of DOE, including consideration of alternatives for on-site disposal, an alternative DOE site, and available non-DOE facilities; consideration of life-cycle cost and potential liability; and protection of public health and the environment.</p> <p>(c) DOE waste shall be sufficiently characterized and certified to meet the facility's waste acceptance criteria.</p> <p>(d) Appropriate National Environmental Policy Act (NEPA) review must be completed. For actions taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), it is DOE's policy to incorporate NEPA values into the CERCLA documentation.</p> <p>(e) Headquarters shall be notified of any exemption allowing use of a non-DOE facility and the Office of the Assistant Secretary for Environment, Safety and Health (EH-1) shall be consulted prior to the exemption being executed.</p> <p>(f) Host States and State Compacts where non-DOE facilities are located shall be consulted prior to approval of an exemption to use such facilities and notified prior to shipments being made.</p>	<p>Current authorization to use ATG facility needs to be recognized as equivalent of exemption or waiver. Additional waiver process needed if any other facilities considered.</p>	<p>Waste Services: Prepare exemption for use of ATG, thermal treatment, and volume reduction contracts.</p>	<p>4K</p>

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

APP A-13

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Gap
CH.I.2.F.(5)	<p>(5) Environmental Restoration, Decommissioning, and Other Cleanup Waste. Ensuring the management and disposal of radioactive waste resulting from environmental restoration activities, including decommissioning, meet the substantive requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. Environmental restoration activities using the CERCLA process (in accordance with Executive Order 12580) may demonstrate compliance with the substantive requirements of DOE O 435.1, Radioactive Waste Management, and this Manual (including the Performance Assessment and performance objectives, as well as the Composite Analysis) through the CERCLA process. However, compliance with all substantive requirements of DOE O 435.1 not met through the CERCLA process must be demonstrated. Environmental restoration activities which will result in the off-site management and disposal of radioactive waste must meet the applicable requirements of DOE O 435.1, Radioactive Waste Management, and this Manual for the management and disposal of those off-site wastes. Field Elements performing environmental restoration activities involving development and management of radioactive waste disposal facilities under the CERCLA process shall:</p> <p>(a) Submit certification to the Deputy Assistant Secretary for Environmental Restoration that compliance with the substantive requirements of DOE O 435.1 have been met through application of the CERCLA process; and</p> <p>(b) Submit the decision document, such as the Record of Decision, or any other document that serves as the authorization to dispose, to the Deputy Assistant Secretary for Environmental Restoration for approval.</p>	<p>K Basins will require demonstration that CERCLA remediation will meet substantive requirements of 435.1.</p> <p>FPF: Demonstration of compliance might be needed for Tank 241-Z-361 remedial action under CERCLA.</p> <p>All other FH facilities: No Gap</p> <p>BHI: Assuming that the removal and/or remedial actions at legacy waste sites will not constitute a new activity. The legacy waste sites are not 'waste management' facilities and their excavation does not constitute management of them. The activities of collection, remediation, recovery, digging, etc., of waste material is not a new activity in terms of the disposal of the material. No closure plans, performance assessments, composite analysis, or disposal authorizations are required for the collection activities. The new or existing activity is the operation of the receiving site (ERDF), which is subject to 435.1 requirements. For the purposes of this gap analysis, the only radioactive waste management facility operated by the ERC is ERDF.</p> <p>A disposal authorization has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk between the ERDF CERCLA documentation and DOE O 435.1 to be submitted by June 25, 2000 to support a Disposal Authorization.</p> <p>The requirement to follow the substantive portions of DOE Order 435.1 undercuts the separation of DOE actions under CERCLA from State procedural controls under RCRA and State hazardous waste law. DOE's insistence that its DOE Order 435.1 substantive procedure be satisfied might allow the State to insist that its officers give formal assent to RCRA equivalent processes before TSD can be conducted under CERCLA. This produces a gap between not only the DOE Order 435.1 substantive requirements but also all State preferences. These could include air-permitting processes, including approval of air pollution control boards, for all CERCLA actions that result in air emissions. It is not possible to precisely determine the gaps involved with this requirement at this time.</p>	<p>K Basins. No action required. Refer to Section 2.2.</p> <p>Reference CH.I.2.F.(2)</p>	

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

APP A-14

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.2.F.(6)	(6) Radioactive Waste Acceptance Requirements. Ensuring development, review, approval, and implementation of the radioactive waste acceptance requirements for facilities that receive waste for storage, treatment, or disposal. Radioactive waste acceptance requirements shall establish the facility's requirements for the receipt, evaluation, and acceptance of waste.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision. PNNL: Documentation needs changes.	Revision in progress.  Modify waste acceptance criteria 9 months after funding.	None  4.3K
CH.I.2.F.(7)	(7) Radioactive Waste Generator Requirements. Ensuring development, review, approval, and implementation of a program for waste generation planning, characterization, certification, and transfer. This program shall address characterization of waste, preparation of waste for transfer, certification that waste meets the receiving facility's radioactive waste acceptance requirements, and transfer of waste.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision. PNNL: Program needs changes	Revision in progress.  Develop waste generation planning system 12 months after funding..	None  13.6K
CH.I.2.F.(8)	(8) Closure Plans. Ensuring development, review, approval, and implementation of closure plans for radioactive waste management facilities in accordance with the applicable requirements in the waste-type chapters of this Manual.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.  BHI: A closure plan has not been developed for ERDF.	Revision in progress.  BHI: Refer to CH.I.2.F.(14)	None
CH.I.2.F.(9)	(9) Defense-In-Depth. Ensuring defense-in-depth principles are incorporated where potential uncertainties or vulnerabilities warrant their use when reviewing and approving radioactive waste management activities and documents. These principles advocate the use of multiple levels of engineered and administrative controls to provide protection to the public, workers, and the environment.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(10)	(10) Oversight. Ensuring oversight of radioactive waste management facilities, operations, and activities is conducted. Oversight shall ensure radioactive waste management program activities are conducted in accordance with a radioactive waste management basis and meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision. PNNL needs minor procedure changes.	Revision in progress.  Change procedure 4 months after funding.	None  3.4K
CH.I.2.F.(11)	(11) Training and Qualification. Ensuring a training and qualification program is implemented for designated radioactive waste management program personnel, and the training is commensurate with job duties and responsibilities. Only those personnel who have been trained and qualified shall design or operate safety (safety class and safety significant) structures, systems, and components.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(12)	(12) As Low As Reasonably Achievable (ALARA). Ensuring ALARA principles for radiation protection are incorporated when reviewing and approving radioactive waste management activities.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None

## DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.I.2.F.(13)	(13) Storage. Ensuring all radioactive waste is stored in a manner that protects the public, workers, and the environment in accordance with a radioactive waste management basis, and that the integrity of waste storage is maintained for the expected time of storage and does not compromise meeting the disposal performance objectives for protection of the public and environment when the waste is disposed.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(14)	(14) Treatment. Ensuring all radioactive waste requiring treatment is treated in a manner that protects the public, workers, and the environment and in accordance with a radioactive waste management basis.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.  BHI: A closure plan has not been developed for the ERDF as part of the radioactive waste management basis.  A disposal authorization as part of the radioactive waste management basis has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk between the ERDF CERCLA documentation and DOE O 435.1 to be submitted by June 25, 2000 to support a Disposal Authorization.	Revision in progress.  BHI: The need for a closure plan for the ERDF will be evaluated following completion of the crosswalk between ERDF CERCLA documentation and DOE O 435.1. Reference CH.I.2.F.(2)	None
CH.I.2.F.(15)	(15) Disposal. Ensuring radioactive waste is disposed in a manner that protects the public, workers, and the environment and in accordance with a radioactive waste management basis. Reviewing specific transuranic or low-level waste documentation including the performance assessment and composite analysis, or appropriate CERCLA documentation, prior to forwarding them to Headquarters for approval, and obtaining and ensuring the facility is operated in accordance with the disposal authorization statement. Conducting performance assessment and composite analysis maintenance.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.  BHI: A disposal authorization as part of the radioactive waste management basis has not been obtained for the ERDF. A Remedial Investigation Feasibility Study has been completed for the ERDF that might be deemed as appropriate documentation for the composite analysis and the performance assessment. DOE-HQ has requested DOE-RL to prepare a crosswalk between the ERDF CERCLA documentation and DOE O 435.1 to be submitted by June 25, 2000 to support a Disposal Authorization.	Revision in progress.	None
CH.I.2.F.(16)	(16) Monitoring. Ensuring monitoring is conducted for all radioactive waste management facilities as required. Ensuring that disposal facilities are monitored, as appropriate, for compliance with conditions of the disposal authorization statement.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.  PNNL: Changes needed to document monitoring activities.  BHI: A disposal authorization as part of the radioactive waste management basis has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk between the ERDF CERCLA documentation and DOE O 435.1 to be submitted by June 25, 2000 to support a Disposal Authorization.	Revision in progress.  Prepare monitoring plan by 12 months after funding.  BHI: Reference CH.I.2.F.(2).	None  5.5K

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Gap
CH.I.2.F.(17)	(17) Material and Waste Declassification for Waste Management. Ensuring, to the extent practical, radioactive material and waste generated under a program that is classified for national security reasons is declassified or rendered suitable for unclassified radioactive waste management.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(18)	(18) Waste Incidental to Reprocessing. Ensuring that waste incidental to reprocessing determinations are made by either the "citation" or "evaluation" process described in Chapter II of this Manual. Ensuring consultation and coordination with the Office of Environmental Management for waste determined to be incidental to reprocessing through the "evaluation" process.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(19)	(19) Waste With No Identified Path to Disposal. Ensuring a process is developed and implemented for identifying the generation of radioactive waste with no identified path to disposal, and reviewing and approving conditions under which radioactive waste with no identified path to disposal may be generated. Headquarters shall be notified of the decisions to generate a waste with no identified path to disposal.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.F.(20)	(20) Corrective Actions. Ensuring a process exists for proposing, reviewing, approving, and implementing corrective actions when necessary to ensure that the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met, and to address conditions that are not protective of the public, workers, or the environment. The process shall allow workers, through the appropriate level of management, to stop or curtail work when they discover conditions that pose an imminent danger or other serious hazard to workers or the public, or are not protective of the environment.	GAP: DOE-RL Functions, Requirements, and Authorities Manual needs revision.	Revision in progress.	None
CH.I.2.G.	G. All Personnel. All personnel are responsible for: (1) Problem Identification. Identifying and reporting radioactive waste management facilities, operations, or activities that do not meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual, or that pose a threat to the safety of the public, workers, or the environment. Shutdown or Curtailment of Activities. Stopping or curtailing work, through the appropriate level of management, to prohibit continuation of conditions or activities which pose an imminent danger or other serious hazard to workers or the public, or are not protective of the environment.	All facilities: No Gap.	NO ACTION REQUIRED	None

000511.1206

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DOE/RL-2000-25, Rev. 0  
05/2000

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CHAPTER II	HIGH-LEVEL WASTE REQUIREMENTS			
CH.II.A.	<p>A. Definition of High-Level Waste. High-level waste is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation.</p>	Definition only.	NO ACTION REQUIRED	None

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	
CH.II.B.	<p>B. Waste incidental to Reprocessing. Waste resulting from reprocessing spent nuclear fuel that is determined to be incidental to reprocessing is not high-level waste, and shall be managed under DOE's regulatory authority in accordance with the requirements for transuranic waste or low-level waste, as appropriate. When determining whether spent nuclear fuel reprocessing plant wastes shall be managed as another waste type or as high-level waste, either the citation or evaluation process described below shall be used:</p> <p>(1) Citation. Waste incidental to reprocessing by citation includes spent nuclear fuel reprocessing plant wastes that meet the description included in the Notice of Proposed Rulemaking (34 FR 8712) for proposed Appendix D, 10 CFR Part 50, Paragraphs 6 and 7. These radioactive wastes are the result of reprocessing plant operations, such as, but not limited to: contaminated job wastes including laboratory items such as clothing, tools, and equipment.</p> <p>Evaluation. Determinations that any waste is incidental to reprocessing by the evaluation process shall be developed under good record-keeping practices, with an adequate quality assurance process, and shall be documented to support the determinations. Such wastes may include, but are not limited to, spent nuclear fuel reprocessing plant wastes that:</p> <p>(a) Will be managed as low-level waste and meet the following criteria:                      Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and                      Will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, Performance Objectives; and                      3. Are to be managed, pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, Waste Classification; or will meet alternative requirements for waste classification and characterization as DOE may authorize.</p> <p>(b) Will be managed as transuranic waste and meet the following criteria:                      Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and                      Will be incorporated in a solid physical form and meet alternative requirements for waste classification and characteristics, as DOE may authorize; and                      Are managed pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, in accordance with the provisions of Chapter III of this Manual, as appropriate.</p>	<p>All facilities: A gap exists, as Hanford Site waste acceptance and management operations programs do not evaluate incidental to reprocessing in a fashion that is compliant with requirements. The current waste acceptance and generation process does not consider waste incidental to reprocessing issues for waste generated at facilities with HLW sources. The potentially affected waste has not been cited or evaluated in the past, but will need to be in the future.</p> <p>Chapter does not apply to Spent Nuclear Fuels.</p> <p>RCP: Gap. 324/327 and 340 facilities.                      No Gap. All other RCP facilities.                      A gap exists as waste acceptance and management operations programs do not evaluate incidental to reprocessing in a fashion that is compliant with requirement. The current waste acceptance and generation process does not consider waste incidental to reprocessing issues for waste generated at facilities with HLW sources. The potential affected waste has not been cited or evaluated in the past, but will need to be in the future.</p>	<p>Waste Services: Revise HNF-PRO-455 series to include WIR evaluation. Evaluate waste for SRTC Project to determine waste classification per HWIR. Activity completion of 4 months after work funded.</p> <p>242-A Evaporator, WESF, PUREX Storage Tunnels, 222-S Laboratory will develop/upgrade procedures or other documents to reflect changes in HNF-PRO modification. Activity completion of 4 months after work funded.</p> <p>Also each of these facilities will evaluate existing waste associated with HLW sources to determine classification per WIR. Activity completion of 4 months after work funded.</p> <p>242-A Evaporator:                      WESF:                      PUREX Storage Tunnels:                      222-S Laboratory:</p> <p>RCP: Evaluate facility wastes to identify and document incidental waste by 09/30/01.                      Develop/upgrade facility procedures to reflect changes in HNF-PRO procedure(s) by 09/30/01.</p> <p>324 Facility                      327 Facility                      340 Facility</p>	<p>28K</p> <p>10K                      11K                      11K                      10K</p> <p>30K                      30K                      30K</p>

