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**Environmental Restoration Program Project Management Plan
for the DOE Oak Ridge Field Office
Major System Acquisition OR-1**

**Environmental Restoration Program
P.O. Box 2003
Oak Ridge, Tennessee 37831-7298**

**Document Approved—December 1992
Date Issued—December 1992**

NOTICE: This document contains information that will change as the Project proceeds. It is subject to addition, revision, or correction and, therefore, will be under the OR-1 Project baseline change control.

2nd Notice: This document is not intended to change any of the contract provisions between the Department of Energy and the contractor signatories. Any conflicts between this Plan and of the signatories' prime contracts with the Department of Energy will be resolved in accordance with the terms and conditions of the prime contracts.

**Prepared for
U.S. Department of Energy
Office of Environmental Restoration and Waste Management
under budget and reporting code EW 20**

**MARTIN MARIETTA ENERGY SYSTEMS, INC.
managing the**

**Oak Ridge K-25 Site
Oak Ridge Y-12 Plant
Oak Ridge National Laboratory
under contract DE-AC05-84OR21400**

**Paducah Gaseous Diffusion Plant
Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-76OR00001**

**for the
U.S. DEPARTMENT OF ENERGY**

MASTER

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ACRONYMS

ACO	Administrative Order by Consent
ADS	Activity Data Sheet
A-E	Architect-Engineer
AEA	Atomic Energy Act
AFP	approved funding program
AIP	Agreement in Principle
ALARA	as low as reasonably achievable
AMCE	Assistant Manager for Construction and Engineering
AMERD	Assistant Manager for Energy Research and Development
AMERWM	Assistant Manager for Environmental Restoration and Waste Management
ARAR	applicable or relevant and appropriate requirement
BA	budget authorization
BCCB	Baseline Change Control Board
BCWP	budgeted cost of work performed
BCWS	budgeted cost of work scheduled
BO	budget outlay
B&R	budget and reporting (code)
CDR	Conceptual Design Report
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980; also known as Superfund
CFR	Code of Federal Regulations
CMC	Construction Management Contractor
CMS	Corrective Measures Study
COR	Contracting Officer's Representative
CPR	Cost Performance Report
CRP	Community Relations Program
CV	cost variance
CWBS	Contract Work Breakdown Structure
CWMD	Central Waste Management Division
CYWP	Current-Year Work Plan
D&D	decontamination and decommissioning
DOE	Department of Energy
DOE-HQ	Department of Energy Headquarters
DOE-OR	Department of Energy Oak Ridge Field Office
DOE-OR ERD	DOE-OR Environmental Restoration Division

EA	Environmental Assessment
EBASCO	EBASCO Services, Inc.
EIS	Environmental Impact Statement
Energy Systems	Martin Marietta Energy Systems, Inc.
EPA	Environmental Protection Agency
ER	environmental restoration
ERD	Environmental Restoration Division
ERWM	Environmental Restoration and Waste Management
ERWMDC	Environmental Restoration and Waste Management Design Contractor
FA	Funding Authority
FFA	Federal Facility Agreement
FFCA	Federal Facility Compliance Agreement
FMC	Facilities Management Contractor
FS	Feasibility Study
FY	fiscal year
HASA	High-Assay Sampling Area
HSWA	Hazardous & Solid Waste Amendments of 1984
IC	Integrating Contractor
IDCS	Intelligent Document Control System
IVC	Independent Verification Contractor
MOU	Memorandum of Understanding
MSA	Major Systems Acquisition
N/A	not applicable
NEPA	National Environmental Policy Act of 1969
NPL	National Priorities List
OER	Office of the Deputy Assistant Secretary for Environmental Restoration (DOE-HQ)
OERWM	DOE-HQ Office of Environmental Restoration and Waste Management
OP	operating plant
ORAU	Oak Ridge Associated Universities
OREIS	Oak Ridge Environmental Information System
ORISE	Oak Ridge Institute of Science and Education
ORNL	Oak Ridge National Laboratory
OR-1	MSA OR-1 Project
ORR	Oak Ridge Reservation
OU	operable unit
PA	Preliminary Assessment
PA/SI	Preliminary Assessment/Site Inspection
P&BD	Planning and Budget Division (DOE-OR)
PCBs	polychlorinated biphenyls
PGDP	Paducah Gaseous Diffusion Plant
PI&A	Program Integration and Administration Division

