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HIGH-LEVEL WASTE ISSUES AND RESOLUTIONS DOCUMENT

**Prepared by
Westinghouse Electric Corporation
Management and Operations Contractors**

May 1994

**Westinghouse Idaho
Nuclear Company, Inc.**

**PREPARED FOR THE
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EXECUTIVE SUMMARY

The High-Level Waste (HLW) Issues and Resolutions Document recognizes U.S. Department of Energy (DOE) complex-wide HLW issues and offers potential corrective actions for resolving these issues. The development of these issues has been completed by analyzing "where we are now" and contrasting it to "where we want and need to be." The "where we are now" is divided into assumptions, key milestones, and regulatory requirements, which are included in the appendix of this document. Analyzing the assumptions, milestones, and regulations reveals what must be accomplished for the DOE complex to achieve its vision of the future. In a joint effort, representatives from each Westinghouse Electric Corporation (hereafter referred to as Westinghouse) site storing and treating HLW have been involved in creating this document.

Westinghouse Management and Operations (M&O) Contractors are effectively managing HLW for the Department of Energy at four sites: Idaho National Engineering Laboratory (INEL), Savannah River Site (SRS), West Valley Demonstration Project (WVDP), and Hanford Reservation. Each site is at varying stages of processing HLW into a more manageable form. This HLW Issues and Resolutions Document identifies five primary issues that must be resolved in order to reach the long-term objective of HLW repository disposal. These issues are as follows:

1. Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.
2. The process of obtaining broad stakeholder support requires much improvement in order to obtain a long range commitment to open interaction between stakeholders and the DOE.
3. The various DOE sites have different drivers {e.g., operation offices, U.S. Environmental Protection Agency (EPA) regions, public, states} affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.
4. Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.
5. Future funding based on current business as usual, for such items as infrastructure, technology development, and other resources, will not be available to support all of the sites' missions.

A root-cause analysis exposes the underlying causes of each of these issues. By dividing the issues into more manageable sub-issues, issue resolution becomes manageable. To further aid in the issue resolution process of these issues, the party responsible for each corrective action has been identified using the following classifications:

M&O - an M&O contractor responsibility

DOE - Headquarters and/or operation offices responsibility

National/State - Responsibility rests with other regulatory agencies, stakeholders, Congress, etc.

As the current M&O contractor at DOE's most difficult waste problem sites, Westinghouse recognizes that they have the responsibility to help solve some of the complexes' HLW problems in a cost effective manner by encouraging the M&Os to work together by sharing expertise, eliminating duplicate efforts, and sharing best practices. Pending an action plan, Westinghouse M&Os will take the initiative on those corrective actions identified as the responsibility of an M&O.

This document captures issues important to the management of HLW. The proposed resolutions contained within this document set the framework for the M&Os and DOE to work cooperatively to develop an action plan to solve some of the major complex-wide problems. Dialogue will continue between the M&Os, DOE, and other regulatory agencies to work jointly toward the goal of storing, treating, and immobilizing HLW for disposal in an environmentally sound, safe, and cost effective manner.

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ACRONYM LIST

ALARA	As Low As Reasonably Achievable
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulation
CSSF	Calcine Solids Storage Facility
D&D	Decontamination and Decommissioning
DOE	U. S. Department of Energy
DOE-HQ	Department of Energy - Headquarters
DOT	U. S. Department of Transportation
DNFSB	Defense Nuclear Facility Safety Board
DWPF	Defense Waste Processing Facility
EPA	U. S. Environmental Protection Agency
EM	Environmental Restoration and Waste Management
ES&H	Environment, Safety and Health
FYP	Five-Year Plan
GOCO	Government-Owned Contractor-Operated
HLLW	High-Level Liquid Waste
HLW	High-Level Waste
ICPP	Idaho Chemical Processing Plant
INEL	Idaho National Engineering Laboratory
ITP	In-Tank Precipitation
LDR	Land Disposal Restrictions
LLW	Low-Level Waste
MOA	Memorandum of Agreement
MRS	Monitored Retrievable Storage
M&O	Management and Operations
NEPA	National Environmental Policy Act
NRC	U. S. Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act
ORR	Operational Readiness Review
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RW	DOE Office of Civilian Radioactive Waste Management
SAR	Safety Analysis Report
SRS	Savannah River Site
VIT*	Vitrification
WMA	Waste Management Authority
WVDP	West Valley Demonstration Project

* Abbreviation

1.0 INTRODUCTION

1.1 DEVELOPMENT

The DOE Office of Environmental Restoration and Waste Management (EM) uses various planning tools to improve its integrated planning process and develop more effective strategies for reaching long-term goals. Although not strictly adhering to the methodology, the HLW Issues and Resolutions Document follows one of those planning tools, the roadmap process, to generate the issues and resolutions found within this document. Additionally, existing HLW site roadmaps, mission plans, and the DOE EM-14 HLW Roadmaps Cross-Cut Document were used as references.

The process involved in the development of this document can be grouped into three phases: assessment, analysis, and resolution. The assessment phase defines the background and current status of the sites. In this phase, assumptions are made, key milestones are determined and regulatory requirements are catalogued. The specific assumptions used to develop the issues can be found in Appendix A. Likewise, applicable key milestones are in Appendix B and regulatory requirements are in Appendix C.

The analysis phase evaluates the information gathered in the assessment phase and contrasts it to the vision of the future. For the purposes of this contrast, the vision of the future for the complex has been defined as:

- HLW will be permanently disposed in a manner that affords an acceptable level of protection to the environment.
- HLW will be safely managed until disposed.
- DOE tank waste will be rendered into a final form suitable for disposal as quickly as possible, consistent with safety, funding constraints, and stakeholder buy-in.
- The public will be involved in the decision concerning the final disposal of HLW. The public will accept the risks and costs associated with disposal.

By contrasting the two situations in the analysis phase, roadblocks to achieving these objectives are determined and primary issues that are common to all or most of the HLW sites within the DOE complex, along with their root causes, are identified.

The resolution phase develops the corrective actions required to resolve the issues in a timely and effective fashion. The resolution phase also identifies responsible parties for each corrective action.

The main focus of this document is on: 1) the issues, since these are key to understanding the problems that could impede progress; 2) the root causes of those issues; and 3) the actions required to resolve the issues. It should be noted that the rapidly changing regulatory environment at the sites affects the contents of the HLW Issues and Resolutions Document.

1.2 SITES

HLW discussed in this document is evaluated using the Nuclear Waste Policy Act (NWPA) definition for HLW. This definition is found in Appendix A.

Currently, all DOE managed HLW inventory is located at Westinghouse managed facilities. These facilities are located at the INEL, SRS, WVDP, and Hanford Reservation. Each site has existing agreements in place with their host state and/or regulatory agencies which are driving activities. Most actions in progress are focused at placing current liquid HLW inventories into more environmentally stable waste forms.