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.C.	<p>C. Management of Specific Wastes. The following provide for management of specific wastes as high-level waste in accordance with the requirements in this Chapter:</p> <p>(1) Mixed High-Level Waste. Unless demonstrated otherwise, all high-level waste shall be considered mixed waste and is subject to the requirements of both the Atomic Energy Act of 1954, as amended, the Resource Conservation and Recovery Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(2) TSCA-Regulated Waste. High-level waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual.</p>	<p>PUREX Storage Tunnels: Gap – need to complete HLW determination and if HLW, determine if waste is mixed and place in records.</p> <p>All other facilities: NO GAP</p>	<p>PUREX Storage Tunnels: Research of past records, processes, and interviews will have to be accomplished to develop a final record of waste that is considered high level and managed as mixed. Activity completion of 4 months after work funded.</p>	5K
CH.II.D.	<p>D. Complex-Wide High-Level Waste Management Program. A complex-wide program and plan shall be developed as described under Responsibilities, 2.B and 2.D, in Chapter I of this Manual.</p>	<p>All Facilities: Potential gap depending upon results of complex-wide plan, which is HQ activity.</p>	<p>NO ACTION REQUIRED</p>	None
CH.II.E.	<p>E. Site-Wide Radioactive Waste Management Program. In addition to the items in Chapter I of this Manual, documentation of the Site-Wide Radioactive Waste Management Program shall include a description of the High-Level Waste Systems Engineering Management Program to support decision-making related to nuclear safety, including high-level waste requirements analysis, functional analysis and allocation, identification of alternatives, and alternative selection and system control.</p>	<p>242-A Evaporator, PUREX Storage Tunnels, and WESF: Gap – Need to evaluate application of these system's engineering requirements.</p> <p>All other Facilities: No Gap</p>	<p>WESF and 242-A Evaporator no action required. Refer to Section 2.2.</p> <p>PUREX Storage Tunnels: Perform a functional analysis, generate a functional analysis document, and incorporate into facility-specific procedures as necessary. Activity completion of 6 months after work funded.</p>	35K
CH.II.F.	<p>F. Radioactive Waste Management Basis. High-level waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:</p> <p>(1) Generators. The waste certification program.</p> <p>(3) Pretreatment and Treatment Facilities. The waste acceptance requirements and waste certification program.</p> <p>(4) (3) Storage Facilities. The waste acceptance requirements and the waste certification program.</p>	<p>PUREX Storage Tunnels, 242-A Evaporator, and WESF: Gap - Each facility will need to develop its waste management basis documentation.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels: Complete Radioactive Waste Management Basis (RWMB).</p> <p>WESF: Develop RWMB Statement.</p> <p>242-A Evaporator: Develop RWMB.</p> <p>Activity complete 6 months after work funded.</p>	<p>16K</p> <p>16K</p> <p>14K</p>

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.G.	<p>G. Quality Assurance Program. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Product Quality. The requirements of RW-0333P, Quality Assurance Requirements and Description, shall apply to those high-level waste items and activities important to waste acceptance/product quality.</p> <p>(2) Audits and Assessments. The evaluation and assessment requirements of RW 0333P, Quality Assurance Requirements Document and Description, and associated implementing procedures shall be met for high-level waste acceptance and product quality activities, in addition to the assessment requirements of other DOE directives and requirements identified in Chapter I of this Manual.</p>	<p>PUREX Storage Tunnels, 242-A Evaporator, and WESF: Gap exists for the O 435.1 Chapter II, Section G. (1) <i>Product Quality</i> and Section G. (2) <i>Audits and Assessments</i>.</p> <p>All other facilities - No gap.</p>	<p>PUREX Storage Tunnels, 242-A Evaporator, and WESF: No action required. Refer to Section 2.2.</p>	None
CH.II.H.	<p>H. Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Contingency Storage. For off-normal or emergency situations involving high-level waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of waste contained in any one storage vessel, pretreatment facility, or treatment facility. Tanks or other facilities that are designated for high-level waste contingency storage shall be maintained in an operational condition when waste is present and shall meet all the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p>	<p>Gap: WESF and PUREX Storage Tunnels – Need to evaluate storage of HLW for application of this requirement.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels and WESF: No action required. Refer to Section 2.2.</p>	None
CH.III.I.	<p>I. Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.</p> <p>(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis.</p>	All Facilities: No Gap	NO ACTION REQUIRED	None

# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.J.	<p>J. Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1). Technical and Administrative. Waste acceptance requirements for all high-level waste storage, pretreatment, or treatment facilities, operations, and activities shall specify, at a minimum, the following:</p> <p>(a) Allowable activities and/or concentrations of specific radionuclides;</p> <p>(b) Acceptable waste form that ensures the chemical and physical stability of the waste under conditions that might be encountered during transfer, storage, pretreatment, or treatment;</p> <p>(c) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved; and</p> <p>(d) Pretreatment, treatment, storage, packaging, and other operations shall be designed and implemented in a manner that will ultimately comply with DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste.</p> <p>(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that the technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established.</p>	<p>PUREX Storage Tunnels and WESF:</p> <p>J (1-2) - Gap – There are currently no formal HLW waste acceptance procedures for these facilities. However, these facilities are not currently accepting new HLW.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels and WESF: No action required. Refer to Section 2.2.</p>	<p>None</p>
CH.II.K.	<p>K. Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.</p>		<p><b>NO ACTION REQUIRED</b></p>	
CH.II.K.(1)	<p>(1). Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all high-level waste streams.</p>	<p>WESF, PUREX Storage Tunnels, and 242-A Evaporator: Gap – Need to develop a life cycle waste planning process to be performed before waste generation. Not currently accepting new HLW</p> <p>All other facilities: No Gap</p>	<p>Waste Services: Revise HNF-PRO-455 series and possibly waste acceptance (WMH-370) procedures. Activity will be completed 4 months after work funded.</p>	<p>12K</p>

# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.K.(2)	<p>(2). Waste With No Identified Path to Disposal. High-level waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address:</p> <p>(a) Programmatic need to generate the waste; (b) Characteristics and issues preventing the disposal of the waste; (c) Safe storage of the waste until disposal can be achieved; and (d) Activities and plans for achieving final disposal of the waste (compliance with DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms).</p>	<p>WESF, PUREX Storage Tunnels, 242-A Evaporator: Gap – It does not appear that there is a documented and reliable process in place to ensure that no path forward waste is evaluated before being generated.</p> <p>All other facilities: No Gap</p>	<p>Waste Services: Refer to II K(1)</p> <p>No facility action required.</p>	None
CH.II.L.	<p>L. Waste Characterization. High-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.</p> <p>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data.</p> <p>(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste:</p> <p>(a) Physical and chemical characteristics;</p> <p>(b) Volume, including the waste and any solidification media;</p> <p>(c) Radionuclides or source information sufficient to describe the approximate radionuclide content of the waste; and</p> <p>(d) Any other information which may be needed to demonstrate compliance with the requirements of the DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste.</p> <p>(3) Hazardous Characteristics. Waste characterization processes shall yield sufficient chemical and physical data to clearly identify any hazardous characteristics that may degrade the ability of structures, systems, and components to perform their radioactive waste management function.</p>	N/A	NO ACTION REQUIRED	None

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.M.	<p>M. Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving high-level waste for storage, pretreatment, treatment, and disposal are met.</p> <p>(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period.</p> <p>(2) Certification Before Transfer. High-level waste shall be certified as meeting the waste acceptance requirements before it is transferred to the facility receiving the waste.</p> <p>(3) Maintaining Certification. High-level waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, pretreatment, treatment, or disposal facility shall be managed in a manner that maintains its certification status.</p>	<p>PUREX Storage Tunnels and WESF: M (all) - Gap – for future waste shipment activities M (all) - No Gap – not applicable to current operating practices</p> <p>242-A Evaporator: M (all) – Gap- for HLW coming from tank farms No Gap for HLW going to tank farms. Existing procedures meet waste certification requirements.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels: No action required at this time. Refer to Section 2.2.</p> <p>WESF: Waste certification program will be in 2012 before shipping capsules to vitrification.</p> <p>242-A Evaporator: Develop waste certification administrative procedure, should address waste certification discussed in the RWMB. Activity will be completed 4 months after work funded</p>	<p>104K</p> <p>27K</p>
CH.II.N.	<p>N. Waste Transfer. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Authorization. High-level waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.</p> <p>(2) Data. Waste characterization data and generation, storage, pretreatment, treatment, and transportation information for high-level waste shall be transferred with or be traceable to the waste.</p> <p>(3) Records and Transfer Reporting. The records and transfer requirements for canistered high-level waste forms shall comply with DOE/EM-0093, Waste Acceptance Product Specification for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste.</p>	<p>PUREX Storage Tunnels and WESF: No Gap – for current operating practices GAP – for future waste transfer activities.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels: No action at this time. Refer to Section 2.2</p> <p>WESF: Waste transfer sheets will be used for capsule transfers in 2013. No action at this time. Refer to Section 2.2.</p>	<p>None</p>
CH.II.O.	<p>O. Packaging and Transportation. The following requirement is in addition to those in Chapter I of this Manual.</p> <p>(1) Canistered Waste Form. Immobilized high-level waste shall meet the requirements of the DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste.</p>	<p>All facilities: No Gap</p>	<p><b>NO ACTION REQUIRED</b></p>	<p>None</p>

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.P.	P. Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.		NO ACTION REQUIRED	
CH.II.P.(1)	(1). Site Evaluation. Proposed locations for high-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses. (a) Each site proposed for a new high-level waste facility or expansion of an existing high-level waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities. (b) Proposed sites with environmental characteristics, geotechnical characteristics, or human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility.	All Facilities: Gap – Need to address in siting and facility change control processes	Waste Services: Will revise HNF-PRO-1998 to address requirements . Activity will be completed 4 months after work funded.	6K
CH.II.P.(2)	(2) Facility Design. The following facility design requirements, at a minimum, apply:		NO ACTION REQUIRED	
CH.II.P. (2)(a)	(a) Safety (Safety Class and Safety-Significant) Structures, Systems, and Components. Safety structures, systems, and components for high-level waste storage, pretreatment, and treatment facilities shall be designated and designed consistent with the provisions of DOE O 420.1, Facility Safety; DOE 5480.22, Technical Safety Requirements; and DOE 5480.23, Nuclear Safety Analysis Reports.	242-A Evaporator, WESF, and PUREX Storage Tunnels: Gap – DOE Order 420.1 is not in contract, evaluate gap to comply with Orders in contract 5480.22, 5480.7A, 6430.1A, and 5480.23. PUREX Storage Tunnels and WESF designs do not comply with 5480.22 and 5480.23. 242-A Evaporator needs to perform a detailed comparison with requirements. All other facilities: NO Gap	242-A Evaporator: Assemble documents demonstrating compliance to DOE Orders. Evaluation of DOE Orders 6430.1A and 5480.7 is given in the SAR. The SAR also states the facility meets the intent of 5480.7A. The 242-A Evaporator SAR does not comply with DOE Orders 5480.22 and 5480.23. Compliance plan has been submitted to DOE-RL with an estimated cost of \$400K plus \$50K annually per letter #FDH-9955894A R2. No impact to 435.1 implementation cost and schedule.  WESF: The SAR does not comply with DOE Order 5480.22 and 5480.23. Compliance plan has been submitted to DOE-RL. No impact to 435.1 implementation.  PUREX Storage Tunnels: This will be addressed in previously planned Safety Basis modification therefore, no impact to 435.1 implementation cost and schedule.	None