PMP	Project Management Plan
PSWBS	Project Summary Work Breakdown Structure
PORTS	Portsmouth Gaseous Diffusion Plant
PTS	Progress Tracking System
QA	quality assurance
QC	quality control
QAPD	QA Program Description
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SAIC	Science Applications International Corporation
S&M	surveillance and maintenance
SARA	Superfund Amendments and Reauthorization Act of 1986 (CERCLA)
SEN	Secretary of Energy Notice
SI	site inspection
SV	schedule variance
SWMU	Solid Waste Management Unit
SWSA	Solid Waste Storage Area
TDEC	Tennessee Department of Environment and Conservation
TEC	total estimated cost
TOA	Tennessee Oversight Agreement
TSC	Technical Support Contractor
TSCA	Toxic Substances Control Act of 1976
UE	Uranium Enrichment
WA	Work Authorization
WAG	Waste Area Grouping
WBS	Work Breakdown Structure

PREFACE

It is essential that all participants in the Major System Acquisition OR-1 Project (OR-1) under the jurisdiction of the DOE Field Office, Oak Ridge (DOE-OR) realize that the execution of this work requires conducting business very differently from the way DOE and the Facilities Management Contractor have normally conducted their business. The normal procedures for executing projects are very thorough, but following these procedures would require much more time for implementation of the OR-1 than the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process allows. The required CERCLA and Resource Conservation and Recovery Act (RCRA) processes may be parallel to the conventional DOE conceptual design, Title I, etc., process, but all the steps are not precisely the same. Some of the major differences follow:

- The CERCLA Remedial Action Plan and RCRA Corrective Measures Study are not as detailed as the DOE Conceptual Design Reports (CDRs). We will not be preparing traditional CDRs as part of OR-1 activities, but instead will produce a Baseline Design Report considered more appropriate for Environmental Restoration subprojects.
- The time between submission of Work Plans to the Environmental Protection Agency and the time work must begin in the field is compressed by the CERCLA-Superfund Amendments and Reauthorization Act of 1986 (SARA) such that the time allowed for accomplishing design activities, preparing bid packages, bidding and awarding contracts, and mobilizing forces is drastically reduced. We will, therefore, dramatically streamline OR-1 activities to ensure compliance with all applicable laws and regulations.
- The scope of our subprojects* for both Remedial Action and Decontamination and Decommissioning will be very fluid up until the selection of the preferred alternative. For this reason, we will focus on versatility and flexibility to meet the schedule demands agreed to by the regulators and DOE Headquarters.

The focus on versatility and flexibility does not mean that we will sacrifice scope, cost, and schedule (baseline) control. Controlling the OR-1 scope, cost, and schedule is even more essential in the CERCLA world to guard against overruns that would delay meeting our commitments and to guard against missing our compliance dates. The baseline control will also be essential for detecting trends in cost estimate changes, which allows for more intelligent budgeting.

*The term subproject found throughout this document is synonymous with the more familiar term "project," and is used to remain consistent with the terminology of the Project Summary Work Breakdown Structure at Level 4 or lower.

The scope, cost, and schedule baselines for the life cycle of the OR-1 is composed of two segments: (1) the work defined in the first 7 years and (2) the work forecast for the total project. The cost, schedule, and technical baseline associated with the work in the 7-year period will be subject to formal baseline control through established procedures. As the 7-year window is updated, the forecast segment will be revised at least annually. The baseline may be updated at other times based on significant Project developments, such as impacts resulting from unplanned events during the discovery process, etc. This revised baseline will be submitted to DOE-OR for review as part of the approval process.

DOE-OR will also utilize the results of engineering risk analyses of the OR-1 scope, cost, and schedule to define minimum and maximum bounds of expectations. These ranges, combined with their respective probabilities, will be used for negotiating schedules with the regulators, forecasting budget needs, formulating contingency plans, forewarning the public of possible problems, etc.