INEL The INEL's HLW is located at the Idaho Chemical Processing Plant (ICPP), a facility managed and operated by Westinghouse Idaho Nuclear Company. Fuel reprocessing activities generated high-level liquid waste (HLLW) from 1953 to 1992. This waste was collected and held in the tank farm until final treatment. The ICPP discontinued fuel reprocessing operations in April 1992 at the direction of DOE with the exception of one final 2nd/3rd cycle processing campaign. The ICPP is currently in transition.

ICPP currently has 300,000 gallons of HLLW and 1.5 million gallons of sodium based waste managed in the ICPP tank farm system contained in eleven 300,000 gallon underground storage tanks. These volumes change dynamically in response to plant operations. Approximately 3,800 m³ of calcine have been produced since 1963 and calcine operations will continue. Calcine is contained in five Calcine Solids Storage Facilities (CSSFs) which are full. Two additional CSSFs have been constructed. Calcine was stored in the sixth CSSF during the last New Waste Calcining Facility campaign, H-3, which ended September 1993. Research is ongoing to determine the most cost effective method for immobilizing the ICPP's HLW for future disposal.

Savannah River In the past, the SRS's four reactors produced nuclear materials for our nation's defense program and other commercial applications. Separation and processing of these special nuclear materials generated millions of gallons of high-level radioactive waste. Fifty-one underground carbon steel tanks, housed inside reinforced concrete vaults, currently hold 34 million gallons of this waste. During storage, the fresh waste settles out into sludge and supernate components. Evaporators concentrate the supernate so that it can be stored as crystallized salt cake. All three components of waste (salt, sludge, and supernate) will be removed from the tanks and processed into the more stable forms of borosilicate glass and saltstone.

Several facilities are required to accomplish this. The Waste Removal Program includes a series of projects that install and operate the necessary pumps, agitators, and transfer equipment needed to remove waste from the primary vessels so that the tanks can be retired or reused. The "old style" tanks, whose designs do not meet current containment standards, will be retired. The "new style" tanks will remain in service. The Waste Processing Program includes the Extended Sludge Processing facility, where sludge is washed to remove excess salts and aluminum. The In-Tank Precipitation (ITP) facility separates the highly radioactive salt cake constituents into a low activity stream and a highly radioactive precipitate stream.

The sludge and precipitate streams are fed to the Defense Waste Processing Facility (DWPF) Vitrification facility, where they are combined with borosilicate glass beads and fed to a melter. The waste is vitrified at 1100°C before being poured into stainless steel canisters, where the glass is

allowed to solidify. The canisters are then sealed, decontaminated, and stored on-site until they can be transferred to a federal repository.

The low activity stream from ITP is transferred to the Saltstone facility, where it is combined with cementitious materials to form a grout. The grout is pumped to above-ground concrete vaults and allowed to harden in place.

Hanford The Hanford site in southeastern Washington State has the most diverse and largest amount of highly radioactive waste of any site in the United States. High-level radioactive waste has been stored in large underground tanks since 1944. Approximately 227,000 m³ of waste have been accumulated in 177 tanks. These caustic wastes consist of many different chemicals. The waste forms include liquids, slurries, salt cakes, and sludges. The radioactive waste stored in these tanks has come from various sources: 1) three different plutonium and uranium recovery processes from irradiated fuel, 2) three different radionuclide recovery processes from waste, and 3) miscellaneous sources (e.g., laboratories and reactor decontamination solutions). The neutralized wastes include sodium nitrate/nitrate, sodium hydroxide, sodium aluminate, sodium phosphate, large amounts of organics, and radionuclides.

The wastes are stored in 149 single-shell tanks and 28 double-shell tanks. The single-shell tanks consist of a reinforced concrete tank with a carbon-steel liner. No wastes have been added to them since 1980. The pumpable liquids have been removed from many of the single-shell tanks so that the remaining waste is mostly sludge and salt cake. The double-shell tanks consist of a carbon-steel tank within a steel-lined concrete tank. In addition to the waste stored in the tanks, significant amounts of ⁹⁰Sr (Strontium) and ¹³⁷Cs (Cesium) were removed from the tank waste, converted to salts, doubly encapsulated in metal containers, and stored in water basins.

A Tank Waste Remediation System Program has been established within the DOE to safely manage and immobilize these wastes in anticipation of permanent disposal of the HLW fraction in a geologic repository.

West Valley Demonstration Project Owned by the State of New York, this site is the only commercial nuclear fuel reprocessing facility to have operated in the United States. Reprocessing occurred from 1966 to 1972 generating approximately 660,000 gallons of highly radioactive liquid waste. The waste was stored in underground steel tanks. The DOE is now responsible for demonstrating that liquid waste from reprocessing spent nuclear fuel can be managed safely. This involves the solidification of HLW by vitrification; the development of containers suitable for permanent disposal of HLW; and decontamination and decommissioning (D&D) of the facilities used in the Project. The Project is continuing the pretreatment of HLW by removal of sulfates in preparation for the operation of the HLW Vitrification Facility in fiscal year 1996.

2.0 ISSUES

2.1 PRIORITIZATION

Issue statements identify situations or problems that may hinder the achievement of strategic objectives. They also reflect information management wants to communicate up the organizational chain of authority for resolution. These statements have been assigned a priority so that resources can be assigned to address the most urgent issues first. A prioritization system, developed by the DOE EM organization for their Five-Year Planning (FYP) process, was used for this exercise. The FYP prioritization categories are as follows:

Priority 1

Includes activities necessary to prevent near-term adverse impacts on workers, the public, or the environment. Examples include: containment to prevent the spread of contamination; actions to prevent or minimize releases to the environment; and ongoing HLW operation activities required to maintain safe conditions.

Priority 2

Includes activities required to meet the terms of agreements (whether in place or under negotiation) between DOE and tribal governments and local, state, and federal agencies. These agreements represent legal, or in the case of Agreements-in-Principle, procedural commitments to complete activities on the schedules agreed to by DOE.

Priority 3

Priority 3 includes compliance with DOE orders that implement external regulations or that set specific DOE regulatory standards, actions that would reduce risk or costs, and actions that would prevent disruption of DOE's production mission.

Priority 4

Includes activities that are not required by regulation but would be desirable. Examples of Priority 4 actions include: some decontamination and decommissioning; activities under Agreements-In-Principle with States and Indian Nations; many technology development efforts; and management oversight to prevent waste, fraud, and abuse.

2.2 ISSUE STATEMENTS

The issue section in this document covers issues identified by several sources. The Westinghouse GOCO HLW Integration Committee transmitted a list of issues identified by various outside reviews including the Defense Nuclear Facility Safety Board (DNFSB). Other sources of previously identified issues were roadmaps, mission plans, and other planning documents. Issues were also developed at a Westinghouse M&O workshop to aid in the development of this HLW Issues and Resolutions Document, as well as through interviews, analyses, and observations. The five primary HLW issues common to all or most HLW sites are as follows:

1. Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.
2. The process of obtaining broad stakeholder support requires much improvement in order to obtain a long range commitment to open interaction between stakeholders and the DOE.
3. The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.
4. Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.
5. Future funding based on current business as usual, for such items as infrastructure, technology development, and other resources, will not be available to support all of the sites' missions.