000510.1728

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Gap
CH.II.P. (2)(b)	<p>(b) Confinement. High-level waste systems and components shall be designed to maintain waste confinement. The following requirements apply to new or modifications to existing high-level waste systems, ancillary systems, and components:</p> <ol style="list-style-type: none"> <li>1. Secondary confinement systems shall be designed to prevent any migration of wastes or accumulated liquid out of the waste system; shall be capable of detecting, collecting, and retrieving releases into the secondary confinement; and shall be constructed of, or lined with, materials that are compatible with the waste(s) to be placed in the waste system</li> </ol> <p>Tank and piping systems used for high-level waste collection, pretreatment, treatment, and storage shall be welded construction, except where remote configurations or periodic rerouting of high-level waste streams require non-welded construction</p>	<p>WESF, PUREX Storage Tunnels, and 242-A Evaporator: Gap – design procedures need to include 435.1 requirement. All other facilities: NO GAP</p>	<p>Waste Services: Modify HNF-PRO-097 and 1819 to incorporate requirement. Activity will be completed 4 months after work funded. Refer to II P(2)(e) for cost.</p>	None
CH.II.P. (2)(c)	<p>(c) Lifting Devices. The design of hoisting and rigging devices shall comply with the following specific requirements.</p> <ol style="list-style-type: none"> <li>1. Lifting devices that are designated as safety class or safety significant shall be designed to prevent free fall of loads.</li> <li>2. Loading and unloading systems for lifting devices that are designated as safety class or safety significant shall be designed with a reliable system of interlocks that will fail safely upon malfunction.</li> </ol>	All facilities: No Gap	NO ACTION REQUIRED	None

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.P. (2)(d)	(d) Ventilation. 1. Design of high-level waste pretreatment, treatment, and storage facilities shall include ventilation through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the applicable requirements. 2. When conditions exist for generating gases in flammable and explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.	PUREX Storage Tunnels: Gap – no filtration system All other facilities: No Gap.	PUREX Storage Tunnels: No action required. Refer to Section 2.2.	None
CH.II.P. (2)(e)	(e) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing high-level waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described.	WESF, PUREX Storage Tunnels, and 242-A Evaporator: Gap – design procedures need to include 435.1 requirement. All other facilities: No Gap	Waste Services: Modify HNF-PRO-097 and 1819 to incorporate requirement. Activity to be completed 4 months after work funded.	10K
CH.II.P. (2)(f)	(f) Maintenance Exposure Reduction. Remote maintenance features and other appropriate techniques to maintain as low as reasonably achievable (ALARA) personnel exposures shall be incorporated into each high-level waste facility.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.II.P. (2)(g)	(g) Facilities for Receipt and Retrieval of High-Level Waste. 1. Designs for storage facilities shall incorporate features to facilitate retrieval capability. 2. High-level waste receipt and retrieval systems shall be designed to complement the existing storage facilities for safe storage and transfer of high-level waste.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.II.P. (2)(h)	(h) Structural Integrity. Designs for new tanks shall contribute to the confinement requirement at Section II.P. (2)(b) of this Manual by: 1. Incorporating features to avoid critical degradation modes at the proposed site where practicable, or minimize degradation rates for the critical modes; and 2. Incorporating features to facilitate execution of the Structural Integrity Program required by Section II.Q. (2) of this Manual.	WESF, PUREX Storage Tunnels, and 242-A Evaporator: Gap – design procedures need to include 435.1 requirement. All other facilities: No Gap	Waste Services: Refer to II P(2)(e).	None

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CH.II.P. (2)(i)	(i) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of high-level waste treatment storage, pretreatment, and treatment facilities to provide volume inventory data and to prevent spills, leaks and overflows from tanks or confinement systems.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.II.P. (2)(j)	(j) Volume Monitoring Systems. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of high-level waste storage, pretreatment, and treatment facilities to provide rapid detection of failed confinement and/or other abnormal conditions.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.II.Q.	Q. Storage. The following requirements are in addition to those in Chapter I of this Manual and also apply to facilities intended for management of high-level waste awaiting pretreatment, treatment or disposal, unless stated otherwise.		NO ACTION REQUIRED	
CH.II.Q.(1)	(1) Operation of Confinement Systems. (a) Confinement systems shall be operated and maintained so as to preserve the design basis. (b) Secondary confinement systems, where provided, shall be operated to prevent any migration of wastes or accumulated liquid out of the waste confinement systems.	(a) All Facilities: No Gap (b) WESF: Gap – need to evaluate pools as secondary confinement All other facilities: No Gap	(a) NO ACTION REQUIRED  (b) WESF: No action required. Refer to Section 2.2.	None

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.Q.(2)	<p>(2) Structural Integrity Program.</p> <p>(a) Leak-Tight Tanks In-Service. A structural integrity program shall be developed for each high-level waste storage tank site to verify the structural integrity and service life of each tank to meet operational requirements for storage capacity. The program shall be capable of:</p> <ul style="list-style-type: none"> <li>Verifying the current leak-tightness and structural strength of each tank in service;</li> <li>Identifying corrosion, fatigue, and other critical degradation modes;</li> <li>Adjusting the chemistry of tank waste, calibrating cathodic protection systems, wherever employed, and implementing other necessary corrosion protection measures;</li> <li>Providing credible projections as to when structural integrity of each tank can no longer be assured; and</li> <li>Identifying the additional controls necessary to maintain an acceptable operating envelope.</li> </ul> <p>(b) In-Service Tanks that Have Leaked or Are Suspect. For each high-level waste storage tank in-service that is known to have leaked, or is suspect, a modified structural integrity program shall be developed and implemented to identify the safe operational envelope. The modified program shall be capable of:</p> <ul style="list-style-type: none"> <li>Verifying the structural strength of each tank in-service which has leaked or is suspect;</li> <li>Identifying corrosion, fatigue and other critical degradation modes;</li> <li>Adjusting the chemistry of tank waste, calibrating cathodic protection systems, wherever employed, and implementing other necessary corrosion protection measures;</li> <li>Determining which of the tanks that have leaked or are suspect may remain in service by identifying an acceptable safe operating envelope;</li> <li>Providing credible projections as to when the acceptable safe operational envelope can no longer be assured; and</li> <li>Identifying the additional controls necessary to maintain the acceptable safe operational envelope.</li> </ul> <p>When physical activities, as part of a structural integrity program, pose additional vulnerabilities, alternative measures shall be implemented to provide an acceptable storage operational envelope.</p> <p>(c) Other Storage Components. The structural integrity of other storage components shall be verified to assure leak tightness and structural strength.</p>	All facilities: No Gap	NO ACTION REQUIRED	None

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.Q.(3)	<p>(3) Canistered Waste Form Storage. Canisters of immobilized high-level waste awaiting shipment to a repository shall be:</p> <p>(a) Stored in a suitable facility;</p> <p>(b) Segregated and clearly identified to avoid commingling with low-level, mixed low-level, or transuranic wastes; and</p> <p>(c) Monitored to ensure that storage conditions are consistent with DOE/EM 0093, Waste Acceptance Product Specifications for Vitrified High-level Waste Forms, or DOE/RW-0351, Waste Acceptance System Requirements Document, for non-vitrified immobilized high-level waste. Facilities and operating procedures for storage of vitrified high-level waste shall maintain the integrity of the canistered waste form.</p>	All facilities: No Gap, this only applies to canister storage	NO ACTION REQUIRED	None
CH.II.R.	<p>R. Treatment. Treatment shall be designed and implemented in a manner that will ultimately comply with DOE/EM 0093, Waste Acceptance Product Specifications for Vitrified High-level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste.</p>	All Facilities: No Gap	NO ACTION REQUIRED	None
CH.II.S.	<p>S. Disposal. Disposal of high-level waste must be in accordance with the provisions of the Atomic Energy Act of 1954, as amended, the Nuclear Waste Policy Act of 1982, as amended, or any other applicable statutes.</p>	All Facilities: No Gap	NO ACTION REQUIRED	None
CH.II.T.	<p>T. Monitoring. High-level waste pretreatment, treatment, storage, and transportation facilities shall be monitored for chemical, physical, radiological, structural, and other changes that could indicate failure of system confinement, integrity, or safety, and which could lead to abnormal events or accidents. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, flammable or explosive mixtures of gases, level and/or waste volume, and significant waste chemistry parameters for non-immobilized high-level waste. Facility monitoring programs shall also include physical inspections to verify that control systems have not failed.</p>	<p>PUREX Storage Tunnels, WESF, and 242-A Evaporator: GAP – do not monitor per minimum requirements. Parameters monitored in these facilities are identified in safety documents and data collection procedures. Need further evaluation to apply requirement to facility.</p> <p>All other facilities: No Gap</p>	<p>PUREX Storage Tunnels: No action required. Refer to Section 2.2.</p> <p>WESF: No action required. Refer to Section 2.2.</p> <p>242-A Evaporator: No action required. Refer to Section 2.2.</p>	None

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.U.	<p>U. Closure. The following requirements for closure of deactivated high-level waste facilities and sites are in addition to those in Chapter I of this Manual.</p> <p>(1) Decommissioning. Deactivated high-level waste facilities/sites shall meet the decommissioning requirements of DOE O 430.1A, Life-Cycle Asset Management and the requirements of DOE 5400.5, Radiation Protection of the Public and the Environment, for release; or</p> <p>(2) CERCLA Process. Deactivated high-level waste facilities/sites shall be closed in accordance with the CERCLA process as described in Section I.2.F. (5); or</p> <p>(3) Closure. Deactivated high-level waste facilities/sites shall be closed in accordance with an approved closure plan as specified below. Residual radioactive waste present in facilities to be closed shall satisfy the waste incidental to reprocessing requirements of this Chapter.</p> <p>(a) Facility/Site Closure Plans. A closure plan shall be developed for each deactivated high-level waste facility/site being closed that defines the approach and plans by which closure of each facility within the site is to be accomplished. This plan shall be completed and approved prior to the initiation of physical closure activities, and updated periodically to reflect current analysis and status of individual facility closure actions. The plan shall include, at a minimum, the following elements:</p> <ol style="list-style-type: none"> <li>1. Identification of the closure standards/performance objectives to be applied from Chapter III or IV, as appropriate;</li> <li>2. A strategy for allocating waste disposal facility performance objectives from the closure standards identified in the closure plan among the facilities/units to be closed at the site;</li> <li>3. An assessment of the projected performance of each unit to be closed relative to the performance objectives allocated to each unit under the closure plan;</li> <li>4. An assessment of the projected composite performance of all units to be closed at the site relative to the performance objectives and closure standards identified in the closure plan; and</li> </ol> <p>Any other relevant closure controls including a monitoring plan, institutional controls, and land use limitations to be maintained in the closure activity.</p>	<p>All Facilities: No Gap, no deactivated HLW facilities; therefore, this requirement does not apply</p>	<p>NO ACTION REQUIRED</p>	<p>None</p>
CH.II.V.	<p>V. Specific Operations. Specific requirements are provided for the operation of lifting devices and facilities for receipt and retrieval of high-level waste.</p>		<p>NO ACTION REQUIRED</p>	

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.II.V.(1)	(1) Operation of Lifting Devices. Hoisting and rigging activities shall be conducted in accordance with the guidance provided in the DOE Standard "Hoisting and Rigging" (DOE-STD-1090-96).	1) All Facilities: No Gap	NO ACTION REQUIRED	None
CH.II.V.(2)	(2) Operation of Facilities for Receipt and Retrieval of High-Level Waste. High-level waste receipt and retrieval systems shall be operated and maintained consistent with high-level waste system features incorporated in the facilities. Strategies for retrieval of waste shall be analyzed to ensure that structural and radiological impacts are consistent with the facility design basis.	2) PUREX Storage Tunnels: No Gap for current operations PUREX Storage Tunnels: Gap for future waste transfer activities All other Facilities: No Gap	PUREX Storage Tunnels: The safety basis serves as the analysis that the impacts are consistent with the facility design	None
<b>CHAPTER III TRANSURANIC WASTE REQUIREMENTS</b>				
CH.III.A.	A. Definition of Transuranic Waste. Transuranic waste is radioactive waste containing more than 100 nanocuries (3700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for:	No Gap: Definition only.  PNNL needs to modify definition in internal documents.	NO ACTION REQUIRED  Modify 6 months after funding.	None  1.3K
CH.III.A.(1)	(1) High-level radioactive waste; (2) Waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) Waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.	No Gap: Definition only.	NO ACTION REQUIRED	None