Participants in OR-1 at the Oak Ridge Reservation (ORR) usually use the terminology based on CERCLA-SARA. This stems from the strong influence of DOE Order 5400.4 (ref. 1), the so-called "CERCLA Order," and the fact that the ORR was placed on the National Priorities List late in 1989. Other DOE-OR sites often have a different lexicon; for example, at the Portsmouth, Ohio, plant, RCRA terminology is more prevalent. Nevertheless, the prevailing terminology has no bearing on which laws apply to our activities. Compliance with *all* environmental laws—CERCLA, RCRA, etc., as well as the National Environmental Policy Act and applicable DOE orders—is required.

This Project Management Plan is designed to respond to this new way of doing business.

DOE-OR ENVIRONMENTAL RESTORATION DIVISION

EXECUTIVE SUMMARY

In the early 1940s, the Manhattan Project was conducted in a regulatory and operational environment less sophisticated than today. Less was known of the measures needed to protect human health and safety and the environment from the dangers posed by radioactive and hazardous wastes, and experience in dealing with these hazardous materials has grown slowly. Certain hazards were recognized and dealt with from the beginning. However, the techniques used, though standard practices at the time, are now known to have been inadequate. Consequently, the DOE has committed to an aggressive program for cleaning up the environment and has initiated an Environmental Restoration Program involving all its field offices. The objective of this program is to ensure that inactive and surplus DOE facilities and sites meet current standards to protect human health and the environment. The actual compliance activities covered by this program are documented in DOE's *Environmental Restoration and Waste Management Five-Year Plan* (ref. 2).

The objective of OR-1 activities is to ensure that risks posed to human health and safety and the environment by inactive sites and surplus facilities contaminated with radioactive, hazardous, and/or mixed wastes are either eliminated or reduced to prescribed safe levels. Although this objective encompasses all requirements of applicable federal, state, and local environmental statutes and regulations, as well as DOE orders, the protection of human health and safety and the protection of our environment are objectives that DOE-OR wants to accomplish independent of the fact that there are regulatory requirements in place that address these issues.

The DOE Oak Ridge Field Office (DOE-OR) has consolidated management of its environmental cleanup activities under its Environmental Restoration Division to give centralized focus, visibility, and management to OR-1. Centralized management will:

1. provide more efficient use of limited resources to solve the near-term, highest-priority problems first;
2. bring common approaches to prioritization and cleanup/decontamination and decommissioning of the hundreds of contaminated sites/facilities in the Project; and
3. transfer new technology and lessons learned between sites and contractors inside DOE and to outside industry.

A vital management challenge for the success of the OR-1 is to maintain cooperative interfaces and relationships with many citizens' groups in several states, state and local authorities, and various regulatory agencies. The regulatory agencies involved in ER activities include the Environmental Protection Agency (EPA), Region IV (EPA-IV), and Tennessee Department of Environment and Conservation for the Oak Ridge Reservation installations; EPA-IV, the State of Kentucky Natural Resources and Environmental Protection Cabinet,

and the State of Kentucky Cabinet for Human Resources for the Paducah Gaseous Diffusion Plant; and EPA Region V, the Ohio Environmental Protection Agency for the Portsmouth Gaseous Diffusion Plant; and the Agency for Toxic Substances and Disease Registry for National Priority Sites.

The OR-1 life-cycle cost estimate will remain somewhat uncertain because of the discovery process of the activities, the impact of changing regulations, and the required future concurrence of the regulators and the public. For these reasons, the baseline is composed of two parts: (1) the more definitive activities in the ensuing 7 years and (2) the less certain projections for the remainder of the Project.

This Project Management Plan (PMP) consolidates the information in two previous documents (DOE/ORO-931 and DOE/OR-975, issued in draft form) and describes the management organizations and techniques to be utilized for the environmental activities at the ORR sites and the Paducah and Portsmouth gaseous diffusion plants. This plan describes all planned OR-1 activities to be accomplished by DOE-OR, the participants who will be involved in these activities (and their roles and responsibilities), and schedules for completing all tasks. The management principles and techniques that are the foundation for this plan are derived from DOE Order 4700.1, *Project Management System*, DOE, June, 1992.