3.0 ROOT CAUSE ANALYSIS AND ISSUE RESOLUTION

Root-cause analysis has one purpose: to find the underlying causes of the primary issues or problems. Root-cause analysis involves organizing issues into a hierarchy. The issue hierarchy is diagrammed in the following Issue Analysis Worksheets. The Issue Analysis Worksheets outline the transformation process of reducing primary issues to secondary issues and then reducing the secondary issues to tertiary issues. By dividing the issue statements into more manageable pieces, determining actions for resolution becomes easier.

The Issue Analysis Worksheets also list Issue Resolution/Corrective Action statements. These statements identify actions necessary to resolve the issues. The corrective actions have been categorized into one of the following three categories to assign responsibility:

- M&O - an M&O contractor responsibility
- DOE - Headquarters and/or operation offices responsibility
- National/State - Responsibility rests with other regulatory agencies, stakeholders, Congress, etc. (abbreviated as Nat'l/State)

Note:

Throughout the Issue Analysis Worksheets, a one-to-one relationship between the issues and issue resolution/corrective actions is not found. Often, one of the identified issue resolution/correction actions address several of the issues.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.1

Priority 3

A policy based on a systems approach to evaluate the HLW life cycle management, with emphasize on the disposal end, including treatment for disposal, has not been developed.

Tertiary Issues

- 1.1.1 Tolerance for the current zero risk approach (for hazards, fraud, technology failures, etc.) extends schedules and increases costs.
- 1.1.2 Stakeholder participation is not included as a necessary part of a systems approach to HLW management.

Issue Resolution/Corrective Actions

- M&O
 - Develop a program to educate M&O and DOE HLW managers on life cycle management techniques.
- M&O
 - Use the life cycle management techniques once they are in place.
- M&O
 - Involve stakeholder groups to assist in determining priorities and future actions.
- M&O
 - Initiate two-way communication with stakeholders concerning the costs/benefits compared to risk tradeoffs of HLW management.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.2

Priority 3

Fragmented management and structure exists in most DOE Headquarters (HQ) organizations which results in program inefficiencies.

Tertiary Issues

- 1.2.1 Changes in leadership disrupt program direction and momentum causing programs to be re-evaluated with every change and an adjustment period to allow the new administration to become "comfortable" enough with the program to support it.
- 1.2.2 DOE-HQ organizations {e.g. DOE Office of Civilian Radioactive Waste Management (RW), EM} do not provide consistent direction and have mutually exclusive program goals.
- 1.2.3 There is not an adequate issue resolution capability between organizations.
- 1.2.4 Liability (both corporate and personal) associated with making a decision in the DOE system precludes making needed decisions. There is no penalty for not making a decision.

Issue Resolution/Corrective Actions

- M&O
 - Develop a program to educate M&O and HLW managers on life cycle management techniques.
- DOE
 - Use the life cycle management techniques once they are in place.
- DOE
 - Establish clear responsibilities at DOE-HQ for HLW management.
- DOE
 - Complete revision of DOE Order 5820.2A, Radioactive Waste Management.
- Nat'l/State
 - Clarify congressionally defined agency responsibilities to manage HLW.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.3

Priority 3

There is insufficient integration of value engineering into obtaining waste minimization objectives.

Tertiary Issues

- 1.3.1 D&D/flushing out the systems that have existing HLW and possible future EM HLW generation need to be accurately projected.
- 1.3.2 Some waste that does not clearly fit the NWPA definition of HLW is currently managed as a HLW stream.
- 1.3.3 Facilities have not been retro-fitted to accomplish DOE waste minimization objectives.
- 1.3.4 Adequate systems analysis is needed to reduce the generation of side streams which may preclude implementation.
- 1.3.5 Quality objectives are not consistently defined for all DOE facilities (related to HLW waste acceptance).

Issue Resolution/Corrective Actions

- M&O
 - Implement complex-wide the WINCO Waste Management Authority (WMA), which is a method to identify, review, and approve/disapprove proposed waste streams prior to generation. The WMA ensures that waste generation is controlled, minimized, and in compliance with applicable laws, rules, and regulations governing the generation, handling, storage, treatment, disposal/reclamation of waste streams.
 - M&O
 - Integrate value engineering into waste minimization objectives.
 - M&O
 - Implement a systems approach to reduce the generation of side streams which may preclude implementation.
 - DOE
 - Define below regulatory concern levels or de minimis waste disposal criteria.
 - DOE
 - Establish penalties via accountability rules to M&Os to encourage waste minimization
-

- Nat'l/State** • Establish limits on how much non-HLW can be included in HLW treatment activities, unless the inclusion of non-HLW are economically justified or justified on a safety/"as low as reasonably achievable" (ALARA) basis.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.4

Priority 4

The DOE procurement system is not flexible or responsive, resulting in delays and unnecessary costs.

Tertiary Issues

- 1.4.1 Federal procurement performance-based purchasing is not being used.
- 1.4.2 Intellectual property issues for all sites have not been resolved.
- 1.4.3 Quality Assurance (QA) requirements are not on a graduated scale.
- 1.4.4 Requirements identification applicable to a project need to be approved as part of the initial project activity.
- 1.4.5 Standard criteria for review and approval have not been developed.

Issue Resolution/Corrective Actions

- DOE
 - Streamline the procurement process by using dollar value of procurement to establish standard criteria and time requirements for review and approval.
- DOE
 - Establish a flexible procurement environment which facilitates technology transfer and technology development.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.5

Priority 3

Overly conservative application of regulations does not allow for a graded approach for each facility.

Tertiary Issues

1.5.1 Application of a graded approach is erratic and not well defined.

1.5.2 The philosophy of conduct of operations is not well understood and causes conduct of operations to be inconsistently applied.

Issue Resolution/Corrective Actions

M&O • Establish a consistent implementation of conduct of operations at the Westinghouse M&O sites.

DOE • Establish procedure for applying graded approach.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 1

Priority 3

Cost effective business management by both DOE and its contractors is not adequately being practiced in areas such as accountability, incentive systems, goal assessment, and administration of resources.

Secondary Issue 1.6

Priority 3

The correct mix of qualified experienced personnel is not in place to meet missions.

Tertiary Issues

- 1.6.1 There is a lack of experienced qualified personnel due to the changing missions (transition from weapons production to environmental restoration and waste management).
- 1.6.2 Personnel are not receiving the appropriate training/qualifications for new mission.
- 1.6.3 Resources are not adequately utilized to complete field work.