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.B.	<p>B. Management of Specific Wastes. The following provide for management of specific wastes as transuranic waste in accordance with the requirements in this Chapter:</p> <p>(1) Mixed Transuranic Waste. Transuranic waste determined to contain both a hazardous component subject to the Resource Conservation and Recovery Act (RCRA), as amended, and a radioactive component subject to the Atomic Energy Act of 1954, as amended, shall be managed in accordance with the requirements of RCRA and DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(2) TSCA-Regulated Waste. Transuranic waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(3) Pre-1970 Transuranic Waste. Transuranic waste disposed of prior to implementation of the 1970 Atomic Energy Commission Immediate Action Directive regarding retrievable storage of transuranic waste is not subject to the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p>	<p>FH: All Facilities: No Gap.</p> <p>PNNL: Minor procedure changes needed for TSCA-regulated waste.</p>	<p>NO ACTION REQUIRED</p> <p>In progress for completion 09/30/00. Funding already allocated.</p>	None
CH.III.C.	<p>C. Complex-Wide Transuranic Waste Management Program. A complex-wide program and plan shall be developed as described under Responsibilities, 2.B and 2.D, in Chapter I of this Manual.</p>	<p>FH: All facilities: Potential gap depending upon results of complex-wide plan, which is HQ activity.</p>	NO ACTION REQUIRED	None
CH.III.D.	<p>D. Radioactive Waste Management Basis. Transuranic waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:</p> <p>(1) Generators. The waste certification program.</p> <p>(2) Treatment Facilities. The waste acceptance requirements and the waste certification program.</p> <p>(3) Storage Facilities. The waste acceptance requirements and the waste certification program.</p> <p>(4) Disposal Facilities. The performance assessment, disposal authorization statement, waste acceptance requirements, and monitoring plan.</p>	<p>FH: All Facilities: Gap. Each facility will need to develop its waste management basis documentation.</p> <p>SNF generates and may store TRU.</p> <p>PFP needs to prepare RWMB.</p> <p>PNNL needs to prepare RWMB.</p> <p>RCP: Gap. All facilities except 340 Facility, which does not have TRU.</p>	<p>Develop a RWMB Statement. The RWMB will be completed 6 months after funding.</p> <p>CWC PUREX Storage Tunnels - refer to II F WRAP LLBG 222-S T Plant SNF PFP</p> <p>PNNL: Refer to I.2.F.(2)</p> <p>RCP: Develop RWMB 6 months after funding</p>	<p>16K 0K 16K 16K 15K 15K 7K 10K</p> <p>100K</p>

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.E.	<p>E. Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Contingency Storage. For off-normal or emergency situations involving liquid transuranic waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of liquid contained in any one storage tank or treatment facility. Tanks or other facilities that are designated transuranic waste contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of liquid waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p>	<p>FH: PUREX Storage Tunnels, LLBG, WESF, WSCF, LWPF, and 242-A Evaporator: NO GAP – do not store liquid TRU.</p> <p>PPF:</p> <p>(1) <i>Contingency storage</i> – 241-Z has four operational tanks. Waste is received in D-8 and treated in D-5. Tanks D-4 and D-7 are used for overflow protection. All tanks have identical operating volumes. This satisfies the contingency storage requirement.</p> <p>(2) <i>Transfer Equipment</i> – Steam jets are used to transfer waste between tanks. Tanks D-4 and D-7 can transfer to D-5 and D-8. But, D-8 only has one transfer route to D-5, which only has a transfer route to Tank Farms. In an emergency, neither tank can be emptied to either of the overflow storage tanks D-4 or D-7. This does not satisfy the new requirement.</p> <p>All other facilities: Gap – need to implement for tanks and bulk container storage (not bottles or lab packs).</p> <p>RCP: Gap. 324/327 and 340 Facilities This section invokes numerous new requirements (leak testing, inspections, functional tests, operations, procedures, training, records, etc.).</p> <p>Compliance with existing RCP facilities authorization agreements (AA), authorization envelopes (AE), and RCP procedures/programs provides adequate compliance with Contingency Actions requirements and regulatory requirements</p>	<p>222-S: Refer to IV E</p> <p>(1) No action required.</p> <p>(2) Procedures will be rewritten for the degree possible 6 months after funding. Full compliance might not be possible and might need waiver.</p> <p>RCP: Evaluate potential impacts on 324 and 327 Liquid Waste Handling System (LWHS) at time of LWHS design.</p> <p>No additional DOE O 435.1 requirements related to contingency actions will be implemented. Waiver will be requested based on adequacy of RCP facility AAs and AEs.</p> <p>This approach is appropriate for the RCP transition facilities, which have limited lifetime, and are currently undergoing deactivation/stabilization for turnover to the site Environmental Restoration Contractor. Existing facility safety hazards/safety basis/safety analysis documentation provide an adequate safety envelope for contingency/accident scenarios.</p>	<p>None</p> <p>(1) None (2) \$15K (also III.M. for design change costs)</p> <p>TBD</p> <p>10K</p>

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CH.III.F.	<p>F. Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.</p> <p>(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis.</p>	<p>FH: (2) Existing operation curtailment processes or programs should meet the requirements of 435.1. An evaluation of Hanford Site "Conduct of Operations" policies and procedures would be necessary to identify those programs that would be most suitable. This section also requires development of a "documented system of routine assessments" against the approved radioactive waste management basis.</p> <p>PNNL: Discussed under CH.I.2.F.(2).</p> <p>(2) RCP: Gap.</p>	<p>(2) – Implementation of ISMS and corrective action management system provides compliance with this requirement.</p> <p>RCP: Revise procedures and assess compliance 1 year after funding.</p>	<p>None</p> <p style="text-align: right;">25K</p>
CH.III.G.	<p>G. Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.</p>		<p>PNNL plan discussed under I.2.F.(6).</p>	
CH.III.G.(1)	<p>(1) Technical and Administrative. Waste acceptance requirements for all transuranic waste storage, treatment, or disposal facilities, operations, and activities shall specify, at a minimum, the following:</p> <p>(a) Allowable activities and/or concentrations of specific radionuclides;</p> <p>(b) Acceptable waste form and/or container requirements that ensure the chemical and physical stability of waste under conditions that might be encountered during transportation, storage, treatment, or disposal;</p> <p>(c) Restrictions or prohibitions on waste, materials, or containers that may adversely affect waste handlers or compromise facility or waste container performance;</p> <p>(d) Requirement to identify transuranic waste as defense or non-defense, and limitations on acceptance; <u>and</u></p> <p>(e) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved</p>	<p>FH: CWC, T Plant, LLBG, and WRAP: Gap – HNF-EP-0063 Rev 5 does not capture the requirement for generators to identify defense vs. non-defense TRU</p> <p>222-S Laboratory: Gap – 222-S needs to formalize acceptance requirements or demonstrate that existing documents meet this section. For waste that is internally generated or stored, a graded approach will be employed to apply the appropriate requirements.</p> <p>PUREX Storage Tunnels: Gap – there are currently no formal TRU waste acceptance procedures for PUREX Storage Tunnels, however, this facility is not currently accepting waste.</p> <p>SNF: Evaluate IC columns in vault to determine storage status and applicable requirements.</p> <p>RCP: All facilities. RCP facilities will have to review and adjust internal procedures if disposal and storage facilities change acceptance requirements.</p> <p>PNNL: Included in RWMB.</p>	<p>Waste Services: Modification to HNF-PRO-0063 is scheduled to be completed by this year using existing funding. No impact to 435.1 budget.</p> <p>CWC, T Plant, LLBG, WRAP: No action required.</p> <p>222-S: No action required. Refer to Section 2.2.</p> <p>PUREX Storage Tunnels: No action required. Refer to Section 2.2.</p> <p>Review/revise facility procedures to be consistent with requirements and perform associated training within one year of receipt of funding.</p> <p>324 Facility 327 Facility 300 Area ADP Facilities 200 Area ADP Facilities 340 Facility</p> <p>Refer to I.2.F.(6)</p>	<p>None</p> <p style="text-align: right;">30K 30K 20K 25K 30K</p>

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.G.(2)	(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established.	FH: All Facilities: No gap.  SNF not accepting more IC column waste for storage.  PFP does not receive TRU from other facilities.  RCP: Gap. All facilities except 340 Facility. RCP facilities do not receive TRU waste from other facilities; however, RCP facilities will have to review and adjust internal procedures if disposal facilities change acceptance requirements.	NO ACTION REQUIRED  Refer to III.G.(1)	None
CH.III.H.	H. Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.		PNNL plan discussed under I.2.F.(7).	
CH.III.H.(1)	(1) Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all transuranic waste streams.	FH: All Facilities: Gap Need to develop a lifecycle waste planning process to be performed prior to waste generation.  RCP: Gap. All facilities. RCP facilities need to develop the process to obtain acceptance of a waste before generation.	Refer to IV H(1) for FH-WMP.  SNF to revise procedure AP-5-10 and train. Activity will be complete 4 months after work authorization  PFP to revise procedure FSP-PFP-5-8 by 10/01/00 for new processes.  RCP: Revise/upgrade RCP facility documentation within one year to document RCP facilities approach and applicability for life cycle planning. 324 Facility 327 Facility 300 Area ADP Facilities 200 Area ADP Facilities 340 Facility	None  1K  2K  20K 20K 15K 20K 20K
CH.III.H.(2)	(2) Waste With No Identified Path to Disposal. Transuranic waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address: (a) Programmatic need to generate the waste; (b) Characteristics and issues preventing the disposal of the waste; (c) Safe storage of the waste until disposal can be achieved; and (d) Activities and plans for achieving final disposal of the	FH: All Facilities: Gap – It does not appear there is a documented and reliable process in place to ensure that no path forward waste is evaluated before generation.  PFP: Procedure needed. However, it is assumed that existing TRU/PCB material is not new waste and is not subject to this prohibition.  RCP: Gap. All facilities. RCP facilities need to document process to ensure that no path forward waste is evaluated prior to generation. (TRU/PCB waste falls into this category and might need an exemption.)	Refer to IV H(1).  SNF to revise AP-5-10 and train by 10/01/01.  PFP to revise FSP-PFP-5-8 by 10/01/00. PFP will submit exemption request by 04/01/01.  RCP: Develop/upgrade facility procedures within one year of receipt of funding to document RCP facilities approach and applicability. 324 Facility 327 Facility 300 Area ADP Facilities 200 Area ADP Facilities 340 Facility	2K  20K 15K 20K 20K

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Citation
CH.III.I	<p>1. Waste Characterization. Transuranic waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.</p> <p>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data.</p> <p>(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste:</p> <p>(a) Physical and chemical characteristics;</p> <p>(b) Volume, including the waste and any stabilization or absorbent media;</p> <p>(c) Weight of the container and contents;</p> <p>(d) Identities, activities, and concentrations of major radionuclides;</p> <p>(e) Characterization date;</p> <p>(f) Generating source;</p> <p>(g) Packaging date; and</p> <p>(h) Any other information which may be needed to prepare and maintain the disposal facility performance assessment or demonstrate compliance with applicable performance objectives.</p>	<p>FH: T Plant Complex, WRAP, 222-S Laboratory, PFP: Gaps exist, as follows:</p> <ol style="list-style-type: none"> <li>1. Waste generators do not consistently use the DQO process or an equivalent process to plan characterization activities.</li> <li>2. This section requires more detailed documentation of characterization data than are commonly practiced, particularly for 'indirect methods'.</li> <li>3. There are minor gaps in 'minimum waste characterization' requirements.</li> </ol> <p>RCP: Gap. No, all facilities. Compliance with existing facilities authorization agreements (AA) authorization envelopes (AE), and RCP procedures/programs provides adequate compliance with Waste Characterization requirements and regulatory requirements.</p> <p>RCP facilities will continue to comply with WAC 173-303 (Dangerous Waste Regulations) for dangerous and mixed waste, and EP-0063 waste acceptance criteria for all waste types.</p> <p>This section requires more detailed documentation of characterization data than are commonly practiced, particularly for "indirect methods".</p> <p>There are minor gaps in "minimum waste characterization" requirements.</p> <p>PNNL: No gaps.</p>	<p>Waste Services: Revise HNF-PRO-455 series, HNF-PRO-0063 and also WMH 370. Activity will be complete 4 months after work authorization</p> <p>T Plant: Rewrite procedures to implement how to best use the DQO process to plan characterization activities, add more detailed documentation of characterization data if needed and the method to evaluate minimum characterization requirements against current methods. Also need to apply requirement to ensure that waste without an identified path forward undergoes the DQO process to assess characterization requirements. Activity will be complete 4 months after work authorization.</p> <p>WRAP: Evaluate the DQO process for consistency against characterization activities and evaluate minimum requirements against current methods. Activity will be complete 4 months after work authorization.</p> <p>222-S: Develop a procedure to comply with 435.1 requirements for implementing a formal DQO process for waste characterization. Activity will be complete 4 months after work authorization.</p> <p>SNF: Modify AP-5-10 and train. Activity will be complete 4 months after work authorization.</p> <p>PFP: Will implement process when waste acceptance criteria of receiver organization incorporates requirements. Also revise FSP-PFP-5-8 for characterization when needed.</p> <p>RCP: No additional DOE 435.1 requirements related to Waste Characterization will be implemented.</p>	<p>24K</p> <p>9K</p> <p>6K</p> <p>4K</p> <p>4K</p> <p>6K</p> <p>None</p>