The work identified in this PMP has been organized into a Project Summary Work Breakdown Structure as the basic framework for identifying, assigning, and tracking all OR-1 activities. The technical work methodology and criteria are documented herein. An approach to, and the requirements for, schedule development and milestone tracking are presented. The character of cost estimates to be developed and used over the 30-year life cycle of the OR-1 is discussed, and management control systems and reporting requirements are also defined. Several management plans subordinate to this PMP but also covering OR-1-related activities have been identified as necessary parts of this plan and are referenced in the annex to this document.

Chapter 1

INTRODUCTION

1.1 PURPOSE

This Project Management Plan (PMP) for Major System Acquisition (MSA) OR-1 Project (OR-1) documents, communicates, and contributes to the evolution of, the management organizations, systems, and tools necessary to carry out effectively the long-range complex cleanup of the DOE sites on the Oak Ridge Reservation (ORR), and at the Paducah, Kentucky, and Piketon, Ohio, uranium enrichment (UE) plants managed by the Department of Energy Oak Ridge Field Office (DOE-OR); the cleanup of off-site contamination resulting from past releases; and the Decontamination and Decommissioning (D&D) of surplus DOE facilities at these installations.

This PMP sets forth the plans, organization, and systems that those responsible for managing the OR-1 will utilize. All other plans and management systems must be related to or be a subset of this PMP. The document tree in Fig. 1.1 shows the hierarchic relationship of superior, companion, and subordinate documents.

The management principles and requirements established by DOE Order 4700.1, *Project Management System*, (DOE, June 1992), have been used as the basic guidance for this PMP and are tailored to the specific needs of the OR-1 work. This PMP is fully responsive to the initiatives of the Secretary of Energy in the following notices and the related Project Plan.

- Secretary of Energy Notice, Policy on Line Management Responsibilities to Achieve Environmental Compliance, SEN-7-89, May 9, 1989 (ref. 3).
- Secretary of Energy Notice, Departmental Organizational and Management Arrangements, SEN-6B-90, August 2, 1990 (ref. 4).
- Secretary of Energy Notice, Strengthening the Department of Energy Project Management System, SEN-27-90, August 16, 1990 (ref. 5).

1.2 SCOPE

This PMP documents the management understandings for the OR-1 activities within the ORR including Oak Ridge Associated Universities (ORAU), the Oak Ridge Institute of Science and Education (ORISE), the Oak Ridge National Laboratory (ORNL), the Oak Ridge K-25 Site, the Oak Ridge Y-12 Plant, and the gaseous diffusion plants at Paducah, Kentucky, (PGDP) and Piketon, Ohio, (PORTS), as shown in Fig. 1.2. For the present, waste management [except for waste created during Remedial Actions (RAs) or D&D] and corrective action activities are excluded from the scope of this PMP.

Fig. 1.1. DOE-ORO Environmental Restoration Program document tree.

Fig. 1.2. DOE-ORO Environmental Restoration Program sites.

The technical work to be managed under this project is documented in the RA and D&D sections of the latest version of the DOE-OR *Environmental Restoration and Waste Management Site-Specific Plan for the Oak Ridge Operations Office*, OR-ERWM-100.

Details of the site-specific activities can be found in the latest versions of the following documents:

- Paducah Gaseous Diffusion Plant, *Environmental Restoration and Waste Management Site-Specific Plan for the Paducah Gaseous Diffusion Plant*, KY/H-104.
- Martin Marietta Energy Systems, Inc., *Environmental Restoration and Waste Management Site-Specific Plan for the Portsmouth Gaseous Diffusion Plant*, POEF/ER-4519.
- Jones, C. G., et al., *Site-Specific Plan for the Oak Ridge Reservation—Environmental Restoration and Waste Management*, K/ESH-1, Martin Marietta Energy Systems, Inc., Oak Ridge K-25 Site.