Issue Resolution/Corrective Actions

- M&O
 - Establish training programs to retrain employees to meet changing mission requirements.
- M&O
 - Decentralize decision making hierarchy - empower employees.
- M&O
 - Aggressively recruit needed and qualified expertise.
- Nat'l/State
 - Increase public education support activities and exchange programs to give more students the opportunity to experience and generate interest in technical occupations.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 2

Priority 4

The process of obtaining broad stakeholder support requires much improvement in order to obtain a long range commitment to open interaction between stakeholders and the DOE.

Secondary Issue 2.1

Priority 4

Balanced information disseminated to the public on HLW technologies, issues, and resolutions has not been achieved.

Tertiary Issues

- 2.1.1 Stakeholder input on the Monitored Retrievable Storage (MRS) concept as a long term option despite repository siting difficulties has not been adequately addressed or obtained.
- 2.1.2 Interaction with stakeholders to select a site for an MRS or repository has not been effective.
- 2.1.3 The public has not accepted a link between risk and benefit.
- 2.1.4 The National Environmental Policy Act (NEPA) process is not fully integrated with desired systems analysis process.
- 2.1.5 The stakeholders lack confidence in the validity of the DOE missions.

Issue Resolution/Corrective Actions

- M&O ● Together with local operation offices, increase stakeholder involvement programs.
 - M&O ● Implement a systems analysis approach to include the NEPA process.
 - DOE ● Inform public on the costs/benefits compared to risk tradeoffs of HLW management.
 - DOE ● Continue Secretary O'Leary's initiative on openness to gain public trust.
 - Nat'l/State ● Negotiate equity issues with involved stakeholders using a risk based approach.
 - Nat'l/State ● Legislate a concentration-based HLW definition through a national uniform policy for HLW management based on risk to public health, worker safety and the environment.
 - Nat'l/State ● Offer incentives to MRS/repository host states and stakeholders.
-

ISSUE ANALYSIS WORKSHEETS

Primary Issue 2

Priority 4

The process of obtaining broad stakeholder support requires much improvement in order to obtain a long range commitment to open interaction between stakeholders and the DOE.

Secondary Issue 2.2

Priority 4

Stakeholders lack confidence in the validity of the DOE missions and are skeptical of the way the sites are managed.

Tertiary Issues

- 2.2.1 Stakeholders do not understand the new mission now that the complex is not producing weapons.
- 2.2.2 Stakeholder participation is not being conducted throughout the planning process.
- 2.2.3 A genuinely open request for stakeholder input has not been perceived.

Issue Resolution/Corrective Actions

M&O	● Together with local operation offices, increase stakeholder involvement in the planning process.
DOE	● Inform stakeholders of the costs/benefits compared to risk tradeoffs of HLW management.
DOE	● Continue Secretary O'Leary's initiative on openness to gain stakeholder trust.
DOE	● Inform stakeholders of the resource impacts (costs, personnel, etc.) incurred as result of schedule and commitment changes.
DOE	● Use stakeholder groups to assist in determining priorities and future actions.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 3

Priority 2

The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.

Secondary Issue 3.1

Priority 3

Implementation of DOE Orders is directed by sub-tiers of local DOE offices with no overall risk/benefit/cost decision making in the process.

Tertiary Issues

- 3.1.1 Local and regional politics strongly influence the regulatory and permitting requirements at each site.
- 3.1.2 Assessment of impact/cost evaluations need to be completed prior to approval of new/revised requirements or agreements.

Issue Resolution/Corrective Actions

M&O	● Negotiate standard regulatory and permitting requirements across complex.
DOE	● Develop standardized criteria for the review and approval process.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 3

Priority 2

The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.

Secondary Issue 3.2

Priority 2

Requirements for operation, permitting, managing, and oversight of HLW facilities are not standardized.

Tertiary Issues

- 3.2.1 The DOE review and approval process for HLW treatment facilities is not efficient and may cause treatment of HLW to be delayed.
- 3.2.2 Facility start-up and restart criteria are not consistent or well defined.
- 3.2.3 Application of a graded approach is not consistent and well defined.
- 3.2.4 The role of regulatory and non-regulatory advisory groups (such as the DNFSB) are not adequately defined as the weapons complex mission shifts from production to restoration.
- 3.2.5 Unique processes and facilities make defining criteria difficult.
- 3.2.6 Safety analysis requirements, Operational Readiness Reviews (ORR), audits, and conduct of operations/assessments are not consistent and well defined.
- 3.2.7 Regulatory commitments are not consistent among the sites.

Issue Resolution/Corrective Actions

- M&O
 - Incorporate the Safety Analysis Report (SAR) process at facility conceptual design phase.
 - M&O
 - Negotiate standard regulatory and permitting requirements.
 - DOE
 - Streamline ORR process by limiting oversight and redundant reviews and empowering local DOE offices.
 - DOE
 - Establish procedure for applying graded approach.
-

DOE • Develop standardized criteria for the review and approval process.

Nat'l/State • Congress must formally define agency roles and responsibilities.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 3

Priority 2

The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.

Secondary Issue 3.3

Priority 2

Comprehensive management of HLW can not be ensured at each site because DOE compliance requirements are not consistent with regulatory agency requirements or with industry codes/standards/regulations.

Tertiary Issues

- 3.3.1 HLW ALARA/handling concerns have resulted in the development of small volume sample technologies which do not meet EPA requirements. In turn, EPA does not consider HLW minimization and ALARA concerns.
- 3.3.2 DOE has stated "DOE will fully comply with Resource Conservation and Recovery Act (RCRA) EPA requirements," but they may conflict with radiological (e.g., ALARA) concerns.
- 3.3.3 Consistent sampling protocols are not established (e.g., frequency, types).
- 3.3.4 Implementation of NEPA requirements by DOE needs to be adequately integrated with other requirements, schedules, or funds.
- 3.3.5 Implications of enforcement of Price-Anderson amendments are not known.
- 3.3.6 EM-Defense Programs implementation of DNFSB Recommendations 90-2 and 92-4 is not consistent.

Issue Resolution/Corrective Actions

- DOE • Codify the terms of enforcement of the Price-Anderson Act amendments.
 - DOE • Define a DOE-wide implementation strategy for codes/standards/regulations.
 - DOE • Integrate DOE order system with industry codes/standards/regulations.
 - Nat'l/State • Matrix personnel between agencies to improve knowledge.
-

Nat'l/State • Clarify regulatory and policy requirements.

Nat'l/State • Standardize interagency laboratory requirements (inter-agency work group).

ISSUE ANALYSIS WORKSHEETS

Primary Issue 3

Priority 2

The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.

Secondary Issue 3.4

Priority 4

Regulatory agency personnel (e.g., EPA, states) are not always experienced with hazards of HLW.

Tertiary Issues

3.4.1 Regulation of radiological and chemical hazards associated with HLW are not integrated.

Issue Resolution/Corrective Actions

- DOE • Assist in the education of agency personnel on HLW issues, hazards, status, etc.
- Nat'l/State • Consolidate/matrix knowledgeable personnel between agencies.
- Nat'l/State • Regulatory agencies dedicate staff to specific DOE project. (operation office level)
- Nat'l/State • Clarify congressionally defined agency responsibilities to manage HLW.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 3

Priority 2

The various DOE sites have different drivers (e.g., operation offices, EPA regions, public, states) affecting their missions and requirements that can often contradict each other, making congruent management of HLW among the sites nearly impossible.