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.J.	<p>J. Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving transuranic waste for storage, treatment, or disposal are met.</p> <p>(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period.</p> <p>(2) Certification Before Transfer. Transuranic waste shall be certified as meeting waste acceptance requirements before it is transferred to the facility receiving the waste</p> <p>(3) Maintaining Certification. Transuranic waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, treatment, or disposal facility shall be managed in a manner that maintains its certification status.</p>	<p>FH: All Facilities: Gap. Facilities have waste certification programs, but they generally do not incorporate all of the 435.1 certification program requirements, particularly as described in the Guidance. The following gaps exist at some or all generating organizations:</p> <ul style="list-style-type: none"> <li>• Identification of a specific certification official for each facility to which waste will be shipped.</li> <li>• Certification plans do not address all of the elements identified in the Guidance.</li> </ul> <p>In the case where waste is generated and stored internal to the generator, a graded approach to waste certification will be applied.</p> <p>No gap for waste managed through the Hanford Site TRU WIPP Certification Program.</p> <p>PNNL: Procedure changes needed for certification.</p> <p>RCP: Gap. Same as FH.</p>	<p>Waste Services: Update WMH-370 procedures to comply with certification requirements. Activity will be complete 4 months after funding.</p> <p>CWC - No action required WRAP - No action required T Plant - No action required LLBG - No action required</p> <p>222-S: Develop a procedure to comply with 435.1 requirements for implementing a formal waste certification process. Activity will be complete 4 months after funding.</p> <p>PUREX Storage Tunnels: No action required. Refer to Section 2.2..</p> <p>SNF: Modify AP-5-10 to include waste certification process. Activity will be complete 4 months after funding.</p> <p>PFP: Prepare certification plan for waste transfers to Tank Farms when WAC changed.</p> <p>PNNL: Prepare procedure 7 months after funding..</p> <p>RCP: Revise certification program when WAC changed.</p>	<p>6K</p> <p>10K</p> <p>0K</p> <p>1K</p> <p>7.5K</p> <p>5.1K</p> <p>TBD</p>
CH.III.K.	<p>K. Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of transuranic waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Authorization. Transuranic waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.</p> <p>(2) Data. Waste characterization data, container information, and generation, storage, treatment, and transportation information for transuranic waste shall be transferred with or be traceable to the waste.</p>	<p>All facilities except PNNL: No Gap.</p> <p>PNNL: Needs procedure to document waste transfer.</p>	<p>NO ACTION REQUIRED</p> <p>Prepare procedure 7 months after funding.</p>	<p>None</p> <p>5K</p>
CH.III.L.	<p>L. Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.</p>		NO ACTION REQUIRED	



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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.M. (2)(b)	(b) Ventilation. 1. Design of transuranic waste treatment and storage facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. 2. When conditions exist for generating gases in flammable or explosive concentrations in treatment or storage facilities, ventilation or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.	All Facilities except PFP: No Gap (b)(1) No Gap (b)(2) No Gap, flammables are managed on a container basis per safety document	NO ACTION REQUIRED	None
CH.III.M. (2)(c)	(c) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing transuranic waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described.	(c) GAP – design procedures need to include 435.1 requirements	Waste Services: Refer to II P(2)(e)  No facility action required.	None
CH.III.M. (2)(d)	(d) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of transuranic waste treatment and storage facilities to provide volume inventory data and to prevent spills, leaks, and overflows from tanks or confinement systems.	All Facilities except PFP: No Gap.	NO ACTION REQUIRED	None
CH.III.M. (2)(e)	(e) Monitoring. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of transuranic waste storage, treatment, and disposal facilities to provide rapid identification of failed confinement and/or other abnormal conditions.	All Facilities except PFP: No Gap	NO ACTION REQUIRED	None
CH.III.N.	N. Storage. The following requirements are in addition to those in Chapter I of this Manual.		NO ACTION REQUIRED	
CH.III.N.(1)	(1) Storage Prohibitions. Transuranic waste in storage shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water. Prior to storage, pyrophoric materials shall be treated, prepared, and packaged to be nonflammable.	All Facilities: No gap.	NO ACTION REQUIRED	None
CH.III.N.(2)	(2) Storage Integrity. Transuranic waste shall be stored in a location and manner that protects the integrity of waste for the expected time of storage and minimizes worker exposure.	All Facilities: No gap.  PFP stores some TRU outside and under cover, with weekly inspections. This storage is assumed to meet requirement III.N.(2). PFP assumes III.N.(2) does not apply to tank 241-Z-361, since nearly all of the waste was placed before 1970 and the site is managed under CERCLA.	NO ACTION REQUIRED	None

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Citation	435.1 Manual Requirement	Compliance Status	Plan to Achieve Compliance	Cost
CH.III.N.(3)	(3) Container Inspection. A process shall be developed and implemented for inspecting and maintaining containers of transuranic waste to ensure container integrity is not compromised.	PUREX Storage Tunnels and SNF IC storage: Gap exists – Inspection cannot be performed. All other facilities: No Gap. Facilities have procedure governing container inspection  PNNL needs procedure to document inspection requirements.	PUREX Storage Tunnels: No action required. Refer to Section 2.2.  SNF IC storage: No action required. Refer to Section 2.2.  PNNL: Prepare procedure 9 months after funding.	None   5K
CH.III.N.(4)	(4) Retrievable Earthen-Covered Storage. Plans for the removal of transuranic waste from retrievable earthen-covered storage facilities shall be established and maintained. Prior to commencing waste retrieval activities, each waste storage site shall be evaluated to determine relevant information on types, quantities, and location of radioactive and hazardous chemicals as necessary to protect workers during the retrieval process.	LLBG: Gap – need to develop plans and procedures for TRU waste retrieval commensurate with the status of retrieval program  RCP: Gap. All facilities except 340 Facility.  All other facilities: No Gap	LLBG: The plan for retrieval has been developed commensurate with the status of the retrieval program. The retrieval program plan is identified in HNF-4781. No further action required.  RCP: Shown previously.	None
CH.III.O.	O. Treatment. Transuranic waste shall be treated as necessary to meet the waste acceptance requirements of the facility receiving the waste for storage or disposal.	All Facilities: No gap	NO ACTION REQUIRED	None
CH.III.P.	P. Disposal. Transuranic waste shall be disposed in accordance with the requirements of 40 CFR Part 191, Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes.	All facilities: No Gap.  RCP: Applicable to disposal facilities only. NO ACTION REQUIRED – RCP facilities are not disposal facilities. However, if wastes were left in place in tanks, it would have to be evaluated against these requirements. Potential Gap--324 Facility tank(s) If the ADP buildings dispositioned will be used as waste "tombs", this requirement will have to be evaluated.	NO ACTION REQUIRED  RCP: Address requirements in RWMB. Develop/upgrade facility procedures to meet requirements by 09/30/01.  324 Facility  FSS does not have this type of tank waste.  200 ADP Facilities	None   10K  TBD
CH.III.Q.	Q. Monitoring. The following requirements are in addition to those in Chapter I of this Manual.			
CH.III.Q.(1)	(1) All Waste Facilities. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, and flammable or explosive mixtures of gases. Facility monitoring programs shall include verification that passive and active control systems have not failed.	All facilities: No Gap.  PNNL: Will address in RWBM.  PFP: Refer to III.M.	NO ACTION REQUIRED	None
CH.III.Q.(2)	(2) Stored Wastes. All transuranic wastes in storage shall be monitored, as prescribed by the appropriate facility safety analysis, to ensure the wastes are maintained in safe condition.	All facilities: No Gap.	NO ACTION REQUIRED	None
CH.III.Q.(3)	(3) Liquid Waste Storage Facilities. For facilities storing liquid transuranic waste, the following shall also be monitored: liquid level and/or waste volume, and significant waste chemistry parameters	All facilities: No Gap.	NO ACTION REQUIRED	None

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
<b>CHAPTER IV LOW-LEVEL WASTE REQUIREMENTS</b>				
CH.IV.A.	A. Definition of Low-Level Waste. Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e. (2) of the Atomic Energy Act of 1954, as amended), or naturally occurring radioactive material.	All Facilities except PNNL: No Gap.  PNNL needs to modify definition in internal documents	NO ACTION REQUIRED  Modify definition by 03/30/01.	None  1K
CH.IV.B.	B. Management of Specific Wastes. The following provide for management of specific wastes as low-level waste in accordance with the requirements in this Chapter:		NO ACTION REQUIRED	
	(1) Mixed Low-Level Waste. Low-level waste determined to contain both source, special nuclear, or byproduct material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component subject to the Resource Conservation and Recovery Act (RCRA), as amended, shall be managed in accordance with the requirements of RCRA and DOE O 435.1, Radioactive Waste Management, and this Manual. (2) TSCA-Regulated Waste. Low-level waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual. (3) Accelerator-Produced Waste. Radioactive waste produced as a result of operations of DOE accelerators is low-level waste and shall be managed in accordance with DOE O 435.1, Radioactive Waste Management, and this Manual, and all applicable Federal or State requirements. (4) 11e. (2) and Naturally Occurring Radioactive Material. Small quantities of 11e. (2) byproduct material and naturally occurring radioactive material may be managed as low-level waste provided they can be managed to meet the requirements for low-level waste disposal in Section IV.P of this Manual.	All Facilities: No Gap.  PNNL needs procedure changes for TSCA waste.  BHI: Assumes that mixed LLW managed under CERCLA will be subject only to the substantive requirements of RCRA and TSCA.	NO ACTION REQUIRED  In progress for completion 09/30/00.	None
CH.IV.C.	Complex-Wide Low-Level Waste Management Program. A complex-wide program and plan shall be developed as described under Responsibilities, 2.B and 2.D, in Chapter I of this Manual.	All facilities: Potential gap depending upon results of complex-wide plan, which is HQ activity	NO ACTION REQUIRED. Evaluate as needed.	None

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.D.	<p>D. Radioactive Waste Management Basis. Low-level waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:</p>	<p>PFP needs RWMB.</p> <p>RCP facilities will need to develop its waste management basis documentation. Refer to III.D.</p> <p>BHI: A disposal authorization has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk to be submitted by June 25, 2000 to support a Disposal Authorization.</p> <p>PNNL needs RWMB for LLW.</p>	<p>Refer to III.D.</p> <p>Refer to III.D.</p> <p>Reference I.2.F.(2).</p> <p>Reference I.2.F.(2).</p>	None
	<p>(1) Generators. The waste certification program.                      (2) Treatment Facilities. The waste acceptance requirements and the waste certification program.                      (3) Storage Facilities. The waste acceptance requirements and the waste certification program.                      (4) Disposal Facilities. The performance assessment, composite analysis, disposal authorization statement, closure plan, waste acceptance requirements, and monitoring plan.</p>	<p>All facilities: Gap. Each facility will need to develop its waste management basis documentation.</p> <p>BHI: No action required assuming that the removal and/or remedial actions at legacy waste sites is not waste generation. The legacy waste sites are not 'waste management' facilities and their excavation does not constitute generation of waste. The activities of collection, remediation, recovery, digging, etc., of waste material is not waste generation or management but may trigger generator requirements.</p> <p>A disposal authorization has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk to be submitted by June 25, 2000 to support a disposal authorization.</p> <p>RCP: Gap. All facilities.</p>	<p>Develop a RWMB Statement. The RWMB will be completed 6 months after funding</p> <p>Waste Services--Develop RWMB 15K                      CWC--Refer to III D 0K                      PUREX Storage Tunnels--Refer to II F 0K                      WRAP--Refer to III D 0K                      LLBG--Refer to III D 0K                      222-S--Refer to III D 0K                      WSCF--Develop RWMB 15K                      WESF--Refer to II F 0K                      LWPF--Develop RWMB 15K                      242-A Evaporator--Refer to II F 0K                      T Plant--Refer to III D 0K                      DynCorp--develop RWMB 10K                      FFTF--develop RWMB 20K                      SNF--develop RWMB--Refer to III.D.                      PFP--develop RWMB--Refer to III.D.</p> <p>BHI: Reference CH.1.2.F.(2) and CH.1.2.F.(14).</p> <p>RCP: Shown previously.</p>	<p>Reference CH.1.2.F.(2) and CH.1.2.F.(14)</p>

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.E.	E. Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.	<p>RCP: Gap. 324/327 and 340 Facilities. This section invokes numerous new requirements (leak testing, inspections, functional tests, operations, procedures, training, records, etc.).                      Note: It is assumed that compliance with existing RCP facilities authorization agreements (AA), authorization envelopes (AE), and RCP procedures/programs provides adequate compliance with Contingency Actions requirements and regulatory requirements.</p> <p>RCP facilities will continue to comply with WAC 173-303 (Dangerous Waste Regulations) for dangerous and mixed waste, and EP-0063 waste acceptance criteria for all waste types.</p>	No additional 435.1 requirements will be implemented.	None
	<p>(1) Contingency Storage. For off-normal or emergency situations involving high activity or high hazard liquid low-level waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of liquid contained in any one storage tank or treatment facility. Tanks or other facilities that are designated low-level waste contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p> <p>(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of high activity or high hazard liquid low-level waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.</p>	<p>PUREX Storage Tunnels: No Gap.</p> <p>PPF: N/A to LLW TF.</p> <p>All other facilities: GAP – need to determine for each situation if liquid is “high activity or high hazard” and if this requirement applies</p> <p>PNNL needs plan for contingency storage of liquid LLW.</p>	<p>Waste Services: Based on criteria for “high activity, high level” as defined in attached white paper, this requirement only potentially applies to 222-S.</p> <p>222-S: Write determination and policy change, (Change Ops Criteria) or get a Waiver. Activity will be completed 4 months after funding.</p> <p>WESF: No action required. Refer to Section 2.2.</p> <p>WRAP: No action required. Refer to Section 2.2.</p> <p>Develop plan 4 months after funding.</p>	<p>16K</p> <p>10K</p>
CH.IV.F.	F. Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.	<p>RCP: Gap. All facilities.</p> <p>It is assumed that compliance with existing RCP facilities authorization agreements (AA), authorization envelopes (AE), and RCP procedures/programs provides adequate compliance with Contingency Actions requirements and regulatory requirements.</p>	NO ACTION REQUIRED	None