1.3 PRIMARY PARTICIPANTS (CORE TEAM)

The primary participants whose OR-1 work is to be managed in accordance with this PMP and who form the **Core Team** are as follows:

- The DOE Headquarters (DOE-HQ) Deputy Assistant Secretary for Environmental Restoration (ER) interfaces with the DOE-OR Office of Assistant Manager for Environmental Restoration and Waste Management (AMERWM) through the Office of Eastern Area Programs as stated in the DOE-HQ ER and Waste Management (ERWM) Plan (Revision 1, March 1992).
- The DOE-OR AMERWM implements this project through the DOE-OR ER Division (ERD). The DOE-OR Assistant Manager for Construction and Engineering (AMCE) will provide support by managing and directing the activities of the ERWM Design Contractor (ERWMDC), and the Construction Management Contractor (CMC).

DOE Prime Contractors (Contractors Team)

- Martin Marietta Energy Systems, Inc. (Energy Systems), is the Facilities Management Contractor (FMC) at five of the operating plant sites. In accordance with the recently negotiated DOE management contracts, Energy Systems has oversight responsibility for all work/participants on the sites that it manages. As the FMC at five installations, Energy Systems is also assigned the role of Integrating Contractor (IC) for the OR-1 work through its ER Program and Program Integration and Administration (PI&A) divisions.
- Radian Corporation is the Resource Conservation and Recovery Act (RCRA)/Comprehensive Environmental Response, Compensation, and Liability Act

(CERCLA)/National Environmental Policy Act (NEPA) Technical Support Contractor (TSC) to DOE-OR for the ORR OR-1 work.

- Science Applications International Corporation (SAIC) is the TSC to DOE-OR for the work at PGDP and PORTS.
- Ebasco Services, Inc., is the ERWMDC, the Architect-Engineer (A-E), for the design of RA and D&D subprojects and Title III field services.
- MK-Ferguson of Oak Ridge Company is the CMC for construction management services at ORR, PGDP, and PORTS. In this capacity, the CMC will solicit bids and award and manage construction subcontracts for the RA and D&D work. In some cases, involvement by CMC direct-hire forces may be an acceptable alternative for selected OR-1 activities.
- Ebasco Services, Inc., is the Independent Verification Contractor (IVC) who will verify that all construction has been completed in accordance with the Title II engineering documents.
- Other IVCs will ensure regulatory compliance has been achieved in accordance with CERCLA for specific RA and D&D activities as required.

The organization of the Core Team and the responsibilities of its members are defined in Chap. 3, "Organization, Relationships, Responsibilities, and Authority." The principal documents from which the OR-1 charter is derived are as follows:

- Secretary of Energy Notice, Departmental Organizational and Management Arrangements, SEN-6B-90, August 2, 1990.
- Letter, W. D. Adams (DOE-OR AMERWM) to C. A. Hall and J. R. Merriman, Subject: Management of Paducah and Portsmouth ERWM Programs, June 6, 1990, presented in Appendix II of this document.
- Letter, J. LaGrone (Manager, DOE-OR) to C. C. Hopkins, Subject: Management of Oak Ridge Environmental Cleanup Program, May 29, 1989, presented in Appendix II.
- Letter, W. D. Adams (DOE-OR AMERWM) to L. D. Bates et al., Subject: Environmental Restoration Community Relations—Roles and Responsibilities, June 21, 1990, presented in Appendix II.
- Memorandum of Understanding between the Office of Waste Management and the Office of Environmental Restoration, Department of Energy, Headquarters, August 8, 1992 (draft).
- Memorandum of Agreement between AMERWM and AMERD [Assistant Manager for Energy Research and Development], Department of Energy, Oak Ridge Operations, August 30, 1990, presented in Appendix II.

- Memorandum of Agreement between the Director of the Energy Systems ER D and the ORR plant organizations, March 28, 1991.
- Memorandum of Agreement between the Director of the Energy Systems ERD and the UE plant organizations at Portsmouth, Ohio, and Paducah, Kentucky, May 10, 1991.