Secondary Issue 3.5

Priority 2

Changes in standards and regulatory requirements have made some facilities obsolete.

Tertiary Issues

- 3.5.1 Some secondary containment is incompatible with stored HLW.
- 3.5.2 Auxiliary systems need to be upgraded.
- 3.5.3 Adequate materials/corrosion data must be compiled to project reliable operation.
- 3.5.4 Redundancy for many critical systems is needed.
- 3.5.5 Some current building codes exceed original design criteria.
- 3.5.6 Land Disposal Restrictions (LDR) storage prohibitions limit the flexibility of managing stored HLW.

Issue Resolution/Corrective Actions

- DOE
 - Compile a complex-wide list of items within a three-year time frame (out-of-budget) that require upgrades (using a risk based graded approach and technological merit) to stabilize safety concerns.
- DOE
 - Implement systems engineering approach to eliminate political prioritization and put in place technical evaluation.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 4

Priority 2

Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.

Secondary Issue 4.1

Priority 2

Waste forms will be produced before a repository is available.

Tertiary Issues

- 4.1.1 A repository site has not been validated and, hence, associated waste acceptance criteria has not been identified.
- 4.1.2 DOE has not adequately addressed the MRS concept as a long term option despite repository siting difficulties.
- 4.1.3 The risks inherent in siting a repository/MRS are not linked to added value by the public; therefore, the public is unwilling to accept the idea ("not in my backyard").
- 4.1.4 Required interim storage capacity for immobilized HLW is unknown due to lack of a final disposal option.

Issue Resolution/Corrective Actions

- M&O
 - Develop public relations/communication issues.
 - DOE
 - RW will concur in a Waste Form Compliance Plan with EM's Waste Acceptance Product Specifications.
 - Nat'l/State
 - Congress modify NWPA to approve use of site MRSs.
 - Nat'l/State
 - Use joint agency approach to improved education and communicate reduced risk resulting from treatment and storage (MRS, accepted final disposal solution).
 - Nat'l/State
 - Evaluate co-siting DOE waste with Department of Defense and commercial fuel.
 - Nat'l/State
 - Clarify congressionally defined agency responsibilities to manage HLW.
-

ISSUE ANALYSIS WORKSHEETS

Primary Issue 4

Priority 2

Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.

Secondary Issue 4.2

Priority 2

Treatment processes are being developed in the absence of disposal criteria and as such, may generate waste forms that will become obsolete.

Tertiary Issues

- 4.2.1 Product specifications currently used at DOE sites need to meet MRS/repository disposal criteria.
- 4.2.2 Interim on-site storage criteria may not satisfy final disposal/storage criteria.
- 4.2.3 To meet commitments, the sites can not postpone treatment technology development or generating final waste forms.

Issue Resolution/Corrective Actions

- M&O ● Develop and provide site-specific storage criteria.
- DOE ● Focus efforts for near term treatment on reducing the risk of waste management and interim storage pending the availability of a repository/MRS.
- DOE ● RW will concur in a Waste Form Compliance Plan with EM's Waste Acceptance Product Specifications.
- Nat'l/State ● Negotiate equity issues with involved stakeholders using a risk based approach.
- Nat'l/State ● Expedite MRS actions.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 4

Priority 2

Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.

Secondary Issue 4.3

Priority 2

A proactive, complex-wide coordinated interface with HLW Repository Program to ensure that HLW forms will be produced in a form acceptable for disposal does not exist.

Tertiary Issues

- 4.3.1 Cost benefit studies have not been completed for HLW management (e.g., minimizing repository volume may not reduce overall program costs).
- 4.3.2 All agencies involved with selecting a disposal site have not cooperated with each other.
- 4.3.3 Separate treatment technologies may be required for each site.
- 4.3.4 A system approach has not been applied to development of technologies, facilities, and documentation.

Issue Resolution/Corrective Actions

- M&O • Complete cost benefit studies on HLW management.
 - M&O • Share technologies and best practices were applicable with other M&Os.
 - DOE • Apply systems analysis at the program level and early in project planning.
 - DOE • RW will concur in a Waste Form Compliance Plan with EM's Waste Acceptance Product Specifications.
 - Nat'l/State • Establish the mechanisms for a joint agency council to exist to ensure comprehensive management of HLW.
 - Nat'l/State • Provide consistent funding to meet milestones.
-

ISSUE ANALYSIS WORKSHEETS

Primary Issue 4

Priority 2

Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.

Secondary Issue 4.4

Priority 4

HLW transportation methods or agreements have not been selected and implemented.

Tertiary Issues

- 4.4.1 Shipping/packaging design requirements have not been finalized.
- 4.4.2 SARs for packaging have a lengthy lead time.
- 4.4.3 Implementation of U. S. Department of Transportation (DOT) regulations must be funded.
- 4.4.4 Sample handling issues are not resolved complex-wide.
- 4.4.5 Emergency response plans are not completed for interstate shipping.
- 4.4.6 Approved shipping paths have not been developed.

Issue Resolution/Corrective Actions

M&O • Establish a working group to resolve and coordinate transportation issues.

Nat'l/State • RW, U. S. Nuclear Regulatory Commission (NRC), and EPA will jointly determine the individual performance requirements of waste form, canisters, overpack, and a repository.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 4

Priority 2

Uncertainties for funding, disposal criteria, and regulations must be resolved in order to move forward in the dispositioning of HLW and to meet agreed upon commitments.

Secondary Issue 4.5

Priority 3

The status of wastes that do not clearly fit the NWPA definition of HLW are ambiguous.

Tertiary Issues

- 4.5.1 The existing HLW definition is not quantitative (i.e., concentration based) but, instead, is source based.
- 4.5.2 Management of residuals after treatment of HLW is not consistent from site to site.
- 4.5.3 Some waste that does not clearly fit the NWPA definition of HLW is currently managed as a HLW stream.

Issue Resolution/Corrective Actions

- DOE • Complete revision of DOE Order 5820.2A, Radioactive Waste Management.
- DOE • Complete (sign) Memorandum of Agreement (MOA) between EM and RW to establish authority for issue resolution on those areas in which joint resolution may be required.
- Nat'l/State • Legislate a concentration-based HLW definition through a national uniform policy for HLW management based on risk to public health, worker safety, and the environment.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 5

Priority 2

Future funding based on current business as usual, for such items as infrastructure, technology development, and other resources, will not be available to support all of the sites' missions.

Secondary Issue 5.1

Priority 4

Adequate program management priorities are not applied to HLW activities.