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000510.1728

Citation	Manual Requirement	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.F.(1)	(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.	<p>All facilities except RCP: No Gap.</p> <p>RCP: Gap. All facilities. RCP facilities use the Deficiency Tracking System (DTS) (HNF-PRO-653, Rev. 1) and the Corrective Action Management System (HNF-PRO-052, Rev. 2). These systems document noncompliant or hazard conditions, identify the organizations or individuals responsible for developing and implementing corrective action plans, provide corrective action status, and track progress through final implementation of the actions. It is assumed that no additional action is required.</p> <p>PFP: Might need to revise internal procedures.</p>	<p>NO ACTION REQUIRED</p> <p>RCP: No action required.</p> <p>PFP: Revise when WAC changed.</p>	None
CH.IV.F.(2)	Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis.	<p>All FH facilities except RCP: No Gap.</p> <p>RCP: Gap. All facilities.</p> <p>BHI: A disposal authorization has not been obtained for the ERDF. DOE-HQ has requested DOE-RL to prepare a crosswalk to be submitted by June 25, 2000 to support a disposal authorization.</p>	<p>NO ACTION REQUIRED, but further evaluate after RWMB issued.</p> <p>RCP: Night need to modify TSRs/OSRs to be consistent with RWMB.</p> <p>BHI: Reference CH.I.2.F.(2).</p>	None
CH.IV.G.	G. Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual:	PNNL needs minor procedure changes.	Discussed in I.2.F.(6).	

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## DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Other
CH.IV.G.(1)	<p>(1) Technical and Administrative. Waste acceptance requirements for all low-level waste storage, treatment, or disposal facilities, operations, and activities shall specify, at a minimum, the following:</p> <p>(a) Allowable activities and/or concentrations of specific radionuclides.</p> <p>(b) Acceptable waste form and/or container requirements that ensure the chemical and physical stability of waste under conditions that might be encountered during transportation, storage, treatment, or disposal.</p> <p>(c) Restrictions or prohibitions on waste, materials, or containers that may adversely affect waste handlers or compromise facility or waste container performance.</p> <p>(d) The following are additional waste acceptance requirements that shall be specified in low-level waste disposal facility waste acceptance requirements:</p> <ol style="list-style-type: none"> <li>1. Low-level waste must contribute to and not detract from achieving long-term stability of the facility, minimizing the need for long-term active maintenance, minimizing subsidence, and minimizing contact of water with waste. Void spaces within the waste and, if containers are used, between the waste and its container shall be reduced to the extent practical.</li> <li>2. Liquid low-level waste or low-level waste containing free liquid must be converted into a form that contains as little freestanding liquid as is reasonably achievable, but in no case shall the liquid exceed 1 percent of the waste volume when the low-level waste is in a disposal container, or 0.5 percent of the waste volume after it is processed to a stable form.</li> <li>3. Low-level waste must not be readily capable of detonation or of explosive decomposition or reaction at anticipated pressures and temperatures, or of explosive reaction with water. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.</li> <li>4. Low-level waste must not contain, or be capable of generating by radiolysis or biodegradation, quantities of toxic gases, vapors, or fumes harmful to the public or workers or disposal facility personnel, or harmful to the long-term structural stability of the disposal site.</li> <li>5. Low-level waste in a gaseous form must be packaged such that the pressure does not exceed 1.5 atmospheres absolute at 20°C.</li> </ol> <p>(e) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved.</p>	<p>LLBG, CWC, T Plant, WRAP, LWPF (liquids): No gap.</p> <p>PUREX Storage Tunnels: Gap – There are currently no formal LLW acceptance procedures for PUREX Storage Tunnels; however, this facility is not currently accepting waste.</p> <p>WESF, 242-A Evaporator, 222-S, WSCF (solids): Gap. These facilities need to formalize acceptance requirements or demonstrate that existing documents meet this section. (For waste that is internally generated or stored, a graded approach will be employed to apply the appropriate requirements.)</p> <p>DynCorp: Need waste acceptance criteria for staging areas.</p> <p>SNF: Does not accept waste. No gap pending treatment definition resolution.</p> <p>RCP: RCP facilities do not accept LLW from other facilities.</p>	<p>PUREX Storage Tunnels: No action required. Refer to Section 2.2.</p> <p>WESF: No action required. Refer to Section 2.2.</p> <p>242-A Evaporator: No action required. Refer to Section 2.2.</p> <p>WSCF: No action required. Refer to Section 2.2.</p> <p>DynCorp: Develop waste acceptance criteria. Activity will be completed 4 months after funding.</p>	10K
CH.IV.G.(2)	<p>(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that the technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established.</p>	<p>All Facilities except BHI: No Gap.</p> <p>BHI: GTCC drums in B Plant need PA when disposal method chosen.</p>	<p>NO ACTION REQUIRED, but evaluate after new waste acceptance criteria issued.</p>	None





# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.I.	<p>I. Waste Characterization. Low-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.</p> <p>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data.</p> <p>Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste: (a) Physical and chemical characteristics; (b) Volume, including the waste and any stabilization or absorbent media; (c) Weight of the container and contents; (d) Identities, activities, and concentrations of major radionuclides; (e) Characterization date; (f) Generating source; and (g) Any other information which may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with applicable performance objectives.</p>	<p>All FH facilities: Gaps exist, as follows:</p> <p>This section requires more detailed documentation of characterization data than are commonly practiced, particularly for "indirect methods".</p> <p>Waste generators do not consistently use the DQO process or an equivalent process to plan characterization activities.</p> <p>There are minor gaps in "minimum waste characterization" requirements.</p> <p>RCP: Compliance with existing RCP facilities authorization agreements (AA), authorization envelopes (AE), and RCP procedures/programs provides adequate compliance with Waste Characterization requirements and regulatory requirements.</p> <p>RCP facilities will continue to comply with WAC 173-303 (Dangerous Waste Regulations) for dangerous and mixed waste, and EP-0063 waste acceptance criteria for waste types.</p> <p>BHI: No action required. The activities of collection, remediation, recovery, digging, etc., of waste material is not waste generation or management but may trigger generator requirements. Characterization, preparation for transfer and transfer, and certification are performed to meet the waste acceptance criteria for the ERDF as required by the ERDF Record of Decision.</p>	<p>Waste Services: Refer to III I</p> <p>T Plant: Refer to III I</p> <p>CWC: Operating procedures need to be developed or revised to coincide with project or site guidance documents that implement the characterization activities. Activity will be completed 4 months after funding.</p> <p>WRAP: Refer to III I</p> <p>LLBG: Operating procedures need to be developed or revised to coincide with project or site guidance documents that implement the characterization activities. Activity will be completed 4 months after funding.</p> <p>WESF: Operating procedures need to be developed or revised to coincide with project or site guidance documents that implement the characterization activities. Activity will be completed 4 months after funding.</p> <p>PUREX Storage Tunnels: Operating procedures need to be developed or revised to coincide with project or site guidance documents that implement the characterization activities. Activity will be completed 4 months after funding.</p> <p>242-A Evaporator: Modify 242-A Evaporator DQO to address characterization of LLW. Activity will be completed 4 months after funding.</p> <p>LWPF: Develop DQO (or equivalent) for characterization of waste at LERF/ETF. This can be done in a separate DQO document or in the RWMB. Also modify POP-65D-003. Activity will be completed 4 months after funding.</p> <p>222-S: Refer to III I.</p> <p>WSCF: Develop a procedure to comply with 435.1 requirements for implementing a formal DQO process for waste characterization. Activity will be completed 4 months after funding.</p> <p>FFTF: Revise procedures to meet revised HNF-EP-0063 by 04/01/02.</p> <p>PFP: Revise FSEP-PFP-5-8, 1.30 by 04/01/01.</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p>7K</p> <p>15K</p> <p>5K</p> <p>10K</p> <p></p> <p>10K</p> <p>5K</p> <p>2K</p>

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# DOE ORDER 435.1 I IMPLEMENTATION PLAN

000510.1728

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.J.	<p><b>J. Waste Certification.</b> A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving low-level waste for storage, treatment, and disposal are met.</p> <p>(1) <b>Certification Program.</b> The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period.</p> <p>(2) <b>Certification Before Transfer.</b> Low-level waste shall be certified as meeting waste acceptance requirements before it is transferred to the facility receiving the waste.</p> <p>(3) <b>Maintaining Certification.</b> Low-level waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, treatment, or disposal facility shall be managed in a manner that maintains its certification status.</p>	<p>All FH facilities: Gap. Facilities waste certification programs generally do not incorporate all of the 435.1 certification program requirements. The following gaps exist at some or all waste generating organizations:</p> <ul style="list-style-type: none"> <li>• Identification of a specific certification official for each facility to which waste will be shipped.</li> <li>• Certification plans do not address all of the elements identified in the Guidance.</li> </ul> <p>Waste generated and stored internal to the generator situation shall employ a graded approach to waste certification.</p> <p>RCP: Gap. All facilities. Facilities waste certification programs generally do not incorporate all of the 435.1 certification program requirements, particularly as described in the Guidance. The following gaps exist at some or all waste generating organizations:</p> <ul style="list-style-type: none"> <li>• Identification of a specific certification official for each facility from which waste will be shipped</li> <li>• Waste management plans do not address all of the elements identified in the Guidance</li> <li>• Current site 'Certification Program' covers TSDs that receive and accept waste.</li> </ul> <p>In the case where waste is generated and stored internal to the generator RCP facilities, a graded approach to waste certification will be applied. RCP facilities will have to adjust its internal procedures if external storage and disposal facilities modify their waste acceptance criteria to accommodate these requirements.</p> <p>BHI: No action required. The activities of collection, remediation, recovery, digging, etc., of waste material is not waste generation or management but may trigger generator requirements. Characterization, preparation for transfer and transfer, and certification are performed to meet the waste acceptance criteria for the ERDF as required by the ERDF Record of Decision.</p> <p>PNNL needs to document certification changes.</p>	<p>Waste Services: Refer to III J</p> <p>CWC - No action required WRAP - No action required T Plant - No action required LLBG - No action required</p> <p>WESF: Operating procedures need to be developed or revised to coincide with project or site guidance documents. Activity will be completed 4 moths after authorization. 2K</p> <p>PUREX Storage Tunnels: Operating procedures need to be developed or revised to coincide with project or site guidance documents that implement the certification activities. Activity will be completed 4 moths after authorization. 7K</p> <p>242-A Evaporator: Refer to II M.</p> <p>LWPF: Modify administrative procedure WMH-331, Section 3.11, "New Waste Stream Acceptance at LERF/ETF", to reflect DOE Order 435.1 requirements. Develop waste profile sheet for acceptance of 242-A Evaporator process condensate. Activity will be completed 4 moths after authorization. 9K</p> <p>222-S: Refer to III J</p> <p>WSCF: Develop a procedure to comply with 435.1 requirements for implementing a formal waste certification process. Also, document in RWMB. Will train affected personnel to procedure modifications. Activity will be completed 4 moths after authorization. 10K</p> <p>DynCorp: Develop process for certifying waste and incorporate into procedure. Activity will be completed 4 moths after authorization. 2K</p> <p>FFP: Revise RSP-PFP-5-8 by 01/01/00. 2K</p> <p>RCP: Address requirements in RWMB. Review/revise facility controls/procedures to meet requirements one year after funding. 75K</p> <p>PNNL: Discussed under III.J.</p>	

# DOE ORDER 435.1 IMPLEMENTATION PLAN

000510.1728

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.K.	<p>K. Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of low-level waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.</p> <p>(1) Authorization. Low-level waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.</p> <p>(2) Data. Waste characterization data, container information, and generation, storage, treatment, and transportation information for low-level waste shall be transferred with or be traceable to the waste.</p>	<p>All FH facilities except RCP: No gap.</p> <p>BHI: No action required. The activities of collection, remediation, recovery, digging, etc., of waste material is not waste generation or management but may trigger generator requirements. Characterization, preparation for transfer and transfer, and certification are performed to meet the waste acceptance criteria for the ERDF as required by the ERDF Record of Decision.</p> <p>PNNL Needs to document transfers.</p>	<p>NO ACTION REQUIRED</p> <p>PNNL: Discussed under III.K.</p>	None
CH.IV.L.	L. Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.		NO ACTION REQUIRED	
CH.IV.L.(1)	<p>(1) Packaging. If containers are used: (a) Low-level waste shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container. (b) When waste is packaged, vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container. (c) Containers of low-level waste shall be marked such that their contents can be identified.</p>	<p>PUREX Storage Tunnels:</p> <p>(a) Does not apply (b) No Gap (c) Gap - Waste not labeled per requirement.</p> <p>All other facilities: No gap.</p>	<p>(a) NO ACTION REQUIRED</p> <p>(b) NO ACTION REQUIRED</p> <p>(c) PUREX Storage Tunnels: Refer to III L(d)</p>	None
CH.IV.L.(2)	(2) Transportation. To the extent practical, the volume of waste and number of low-level waste shipments shall be minimized.	All facilities except RCP: Gap – no program in place to minimize number of shipments.	<p>Waste Services: Refer to III L(2)</p> <p>No action required for facilities.</p>	None
CH.IV.M.	M. Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.		NO ACTION REQUIRED	