1.4 EXPANDED TEAM (STAKEHOLDERS)

Because of the environmental, health, and safety nature of OR-1 work and the fact that the MSA OR-1 Project involves three states—Ohio, Kentucky, and Tennessee—it is vital that the interested and affected parties (stakeholders) be involved in the planning and management of the Project. In addition to the Core Team, other stakeholders include:

- the U.S. Environmental Protection Agency (EPA), Region IV (EPA-IV) and Region V (EPA-V);
- the U.S. Army Corps of Engineers;
- the Tennessee Valley Authority (TVA);
- the Ohio EPA;
- the Kentucky Natural Resources and Environmental Protection Cabinet;
- the Tennessee Department of Environment and Conservation (TDEC);
- the elected representatives of the citizen-stakeholders;
- the citizens of all affected states; and
- the Agency for Toxic Substances and Disease Registry.

Chapter 2

OBJECTIVES

2.1 MISSION AND APPROACH

The mission of the MSA OR-1 Project is to eliminate or reduce to prescribed safe levels the risks to human health and safety and the environment posed by inactive and surplus sites and facilities managed by DOE-OR that have been contaminated by radioactive, toxic, hazardous, or mixed wastes. After acceptance into the Project, the surplus facilities and sites will be subjected to surveillance and maintenance (S&M) as required to render them safe from a radiological and/or hazardous standpoint until cleanup is complete. This mission will be accomplished in conformance with all applicable federal, state, and local environmental statutes and regulations.

Emphasis will be placed on an observational approach in accomplishing the OR-1 field investigation activities. The typical subproject may begin without defining all of the characteristics of the site being remediated or decontaminated and decommissioned, because the cost of fully defining the characteristics may be prohibitively high in comparison with the benefits derived therefrom. Hence, specific tasks may be vulnerable to significant changes in scope and/or complexity during remediation and/or D&D. This may result in some design and/or construction breakage. However, OR-1 management must have the ability to react in a controlled but rapid manner to changes dictated by experience in the field as the work progresses.

This observational approach does not mean that baseline control will be sacrificed, nor will environmental concerns be disregarded. Scope, cost, and schedule baseline management will be used to avoid losing control of the scope, having overruns that delay meeting commitments, or missing compliance dates. Baseline control and tracking will also be essential for detecting trends in cost changes for more intelligent budgeting as OR-1 experience is gained. To accomplish these objectives, baseline changes will be tracked and maintained for subprojects in accordance with established baseline change control procedures. This will permit predictions for current and future subproject changes to be made with decreased levels of uncertainty. Further, lessons learned can be integrated into ongoing or future work.

The CERCLA process of requiring definition of several alternatives provides recognition of the uncertainties associated with the cleanup activities. The additional definition, planning, and analysis will help to mitigate missed schedule milestones inherent in the design and/or construction breakage discussed above, because project participants will have a readily available, well-defined, planned alternative for achieving project goals, and the revised approach to meeting the project objectives will already be familiar to EPA as a possible alternative. While not required by any regulatory statutes, a similar approach will be adopted for the D&D phase.

OR-1 activities will maintain technical effectiveness in the environmental cleanup across multiple subprojects. The goal of each subproject will be the reduction of risk to human health and the environment.

2.2 TECHNICAL OBJECTIVES

The technical objectives of the OR-1 are as follows:

1. Identify inactive sites and surplus facilities for possible remediation or D&D. (Everyday operation of each site shall remain the responsibility of the site operator.)
2. Assess the radiological or hazardous condition; determine the nature and extent of the contamination; determine the need for action based on assessments of the risk to the health and safety of the public and the environment, implementation safety, etc.; and evaluate and select the most appropriate remedial or D&D alternatives.
3. Perform interim actions to protect public health and safety and/or the environment.
4. Ensure that shutdown facilities and sites accepted into the D&D segment of the project remain safe and environmentally sound until they have undergone cleanup.
5. Support the requirements of NEPA.
6. Prepare documentation supporting the Record of Decision (ROD) for each remediation project.
7. Perform the Remedial Design (RD) engineering for the sites.
8. Remediate potentially contaminated DOE-controlled sites.
9. Perform D&D tasks that encompass (a) S&M (b) assessment and characterization, (c) environmental review, (d) engineering design, (e) D&D operations, (f) waste disposal, and (g) closeout.
10. Treat, store, or dispose of any collected or processed (treated and/or untreated) waste.
11. Plan for postclosure S&M.
12. Verify completion of each subproject.
13. Provide complete permanent records of activities, decisions, and actions taken.