Tertiary Issues

- 5.1.1 A systems approach is not applied to the development of all technologies, facilities, and documentation.
- 5.1.2 Funding for development of new technologies/facilities is not consistently provided.
- 5.1.3 Funding to conduct non-critical activities (maintenance upgrades) tends to get cut.
- 5.1.4 Programmatic decisions are made to satisfy near-term budget constraints that create significant long-term life cycle cost increases.

Issue Resolution/Corrective Actions

M&O	● Apply re-engineering concepts to the budget in order better utilize available funding to accomplish programs that otherwise will be cut.
M&O	● Improve operational and cost effectiveness by implementing process improvement tools such as WesTip, benchmarking, value engineering, Saving through Sharing, etc.
DOE	● Apply system engineering approach to develop program management requirements.
DOE	● Change activity data sheet development process to give proper priority to preventative maintenance during shut down/stand-by mode.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 5

Priority 2

Future funding based on current business as usual, for such items as infrastructure, technology development, and other resources, will not be available to support all of the sites' missions.

Secondary Issue 5.2

Priority 2

Resource allocation does not always support HLW management commitments and needs.

Tertiary Issues

- 5.2.1 Funding changes tend not to be made with full consideration of impacts on previous consent order commitments.
- 5.2.2 Consistent funding is not adequately provided to fully pursue research and development options.
- 5.2.3 Funding to support degraded condition repair/upgrades required by regulatory agencies is not available.
- 5.2.4 The mixture of personnel expertise needs to support DOE facility mission changes.

Issue Resolution/Corrective Actions

- DOE
 - Complete (sign) MOA between EM and RW to facilitate resolution of issues between DOE organizations.
- DOE
 - Apply a systems approach to prioritize resource allocation.
- DOE
 - Publicize the costs of complying with regulatory changes.
- DOE
 - Educate the public to the costs incurred resulting from changing schedule and commitment changes.
- Nat'l/State
 - Reassess current allocation of Nuclear Waste Funds to specifically address HLW priorities.

ISSUE ANALYSIS WORKSHEETS

Primary Issue 5

Priority 2

Future funding based on current business as usual, for such items as infrastructure, technology development, and other resources, will not be available to support all of the sites' missions.

Secondary Issue 5.3

Priority 2

Facilities are not available to meet current and future needs of the HLW program.

Tertiary Issues

- 5.3.1 Existing facilities do not meet new/revised standards, regulations, etc.
- 5.3.2 Resources are not available to upgrade facilities to keep pace with changing regulatory requirements.
- 5.3.3 Funding is not always available for degraded condition repair/upgrades required by regulation/law.
- 5.3.4 Decisions on acquiring new facilities are not based on the appropriate drivers, but, instead, tend to be based on subjective information or the wrong drivers.
- 5.3.5 LDR storage prohibitions limit the flexibility of managing stored HLW.
- 5.3.6 Many existing facilities are beyond reliable design life.
- 5.3.7 Facilities need to be designed to store all types of wastes now classified as HLW.
- 5.3.8 Sufficient analytical laboratory capacity is not available to meet program needs.

Issue Resolution/Corrective Actions

- DOE • Set aside a percentage of DOE budget for facility upgrades.
 - DOE • Conduct a graded approach to implementing new requirements.
 - DOE • Implement systems engineering approach to eliminate political prioritization and establish technical evaluation.
 - DOE • Delegate review and approval process to operation offices.
 - Nat'l/State • Standardized inter-agency laboratory requirements (Inter-Agency Work Group).
-

Nat'l/State • Conduct inter-agency cost benefit analysis of environment, safety, & health (ES&H) driving requirements (risk based graded approach).

Nat'l/State • Establish an inter-agency analytical resource network to facilitate sharing to fully exploit existing capabilities.

4.0 CONCLUSION

In a joint Westinghouse M&O effort, representatives from each DOE HLW site participated in the creation of the HLW Issues and Resolution Document. Careful analysis went in to determining complex-wide HLW issues, while thorough consideration went in to proposing corrective actions. Many of the resolutions to the issues are not easily achievable and many require the concession of agencies outside of DOE. These issues will not disappear overnight. However, this document takes the first step in suggesting a path toward reaching DOE complex, M&O, and stakeholder vision of the future.

Westinghouse recognizes its responsibility to expediently and cost effectively resolve issues falling under its responsibility. Committees such as the GOCO HLW Integration Committee can facilitate some of the required changes. Perhaps, DOE-sponsored committees such as the newly formed HLW Steering Committee (EM-30) will be able resolve some issues, establish policies, and utilize resources more efficiently so that the corrective actions designated in the document as DOE responsibilities can be implemented. The Westinghouse M&Os are committed to assist DOE in accomplishing optimum HLW management resolutions.

APPENDICES

A. ASSUMPTIONS

B. DOE COMMITMENTS/MILESTONES

C. REGULATORY REQUIREMENTS

A. ASSUMPTIONS

The first step in identifying issues is to construct a list of assumptions common to the DOE-complex. The assumptions drive out the issues by establishing a frame of reference or planning basis for subsequent analysis. An assumption typically is used to fill a knowledge gap. Although the assumptions are stated as facts, it is important to realize that they are not final or that they are necessarily correct. These assumptions can change at any time and, as a result, the issues would be effected. The assumptions do not include contingencies for uncertainties in technical, cost, or budget baselines.

Management Assumptions

1. Budgets will be developed and funding will be consistently provided to meet currently approved schedules.
2. The existing sites will continue with their current missions to manage HLW.
3. DOE will standardize/streamline the requirements for review of documents and facility readiness assessments.
4. Facilities will be designed, constructed, maintained and operated in compliance with applicable codes, standards, and DOE orders.
5. Adequate resources (e.g., funding, qualified people) will be available.
6. Current consent agreements will be followed.
7. HLW will be managed (treated) to minimize final systems costs for disposal.
8. The status of all wastes that do not clearly fit the definition of HLW per the NWPA* will be clarified.
9. DOE will integrate their order and compliance requirements with other regulating agencies.
10. Spent fuel will not be re-processed and stabilization of spent fuel for long-term storage will not generate new HLW.
11. Weapons complex recycling, conditioning, processing, HLW treatment, and disposal will not generate new HLW.
12. The repository program will provide approved casks and equipment as required to meet program needs.

* The definition of HLW in the NWPA [section 2 (12)] is: "... (A) the highly radioactive 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 (B) other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation."

Storage Assumptions

1. Interim storage will be provided to support HLW retrieval, pretreatment, immobilization, and other cleanup activity operational requirements.
2. HLW, including residuals, will be removed to meet closure requirements.
3. HLW management storage systems will continue to be operated and monitored as required to safely store HLW.
4. DOE and the M&O contractors will take action to satisfy LDR storage prohibition issues regarding HLW storage.
5. There will be no loss of HLW storage capacity due to component failures.