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.M.(1)	<p>(1) Site Evaluation. Proposed locations for low-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses. (a) Each site proposed for a new low-level waste facility or expansion of an existing low-level waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities, including for a low-level waste disposal facility, the capability of the site to demonstrate, at a minimum, whether it is: 1. Located to accommodate the projected volume of waste to be received; 2. Located in a flood plain, a tectonically active area, or in the zone of water table fluctuation; and 3. Located where radionuclide migration pathways are predictable and erosion and surface runoff can be controlled</p> <p>(b) Proposed sites with environmental characteristics, geotechnical characteristics, and human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility.</p> <p>(c) Low-level waste disposal facilities shall be sited to achieve long-term stability and to minimize, to the extent practical, the need for active maintenance following final closure.</p>	All Facilities: No Gap unless new facilities planned.	<p>Waste Services: Refer to II P(1)</p> <p>No action for facilities unless new facilities planned.</p>	None
CH.IV.M.(2)	(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:	PNNL needs to add requirements in RWMB.	Discussed in I.2.F.(2).	
CH.IV.M.(2)(a)	Confinement. Low-level waste systems and components shall be designed to maintain waste confinement.	All Facilities: No Gap.	NO ACTION REQUIRED	None
CH.IV.M.(2)(b)	(b) Ventilation. 1. Design of low-level waste treatment and storage facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. 2. When conditions exist for generating gases in flammable or explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.	All Facilities: No Gap.	NO ACTION REQUIRED	None

000511.1211

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1220

Citation	35.1 Manual Requirement	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.N.(1)	(1) Storage Prohibitions. Low-level waste in storage shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water. Prior to storage, pyrophoric materials shall be treated, prepared, and packaged to be nonflammable.	All FH facilities: No Gap.  BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity are not considered to be in storage.	NO ACTION REQUIRED	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1212

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.N.(2)	(2) Storage Limit. Low-level waste that has an identified path to disposal shall not be stored longer than one year prior to disposal, except for storage for decay, or as otherwise authorized by the Field Element Manager.	<p>LWPF, T Plant, CWC, WRAP, PUREX Storage Tunnels, 222-S, WSCF: Gap – Storage of LLW for more than 1 year must be justified.</p> <p>All other facilities: Need to revise procedures to include 1 year time limit.</p> <p>LLBG: No Gap.</p> <p>BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity is not considered to be in storage.</p> <p>PNNL: Needs changes to procedures.</p>	<p>Waste Services: HNF-PRO-455 series revision. Activity will be completed 4 months after funding.</p> <p>T Plant: Revise procedures to implement a limit on storage time as necessary. Activity will be completed 4 months after funding.</p> <p>CWC: Might require minor modification to facility procedure(s). Activity will be completed 4 months after funding.</p> <p>WRAP: Revise procedures to implement a limit on storage time as necessary. Activity will be completed 4 months after funding.</p> <p>No action for LLBG.</p> <p>WESF: Revise operating procedures for LLW storage requirements. Activity will be completed 4 months after funding.</p> <p>PUREX Storage Tunnels: No action required. Refer to Section 2.2.</p> <p>242-A Evaporator: Need to revise procedures to include 1-year limit on storage of LLW. Cost included in IV N(6). Activity will be completed 4 months after funding.</p> <p>LWPF: No action required. Refer to Section 2.2.</p> <p>222-S: Revise procedures to implement a limit on storage time as necessary. Develop a waste tracking system. Activity will be completed 4 months after funding.</p> <p>WSCF: Revise procedures to implement a limit on storage time as necessary. Activity will be completed 4 months after funding.</p> <p>PFP: Revise procedure.</p> <p>PNNL: Prepare procedure 1 year after funding.</p> <p>RCP: Revise procedure 1 year after funding.</p>	<p>1K</p> <p>5K</p> <p>2K</p> <p>5K</p> <p>50K</p>
CH.IV.N.(3)	(3) Storage Integrity. Low-level waste shall be stored in a location and manner that protects the integrity of waste for the expected time of storage and minimizes worker exposure.	<p>All FH facilities: No Gap.</p> <p>BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity is not considered to be in storage.</p>	NO ACTION REQUIRED	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.N.(4)	(4) Waste Characterization for Storage.		<b>NO ACTION REQUIRED</b>	
CH.IV.N. (4)(a)	(a) Low-level waste that does not have an identified path to disposal shall be characterized as necessary to meet the data quality objectives and minimum characterization requirements of this Chapter, to ensure safe storage, and to facilitate disposal.	All facilities: Gap - currently, waste without an identified path forward might not have undergone the DQO process to assess characterization requirements.	Waste Services: Revise HNF-PRO-455 series, HNF-PRO-0063 and WMH 370 as necessary. Refer to III H(2) for cost. Activity will be complete 4 months after funding.  PFP: Revise FSP-PFP-5-8, 1.30.	4K
CH.IV.N. (4)(b)	(b) Characterization information for all low-level waste in storage shall be maintained as a record in accordance with the requirements for Records Management in Chapter I of this Manual.	PUREX Storage Tunnels: Gap - records not stored compliant with requirements . All other facilities: No Gap.  BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity is not considered to be in storage.	PUREX Storage Tunnels: Evaluate and develop/revise procedures to meet 435.1 and place in a compliant configuration. Activity will be completed 4 months after funding.	15K
CH.IV.N.(5)	(5) Container Inspection. A process shall be developed and implemented for inspecting and maintaining containers of low-level waste to ensure container integrity is not compromised.	PUREX Storage Tunnels: Gap exists - inspection cannot be performed. All other facilities: No Gap - facilities have procedures governing container inspection.  BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity is not considered to be in storage.  PNNL needs to document inspection requirement.	PUREX Storage Tunnels: Will address in RWMB (refer to II-F).  PNNL: Discussed under III.N.(3).	None

000510.1728

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.N.(6)	(6) Storage Management. Low-level waste storage shall be managed to identify and segregate low-level waste from mixed low-level waste.	LWPF, 222-S, T Plant, WESF: Gap – commingling of mixed and low level waste in waste tanks may occur. All other FH-WMP facilities: Gap – low level and mixed are not segregated from the same immediate area storage as per guide.	<p>Waste Services: Revise HNF-PRO-455 series. Activity will be complete 4 months after funding.</p> <p>T Plant: Emplace procedures to prevent commingling of mixed and LLW stored in tanks and that the waste is not stored in same immediate area. Activity will be completed 4 months after funding.</p> <p>CWC: Operating procedure needs to be developed or revised. Activity will be completed 4 months after funding.</p> <p>WRAP: Make revisions to procedures to be consistent with 435.1 and WRAP's AB. Activity will be completed 4 months after funding.</p> <p>LLBG: Modify procedure SW-100-129 to ensure that low-level and mixed waste generated at the LLBG are not staged/stored together in the same immediate area. Activity will be completed 4 months after funding.</p> <p>WESF: Procedure modification per issuance of the HNF-PRO revision. Activity will be completed 4 months after funding.</p> <p>PUREX Storage Tunnels: Evaluate and develop/revise procedures to meet 435.1. Activity will be completed 4 months after funding. No action required regarding segregation of waste in the tunnels. Refer to Section 2.2.</p> <p>242-A Evaporator: Create a new facility-specific operating procedure to replace the Tank Farm procedure TO-100-052 currently in use. Activity will be completed 4 months after funding.</p> <p>LWPF: The mixing of low-level and mixed waste in LERF is discussed in Section 2.2. Waste generated at LERF/ETF is physically separated - no modifications required.</p> <p>222-S: Operating procedure will be modified. Activity will be completed 4 months after funding.</p> <p>WSCF: Operating procedure will be modified. Activity will be completed 4 months after funding.</p> <p>PFP: Revise procedures.</p> <p>PNNL: Prepare procedure 7 months after funding.</p>	<p>15K</p> <p>6K</p> <p>5K</p> <p>4K</p> <p>11K</p> <p>20K</p> <p>8K</p> <p>8K</p> <p>5K</p>
		PNNL needs to add segregation to procedures.		
		BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity are not considered to be in storage.		

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.N.(7)	(7) Staging. Staging of low-level waste shall be for the purpose of the accumulation of such quantities of waste as necessary to facilitate transportation, treatment, and disposal. Staging longer than 90 days shall meet the requirements for storage above and in Chapter I of this Manual.	<p>T Plant, CWC, WRAP, LWPF: NO GAP                      All other facilities: Gap – 90-day staging conditions are not contained in current facility procedures.</p> <p>RCP: Gap. All facilities.</p> <p>BHI: No action required. Assume that waste in the area of contamination at a CERCLA activity is not considered to be in storage.</p> <p>PNNL needs to establish staging areas.</p>	<p>Waste Services: Revise HNF-PRO-455 series. Refer to II B.</p> <p>LLBG: Modify procedure SW-100-129 to ensure staging of LLW is restricted to 90 days. Activity will be complete 4 months after funding.</p> <p>WESF: Procedure modification per issuance of the HNF-PRO revision. Activity will be complete 4 months after funding.</p> <p>PUREX Storage Tunnels: Evaluate and develop/revise procedures to meet 435.1. Activity will be complete 4 months after funding.</p> <p>242-A Evaporator: Need to add 90-day requirement to procedures and include dating of containers and "90-day clock management". Activity will be complete 4 months after funding.</p> <p>222-S: Operating procedure will be modified. Activity will be complete 4 months after funding.</p> <p>WSCF: Operating procedure will be modified. Activity will be complete 4 months after funding.</p> <p>DynCorp: Revise procedures to incorporate 90-day limit. Activity will be complete 4 months after funding.</p> <p>FFTF: Revise procedures to incorporate 90-day limit.</p> <p>PFP: Revise procedures.</p> <p>RCP: Shown previously.</p> <p>SNF: Modify procedure AP-5-10. Activity will be complete 4 months after work authorization.</p> <p>PNNL: Prepare plan and implement 12 months after funding.</p>	<p>4K</p> <p>11K</p> <p>7K</p> <p>19K</p> <p>1K</p> <p>1K</p> <p>1K</p> <p>5K</p> <p>2K</p> <p>23K</p>
CH.IV.O.	O. Treatment. Low-level waste treatment to provide more stable waste forms and to improve the long-term performance of a low-level waste disposal facility shall be implemented as necessary to meet the performance objectives of the disposal facility.	All facilities: No Gap	NO ACTION REQUIRED	None
CH.IV.P.	P. Disposal. Low-level waste disposal facilities shall meet the following requirements.		NO ACTION REQUIRED	

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Date
CH.IV.P.(1)	<p>(1) Performance Objectives. Low-level waste disposal facilities shall be sited, designed, operated, maintained, and closed so that a reasonable expectation exists that the following performance objectives will be met for waste disposed of after September 26, 1988:</p> <p>(a) Dose to representative members of the public shall not exceed 25 mrem (0.25 mSv) in a year total effective dose equivalent from all exposure pathways, excluding the dose from radon and its progeny in air.</p> <p>(b) Dose to representative members of the public via the air pathway shall not exceed 10 mrem (0.10 mSv) in a year total effective dose equivalent, excluding the dose from radon and its progeny.</p> <p>(c) Release of radon shall be less than an average flux of 20 pCi/m<sup>2</sup>/s (0.74 Bq/m<sup>2</sup>/s) at the surface of the disposal facility. Alternatively, a limit of 0.5 pCi/l (0.0185 Bq/l) of air may be applied at the boundary of the facility.</p>	<p>All FH facilities: No Gap.</p> <p>BHI: A PA was completed for ERDF and issued as a BHI document but was not released as DOE document. The PA is not maintained. HQ agreed to consider the CERCLA risk assessment in lieu of the performance assessment.</p>	<p>NO ACTION REQUIRED</p> <p>BHI: Refer to I.2.F.(2).</p>	<p>None</p>