Methodology for achieving the technical objectives for an RA subproject prior to the issuance of the ROD is given in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, EPA/540/G-89/004, for a CERCLA subproject. Activities after the ROD will be performed in accordance with the Work Plan that is submitted as a portion of the ROD supporting information.

The RA activities performed under the Federal Facility Agreement (FFA) are intended to achieve compliance with CERCLA, to satisfy the corrective action requirements of Sect. 3008(h) of RCRA for interim status facilities, and to meet or exceed all applicable or relevant and appropriate federal and state laws and regulations to the extent required by Sect. 121 of CERCLA. The FFA expands the RCRA facility assessments and investigations presently underway at the ORR with requirements to investigate (1) releases at or from units not included in the RCRA permit and (2) releases of hazardous or radioactive substances not regulated by DOE's RCRA Hazardous and Solid Waste Amendment (HSWA) permit. The parties to the agreement intend to coordinate and consolidate these assessments, investigations, and other response actions, as well as the administrative records developed for activities under the RCRA HSWA permit and the public participation requirements of CERCLA.

One segment of decontamination entails hazardous material removal, which is necessary to bring the facilities into compliance with applicable laws and regulations prior to the start of actual decommissioning activities. These activities are governed by such statutes as RCRA and its amendments, the Toxic Substances Control Act (TSCA), and CERCLA and its amendments. On the other hand, the decommissioning activities are governed primarily by DOE orders.

2.3 SCHEDULE OBJECTIVES

The schedule objective of the OR-1 is to complete all work as soon as possible as technical limitations allow. Characterization has already begun at all installations, but not at all suspected release sites or surplus facilities. Corrective measures have been initiated at some sites/facilities using existing technologies. Other corrective measures will require either scale-up of existing bench-scale technology or major development efforts before any cleanup/D&D can be initiated. The schedule for each potential site/facility must be evaluated individually, and the aggregate of all schedules balanced against available technology and resources. Project/subproject schedules are discussed in Chap. 6.

2.4 COST OBJECTIVE

The cost objective for the OR-1 on a qualitative basis is to optimize the technical effectiveness of the remediation at minimal life-cycle cost. Quantified cost objectives are defined in the nominal cost estimate provided in the 7-year baseline document. Cost estimates (forecasts) are developed for the total life cycle of each subproject beyond the current 7-year horizon through the end of each subproject and documented in the life-cycle cost report.

Chapter 3

ORGANIZATION, RELATIONSHIPS, RESPONSIBILITIES, AND AUTHORITY

The OR-1 Project is an element of the new environmental cleanup initiative within DOE, as defined by the Secretary of Energy in SEN-6B-90 (ref. 4). With the reaffirmation by the Secretary in the June 1990 issue of DOE's *Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1992-1996* that this area of attention and management should be raised to the level of Assistant Secretary, DOE-OR has organized its OR-1 management structure as described in this PMP.

Five installations (ORNL, Y-12 Plant, K-25 Site, PGDP, and PORTS) within the scope of this PMP are all active sites, solely owned by DOE, and Energy Systems is the one common FMC for all five of these installations. A large number of established agreements and procedures are in place within each organization and between DOE-OR and Energy Systems by which functions and work other than that now being consolidated in OR-1 have been and will continue to be managed. The challenge to these organizations and to the evolution of this PMP is to use effectively those tools that exist and are most useful and to change or create new arrangements that help carry out the new directions established by the Secretary of Energy. The roles, relationships, agreements, and procedures for ORAU and the ORISE facility, managed by ORAU for DOE, have been established in prior years.