Treatment Assumptions

1. Processes will be developed and implemented to minimize the storage and final disposal costs.
2. Final treatment processes for HLW will provide a waste form which meets all applicable requirements for final disposal.
3. Technologies will be developed and demonstrated for retrieval, pre-treatment, and final treatment of DOE managed HLW.
4. HLW will be treated at the site where it is generated or currently stored.
5. Facilities and personnel will be available to provide analytical lab support.
6. Sampling procedures comply with NRC ALARA policy and recognize EPA RCRA requirements.
7. Evaporation will continue to be used to reduce HLLW volumes at all sites.

Transportation Assumptions

1. Approved transport plans and containers will be developed for off-site shipments of HLW (including characterization samples).
2. Any movements of HLW (within the site boundary and not accessing public roads) will be made according to DOE-approved transportation plans and will adhere as closely as practical to the applicable DOT regulations.

Disposal Assumptions

1. Waste forms produced by treatment facilities will meet waste acceptance criteria/performance requirements for disposal facility.
2. A permanent federal repository will be available for receipt of all immobilized HLW.

B. DOE COMMITMENTS/MILESTONES

The purpose of listing and evaluating milestones is to generate a basis for reviewing each site's activities. This document contains only those milestones considered key HLW commitments. These milestones were taken from such sources as 1995-1999 Five-Year Plans, Federal Facilities Compliance Agreements, DOE-HQ Program Execution Guidance and Tri-Party Agreement. These milestones incorporate installations programmatic commitments, commitments to DOE-HQ, regulatory requirements, consent orders, and commitments to the States and other federal agencies.

<u>Site</u>	<u>Milestone</u>	<u>Fiscal Year</u>
West Valley*	1. Initiation of vitrification (VIT) start-up activities.	1Q 1994
	2. Completion of VIT facility construction.	4Q 1994
	3. Receive NRC/DOE start-up approval.	2Q 1996
	4. Start of VIT radioactive operations.	2Q 1996
	5. Completion of VIT radioactive operations.	3Q 1998
Savannah River**	1. Start-up ITP in Radioactive operations.	4Q 1994
	2. Resume Extended Sludge Processing (Batch 1).	4Q 1994
	3. Commence New Waste Transfer Facility Hot Operation.	4Q 1994
	4. Commence DWPF Sludge-only Rad Ops.	4Q 1995
	5. Commence Late Wash Facility Rad Ops.	4Q 1995
	6. Commence Replacement HLW Evaporator Radioactive Operations.	4Q 1997
Hanford***	1. Start Hot Operations of LLW Pre-Treatment Facility.	1Q 2005
	2. Initiate Hot Operations of LLW VIT facility.	3Q 2005
	3. Start-up Hot Operation of HLW pre-treatment facility.	3Q 2008
	4. Initiate Hot Operation of HLW VIT Plant.	1Q 2010

* West Valley Milestones are from current project schedules.

** Savannah River milestones are from the 1993 Savannah River Site Roadmap.

*** Hanford milestones are from the Tri-Party Agreement.

<u>Site</u>	<u>Milestone</u>	<u>Fiscal Year</u>
Idaho*,**	1. Complete evaluation of the candidate sodium waste technologies.	4Q 1994
	2. Complete construction and start up of the HLLW Evaporator.	3Q 1996
	3. Complete INEL EM Environmental Impact Statement.	3Q 1995
	4. Complete advanced conceptual design for bin set #1 retrieval system.	3Q 1996
	5. Begin NWCF Campaign H-4.	1Q 1997
	6. Begin NWCF Campaign H-5.	2Q 1999
	7. Complete transfer of waste from tanks WM-182 through WM-186 including the heel.	2Q 2009
	8. Complete transfer of waste from tanks WM-180, WM-181, and WM-187 through WM-190 including the heel.	3Q 2015

* Idaho milestones 1 through 6 are from the FY95 ER&WM FYP.

** Idaho Milestones 7 and 8 are from the Consent Order with the State of Idaho.

C. REGULATORY REQUIREMENTS

The purpose of this appendix section is to briefly identify the regulations and other requirements related to HLW management and provide substantive support for issues, needs, and activities identified in the analysis phase.

The existing network of laws and regulations was formulated principally on the basis of controlling the environmental impacts resulting from the operations of industrial and municipal plants. DOE facilities are unique, due to radioactivity, security, etc., and generally unlike the intended targets of RCRA or CERCLA; thus, consent agreements and DOE Orders have been developed in an attempt to reach consensus for regulation of DOE facilities.

While this section is not intended to be all inclusive, it does provide a sound basis for substantiating issues. An overview of the relevant regulatory requirements, statutes, and Code of Federal Regulations (CFRs) are listed below. A more comprehensive list of these regulatory requirements including site specific regulations can be found in each site's individual roadmap document or mission plan. Below is the title of each DOE order or regulation, the regulating authority, and a short summary.

Key Regulatory Requirements

Regulation: DOE Order 1540.3A, Base Technology for Radioactive Material Transportation Packaging Systems

Regulating Authority: DOE

Description: Establishes DOE policies and responsibilities for coordinating and planning base technology for radioactive material transportation systems.

Regulation: DOE Order 4700.1, Project Management System

Regulating Authority: DOE

Description: Establishes the DOE project management system and provides implementing instructions, formats, and procedures, and sets forth the principles and requirements which govern the development, approval, and execution of DOE's outlay program acquisitions as embodied in the project management system.

Regulation: DOE Order 5000.3B, Occurrence Reporting and Processing of Operations Information

Regulating Authority: DOE

Description: Establishes a system that ensures timely identification, categorization, notification, and reporting to DOE management of all Reportable Occurrences at DOE-operated facilities or M&O facilities.

Regulation: DOE Order 5400.1, General Environmental Protection Program

Regulating Authority: DOE

Description: Establishes conduct of DOE operations in compliance with applicable environmental statutes, regulations, and standards to protect environment and public health. Establishes environmental protection program.

Regulation: DOE Order 5400.2A, Environmental Compliance Issue Coordination

Regulating Authority: DOE

Description: Establishes DOE requirements for coordination of significant environmental compliance issues to ensure timely development and consistent application of departmental environmental policy and guidance.

Regulation: DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Program

Regulating Authority: DOE

Description: Establishes DOE hazardous and mixed waste policies and requirements, and implements RCRA requirements with framework of environmental protection programs.

Regulation: DOE 5400.4, Comprehensive Environmental Response, Compensation, and Liability Act Requirements (CERCLA)

Regulating Authority: DOE

Description: Establishes and implements CERCLA policies and procedures with framework of environmental protection programs.

Regulation: DOE 5400.5, Radiation Protection of the Public Health and the Environment

Regulating Authority: DOE

Description: Establishes standards and requirements for operations with respect to protection of members of the public and the environment against due risk from radiation.

Regulation: DOE 5440.1E, National Environmental Policy Act Compliance Program

Regulating Authority: DOE

Description: Establishes policy and procedures which implement NEPA and to ensure environmental values and factors are considered in the decision making process. Requires coordination with the states.

Regulation: DOE 5480.1B, ES&H Program for DOE Operations

Regulating Authority: DOE

Description: Establishes ES&H program and corresponding QA program.