APP A-58

# DOE ORDER 435.1 IMPLEMENTATION PLAN

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.P.(2)	<p>(2) Performance Assessment. A site-specific radiological performance assessment shall be prepared and maintained for DOE low-level waste disposed of after September 26, 1988. The performance assessment shall include calculations for a 1,000 year period after closure of potential doses to representative future members of the public and potential releases from the facility to provide a reasonable expectation that the performance objectives identified in this Chapter are not exceeded as a result of operation and closure of the facility.</p> <p>(a) Analyses performed to demonstrate compliance with the performance objectives in this Chapter, and to establish limits on concentrations of radionuclides for disposal based on the performance measures for inadvertent intruders in this Chapter shall be based on reasonable activities in the critical group of exposed individuals. Unless otherwise specified, the assumption of average living habits and exposure conditions in representative critical groups of individuals projected to receive the highest doses is appropriate. The likelihood of inadvertent intruder scenarios may be considered in interpreting the results of the analyses and establishing radionuclide concentrations, if adequate justification is provided.</p> <p>(b) The point of compliance shall correspond to the point of highest projected dose or concentration beyond a 100 meter buffer zone surrounding the disposed waste. A larger or smaller buffer zone may be used if adequate justification is provided.</p> <p>(c) Performance assessments shall address reasonably foreseeable natural processes that might disrupt barriers against release and transport of radioactive materials.</p> <p>(d) Performance assessments shall use DOE-approved dose coefficients (dose conversion factors) for internal and external exposure of reference adults.</p> <p>(e) The performance assessment shall include a sensitivity/uncertainty analysis.</p> <p>(f) Performance assessments shall include a demonstration that projected releases of radionuclides to the environment shall be maintained as low as reasonably achievable (ALARA).</p> <p>(g) For purposes of establishing limits on radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts to water resources.</p> <p>(h) For purposes of establishing limits on the concentration of radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts calculated for a hypothetical person assumed to inadvertently intrude for a temporary period into the low-level waste disposal facility. For intruder analyses, institutional controls shall be assumed to be effective in deterring intrusion for at least 100 years following closure. The intruder analyses shall use performance measures for chronic and acute exposure scenarios, respectively, of 100 mrem (1 mSv) in a year and 500 mrem (5 mSv) total effective dose equivalent excluding radon in air.</p>	All facilities: No Gap	NO ACTION REQUIRED	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.P.(3)	<p>(3) Composite Analysis. For disposal facilities which received waste after September 26, 1988, a site-specific radiological composite analysis shall be prepared and maintained that accounts for all sources of radioactive material that may be left at the DOE site and may interact with the low-level waste disposal facility, contributing to the dose projected to a hypothetical member of the public from the existing or future disposal facilities. Performance measures shall be consistent with DOE requirements for protection of the public and environment and evaluated for a 1,000 year period following disposal facility closure. The composite analysis results shall be used for planning, radiation protection activities, and future use commitments to minimize the likelihood that current low-level waste disposal activities will result in the need for future corrective or remedial actions to adequately protect the public and the environment.</p>	All facilities: No Gap.	NO ACTION REQUIRED	None

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

000511.1212

Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.P.(4)	<p>(4) Performance Assessment and Composite Analysis Maintenance. The performance assessment and composite analysis shall be maintained to evaluate changes that could affect the performance, design, and operating bases for the facility. Performance assessment and composite analysis maintenance shall include the conduct of research, field studies, and monitoring needed to address uncertainties or gaps in existing data. The performance assessment shall be updated to support the final facility closure. Additional iterations of the performance assessment and composite analysis shall be conducted as necessary during the post-closure period.</p> <p>(a) Performance assessments and composite analyses shall be reviewed and revised when changes in waste forms or containers, radionuclide inventories, facility design and operations, closure concepts, or the improved understanding of the performance of the waste disposal facility in combination with the features of the site on which it is located alter the conclusions or the conceptual model(s) of the existing performance assessment or composite analysis.</p> <p>(b) A determination of the continued adequacy of the performance assessment and composite analysis shall be made on an annual basis, and shall consider the results of data collection and analysis from research, field studies, and monitoring.</p> <p>(c) Annual summaries of low-level waste disposal operations shall be prepared with respect to the conclusions and recommendations of the performance assessment and composite analysis and a determination of the need to revise the performance assessment or composite analysis.</p>	<p>All FH facilities: No Gap - A composite analysis has been completed and conditionally accepted by DOE. A maintenance program for Performance Assessment has been ongoing for 3 years.</p>	<p>NO ACTION REQUIRED</p>	<p>None</p>

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# DOE ORDER 435.1 IMPLEMENTATION PLAN

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.P.(5)	<p>(5) Disposal Authorization. A disposal authorization statement shall be obtained prior to construction of a new low-level waste disposal facility. Field Elements with existing low-level waste disposal facilities shall obtain a disposal authorization statement in accordance with the schedule in the Complex-Wide Low-Level Waste Management Program Plan. The disposal authorization statement shall be issued based on a review of the facility's performance assessment, composite analysis, performance assessment and composite analysis maintenance, preliminary closure plan, and preliminary monitoring plan. The disposal authorization statement shall specify the limits and conditions on construction, design, operations, and closure of the low-level waste facility based on these reviews. A disposal authorization statement is a part of the radioactive waste management basis for a disposal facility. Failure to obtain a disposal authorization statement by the implementation date of this Order shall result in shutdown of the disposal facility.</p>	<p>LLBG: Gap – disposal authorization statement is in process but not complete; refer to letter 9958328 / H. Bilson to R. Hanson, 11/1/99</p> <p>All other facilities: NO GAP – no other LLW disposal facilities, therefore requirement does not apply.</p> <p>BHI: Refer to I.2.F.(2)</p>	<p>LLBG: Refer to IV Q(1) and IV R(1).</p> <p>BHI: Reference CH.I.2.E.(2).</p>	None

APP A-62

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Citation	435.1-1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.P.(6)	<p>(6) Disposal Facility Operations. The disposal facility design and operation must be consistent with the disposal facility closure plan and lead to disposal facility closure that provides a reasonable expectation that performance objectives will be met. Low-level waste shall be disposed in such a manner that achieves the performance objectives stated in this Chapter, consistent with the disposal facility radiological performance assessment. Additional requirements include:</p> <p>(a) Operating procedures shall be developed and implemented for low-level waste disposal facilities that protect the public, workers, and the environment; ensure the security of the facility; minimize subsidence during and after waste emplacement; achieve long-term stability and minimize the need for long-term active maintenance; and meet the requirements of the closure/post-closure plan.</p> <p>(b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.</p> <p>(c) Low-level waste placement into disposal units shall minimize voids between waste containers. Voids within disposal units shall be filled to the extent practical. Uncontainerized bulk waste shall also be placed in a manner that minimizes voids and subsidence.</p> <p>(d) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on any other disposal units.</p> <p>(e) Operations shall include a process for tracking and documenting low-level waste placement in the facility by generator source.</p>	<p>(a) LLBG: Gap – procedures are in place for safe operations but closure requirements are not captured.</p> <p>All other facilities: No Gap. This requirement only applies to LLBG.</p> <p>BHI: A closure plan has not been developed for the ERDF.</p>	<p>LLBG: Implement the requirements in the closure plan by modifying procedure SW-100-129. Modify procedure SW-100-129 to place waste in a manner that will minimize voids. Modify disposal plan trench excavation sequence/locations. Develop a Geographic Information System (GIS) to locate waste packages in the LLBG. For costs, refer to IV Q(1). Activity will be complete 4 months after funding.</p> <p>BHI: Reference CH.I.2.F.(14)</p>	None
CH.IV.P.(7)	<p>(7) Alternate Requirements for Low-Level Waste Disposal Facility Design and Operation. Requirements other than those set forth in this Section for the design and operation of a low-level waste disposal facility may be approved on a specific basis if a reasonable expectation is demonstrated that the disposal performance objectives will be met.</p>	All facilities: No Gap	NO ACTION REQUIRED	None
CH.IV.Q.	<p>Q. Closure. The following requirements are in addition to those in Chapter I of this Manual.</p>		NO ACTION REQUIRED	

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Cost
CH.IV.Q.(1)	<p>(1) Disposal Facility Closure Plans. A preliminary closure plan shall be developed and submitted to Headquarters for review with the performance assessment and composite analysis. The closure plan shall be updated following issuance of the disposal authorization statement to incorporate conditions specified in the disposal authorization statement. Closure plans shall: (a) Be updated as required during the operational life of the facility. (b) Include a description of how the disposal facility will be closed to achieve long-term stability and minimize the need for active maintenance following closure and to ensure compliance with the requirements of DOE 5400.5, Radiation Protection of the Public and the Environment. (c) Include the total expected inventory of wastes to be disposed of at the facility over the operational life of the facility.</p>	<p>LLBG: Gap – closure plan (in preparation to meet DAS requirement for submittal 10/25/00) does not comply with 435.1 requirements.</p> <p>BHI: A closure plan has not been developed for the ERDF.</p> <p>All other facilities: No Gap</p>	<p>LLBG: Develop a closure plan for the LLBG compliant with 435.1. Activity will be complete 1 year after work authorization.</p> <p>BHI: Reference CH.I.2.F.(14)</p>	<p style="text-align: right;">714K</p> <p>Reference CH.I.2.F.(14)</p>
CH.IV.Q.(2)	<p>(2) Disposal Facility Closure. Closure of a disposal facility shall occur within a five-year period after it is filled to capacity, or after the facility is otherwise determined to be no longer needed. (a) Prior to facility closure, the final inventory of the low-level waste disposed in the facility shall be prepared and incorporated in the performance assessment and composite analysis which shall be updated to support the closure of the facility. (b) A final closure plan shall be prepared based on the final inventory of waste disposed in the facility, the plan implemented, and the updated performance assessment and composite analysis prepared in support of the facility closure. (c) Institutional control measures shall be integrated into land use and stewardship plans and programs, and shall continue until the facility can be released pursuant to DOE 5400.5, Radiation Protection of the Public and the Environment. (d) The location and use of the facility shall be filed with the local authorities responsible for land use and zoning.</p>	<p>No Gap.</p>	<p>NO ACTION REQUIRED</p>	<p>None</p>
CH.IV.R.	<p>R. Monitoring. The following requirements are in addition to those in Chapter I of this Manual.</p>	<p>PNNL needs to address monitoring in RWMB.</p>	<p>Plan discussed in I.2.f.(2).</p>	<p>None</p>

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Gap
CH.IV.R.(1)	(1) All Waste Facilities. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, and flammable or explosive mixtures of gases. Facility monitoring programs shall include verification that passive and active control systems have not failed.	<p>All Facilities: Gap – Waste not monitored per minimum requirements, parameters monitored are identified per safety documents and data collection procedure exist, need to justify. Effluent monitoring is no gap per DOE/RL-91-50.</p> <p>PFP: Assumes temperature monitoring not required per existing safety documents.</p>	<p>T Plant: No action required. Refer to Section 2.2.</p> <p>CWC: No action required. Refer to Section 2.2.</p> <p>WRAP: No action required. Refer to Section 2.2.</p> <p>LLBG: No action required. Refer to Section 2.2.</p> <p>WESF: Refer to II.T.</p> <p>PUREX Storage Tunnels: No action required. Refer to Section 2.2.</p> <p>242-A Evaporator: No action required. Refer to Section 2.2.</p> <p>LWPF: No action required. Refer to Section 2.2.</p> <p>WSCF: No action required. Refer to Section 2.2.</p> <p>PFP: No action required.</p> <p>RCP: Shown previously.</p>	None
CH.IV.R.(2)	(2) Liquid Waste Storage Facilities. For facilities storing liquid low-level waste, the following shall also be monitored: liquid level and/or waste volume, and significant waste chemistry parameters.	<p>PUREX Storage Tunnels: No Gap</p> <p>All other facilities: Gap – Waste not monitored per minimum requirements, parameters monitored are identified per safety documents and data collection procedure exist, need to justify. Effluent monitoring is no gap per DOE/RL-91-50.</p> <p>RCP: Gap. All facilities.</p>	<p>T Plant, CWC, WRAP, LLBG, WESF, 242-A Evaporator, LWPF, 222-S, WSCF: Same as IV.R.(1).</p> <p>RCP: Shown previously.</p>	None

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Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance	Code
CH.IV.R.(3)	<p>(3) Disposal Facilities. A preliminary monitoring plan for a low-level waste disposal facility shall be prepared and submitted to Headquarters for review with the performance assessment and composite analysis. The monitoring plan shall be updated within one year following issuance of the disposal authorization statement to incorporate and implement conditions specified in the disposal authorization statement. (a) The site-specific performance assessment and composite analysis shall be used to determine the media, locations, radionuclides, and other substances to be monitored. (b) The environmental monitoring program shall be designed to include measuring and evaluating releases, migration of radionuclides, disposal unit subsidence, and changes in disposal facility and disposal site parameters which may affect long-term performance. (c) The environmental monitoring programs shall be capable of detecting changing trends in performance to allow application of any necessary corrective action prior to exceeding the performance objectives in this Chapter.</p>	<p>LLBG: Gap. Will develop a preliminary monitoring plan per requirement.</p> <p>BHI: The monitoring plan for ERDF is updated as needed.</p> <p>All other facilities: No Gap.</p>	<p>LLBG: Modify procedure SW-40-41 to monitor for subsidence as required by 435.1. Install leak detection equipment on Trench 34 Leachate storage tank. Modify SW-xx-xx to add monitoring requirements for Trench 34 leachate storage tank as required by 435.1. Develop preliminary monitoring plan as required by 435.1 and monitoring plan 1 year after work authorization with procedure changes following 4 months after completion of monitoring plan and procedure work funding..</p> <p>BHI: Reference CH.I.2.F.(2).</p>	60K

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