Regulation: DOE 5480.3, Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes

Regulating Authority: DOE

Description: Establishes requirements for packaging, preparation for shipment, and transportation of licensed radioactive material.

Regulation: DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards

Regulating Authority: DOE

Description: Presents standards for ES&H programs: mandatory external standards, mandatory internal standards, and good practice standards.

Regulation: DOE 5480.5, Safety of Nuclear Facilities

Regulating Authority: DOE

Description: Defines safety program requirements for nuclear facilities.

Regulation: DOE Order 5480.9, Construction Safety and Health Program

Regulating Authority: DOE

Description: Establishes procedures and provides guidance for protection of DOE and DOE contractor employees engaged in construction activities; protection of the general public from hazards in connection with Departmental construction activities; protection of adjacent property from damage; and prevention of delay or interruption of DOE programs caused by accident and/or fires.

Regulation: DOE 5480.11, Radiation Protection for Occupational Workers

Regulating Authority: DOE

Description: Establishes radiation protection standards and program requirements for DOE and DOE contractor workers with regard to ionizing radiation.

Regulation: DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities

Regulating Authority: DOE

Description: Establishes requirements for appropriate conduct of operations programs at DOE facilities.

Regulation: DOE Order 5700.6C, Quality Assurance

Regulating Authority: DOE

Description: Establishes QA requirements for the DOE.

Regulation: DOE 5820.2A, Radioactive Waste Management

Regulating Authority: DOE

Description: This order establishes policies, guidelines, and minimum requirements by which DOE manages its radioactive and mixed waste and contaminated facilities.

Regulation: DOE 6430.1A, General Design Criteria

Regulating Authority: DOE

Description: Criteria providing DOE prescribed and referenced standards for minimally acceptable requirements for facility design.

Regulation: 10 CFR 60, Disposal of High-Level Radioactive Waste in Geologic Repositories

Regulating Authority: NRC

Description: Prescribes the standards for the issuance of a license to the DOE to receive and possess radioactive waste, spent nuclear fuel, or byproduct material at a geologic repository (NRC 1989a).

Regulation: 10 CFR 71, Packaging and Transportation of Radioactive Materials

Regulating Authority: NRC

Description: Establishes requirements for packaging, preparation for shipment, and transportation of licensed radioactive material.

Regulation: 40 CFR 191, Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level, and Transuranic Radioactive Wastes

Regulating Authority: EPA

Description: Sets forth environmental standards for the management and disposal of radioactive waste and provides limits on the radiation exposure.

Regulation: 40 CFR 260, Hazardous Waste Management System: General

Regulating Authority: EPA

Description: Provides definitions of terms, general standards, and overview information applicable to management of hazardous wastes.

Regulation: 40 CFR 261, Identification and Listing of Hazardous Waste

Regulating Authority: EPA

Description: Identifies the solid wastes subject to regulation as hazardous wastes.

Regulation: 40 CFR 262, Standards Applicable to Generators of Hazardous Waste

Regulating Authority: EPA

Description: Establishes standards for generators of hazardous waste. Included are general requirements, manifesting requirements, pre-transport requirements, and recordkeeping and reporting requirements.

Regulation: 40 CFR 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Regulating Authority: EPA

Description: Establishes the minimum national standards that define the acceptable management of hazardous waste. As such, it deals with a number of broad issues, including general facility standards, contingency plans, releases from solid waste management units, record keeping, closure plans, use and management of containers, and land treatment.

Regulation: 40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Regulating Authority: EPA

Description: Establishes requirements for performing waste analysis, inspections of facilities, training of personnel, and proper facility maintenance and safety systems.

Regulation: 40 CFR 268, LDR

Regulating Authority: EPA

Description: Identifies hazardous wastes restricted from land disposal and defines limited circumstances under which an otherwise prohibited waste may continue to be land disposed.

Regulation: 49 CFR 171, (Hazardous Materials Regulations) General Information, Regulations, and Definitions

Regulating Authority: DOT

Description: Establishes general requirements, definitions, and references. Further defines applicability.

Regulation: 49 CFR 172, Hazardous Materials Tables, Hazardous Materials Communications Requirements, and Emergency Response Information Requirements

Regulating Authority: DOT

Description: Defines requirements for classifying materials and communicating hazards via use of proper shipping names, labels, markings, and placarding for hazardous material.

Regulation: 49 CFR 173, Shippers - General Requirements for Shipments and Packagings

Regulating Authority: DOT

Description: Defines hazardous materials; includes requirements outlining the preparation of materials for shipping and container construction, maintenance and testing requirements. Sets forth requirements for transporting radioactive material.

Regulation: NWPA of 1982 and Amendments of 1987

Regulating Authority: DOE

Description: The NWPA of 1982 and Amendments of 1987 set national policy for managing high-level radioactive waste and spent fuel. The following issues are covered in the NWPA and amendments: Site considerations, site characterization, repository capacity, retrievability, interim storage program, MRS Facility, transportation system, and program for research, development, and demonstration for disposal of high-level waste and spent fuel.

Regulation: Resource Conservation and Recovery Act (PL-94-580)

Regulating Authority: EPA

Description: Outlines the framework for national programs to achieve environmentally sound management of both hazardous and non-hazardous solid wastes. In addition, it is concerned with the promotion of resource recovery techniques to provide fuel and reduce the volumes of waste.

Regulation: National Environmental Policy Act

Regulating Authority: Council of Environmental Quality

Description: Provides a means to evaluate the potential environmental impacts of proposed federal activities and to examine alternatives to those actions.

Regulation: Comprehensive Environmental Response, Compensation, and Liability Act

Regulating Authority: EPA

Description: CERCLA, as amended by the Superfund Amendments and Reauthorization Act in 1986, provides liability, compensation, cleanup, and emergency response for hazardous substances released to the environment.

Regulation: Clean Air Act of 1970, Amendments of 1990

Regulating Authority: EPA

Description: Establishes air quality and emission limits throughout the United States.

Regulation: Safe Drinking Water Act

Regulating Authority: EPA

Description: This act requires the DOE to obtain applicable permits and satisfactorily complete required sample analyses and site inspections of public/industrial water supplies and sources of drinking water. Also, this act imposes requirements on the installation and maintenance of drinking water wells.

Regulation: Atomic Energy Act

Regulating Authority: DOE

Description: Pursuant to the Atomic Energy Act, DOE is responsible for developing and maintaining a capability to produce nuclear materials required for the defense of the United States. The act also sets forth basic policies and guidance on worker protection, and emission standards, including the principle ALARA.

Regulation: Federal Facility Compliance Act

Regulating Authority: States

Description: The Federal Facility Compliance Act allows states to impose fines and penalties against federal facilities that violate RCRA, although this is delayed for three years to allow DOE time to prepare plans for the development of treatment capacities and technologies for facilities at which DOE generates or stores mixed wastes.

DATE

FILMED

7/12/94

END