Energy Systems' overall oversight of the facilities it manages and operates for DOE is not intended to reduce the obligations, responsibility, and/or accountability to DOE or any regulatory agency (including any judicial body) responsible for auditing, licensing, permitting, or other administrative reviews or adjudication capacity, of other DOE prime contractors and subcontractors for compliance with laws, regulations, DOE orders and directions, or contract provisions, nor to impose any responsibility or accountability on Energy Systems for the failure of the DOE prime contractors or subcontractors to meet their obligations.

The organizational relationships of the primary participants which constitute the OR-1 Core Team are shown in Fig. 3.1.

3.1 RELATIONSHIPS AND AUTHORITY WITHIN DOE

Responsibility for the ER Program at DOE-HQ falls under the Office of the Deputy Assistant Secretary for Environmental Restoration (OER), which is responsible and accountable to the Office of the Assistant Secretary for Environmental Restoration and Waste Management (OERWM). The Deputy Assistant Secretary will have authority for

Fig. 3.1. DOE-OR Environmental I

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Environmental Restoration Program organization chart.

approving changes to the total program cost estimate, approving changes to the major milestone schedule, selecting disposal options, issuing the DOE ROD under NEPA, and approving significant changes to the scope of the Program.

The OER has been delegated the task of developing policy and strategy for OERWM approval. The OER is to provide overall technical and financial guidance and establish and monitor milestones controlled by DOE-HQ. The OER also annually approves funding packages, appraises project progress, reviews public communication strategy, and serves as a focal point for contacts with the Office of Management and Budget and Congress.

The OER has delegated direct management of the MSA OR-1 Project to the DOE-OR Manager through the Office of Eastern Area Programs. The DOE-OR Manager has, in turn, delegated this authority to the DOE-OR AMERWM. The DOE-OR ERD Director reports to the AMERWM. DOE-OR provides all management support functions, such as safety review, quality assurance (QA), budget guidance, project management, procurement, security, legal and environmental compliance review, and coordination with the OER at DOE-HQ. DOE-OR also provides the interface with the regulators through DOE-OR ERD.

3.1.1 DOE-OR Assistant Manager for Environmental Restoration and Waste Management

The DOE-OR AMERWM is responsible for setting policy for DOE-OR regarding the MSA OR-1 Project and ensuring coordination between the ER Program and the Waste Management Program and with all other functions and programs at DOE-OR.

3.1.2 DOE-OR Environmental Restoration Division

The Director of DOE-OR ERD, as the Project Manager, has overall responsibility and authority for OR-1 planning and execution. The Director of DOE-OR ERD is the Contracting Officer's Representative (COR) for all OR-1 activities within Energy Systems except Engineering and construction activities. The DOE-OR ERD staff will perform the following functions:

1. **Site Program Managers.** One DOE-OR ERD person is assigned responsibility and given authority over RA or D&D activities at each installation and the off-site areas (stream and rivers) (e.g., one Project Manager for RA at Y-12, one for D&D at ORNL, etc.). These people are responsible for day-to-day execution of the OR-1 activities at their installation and routinely communicate with the regulators.
2. **FFA Project Manager.** A single person serves as the formal DOE-OR point of contact for the FFA. All FFA transmittals pass through the FFA Project Manager. The FFA Project Manager will be primarily responsible for negotiating changes to the FFA with the EPA and the state.
3. **Federal Facility Compliance Agreement Project Manager.** A single person serves as the formal DOE-OR point of contact for the Federal Facility Compliance Agreements (FFCAs). All FFCA transmittals pass through the FFCA Project Manager. DOE-HQ, in conjunction with the FFCA Project Manager, will be primarily responsible for negotiating changes to the FFCA with EPA Headquarters.

4. **Community Relations Program (CRP) Manager.** One DOE-OR person is designated as the CRP Manager. This person is the focus of all communications concerning the CRP and is responsible for the program's execution.
5. **NEPA Program Manager.** One DOE-OR person is designated as the NEPA Program Manager. This person provides guidance regarding NEPA-related matters, including the provisions of Council on Environmental Quality (CEQ) regulations, DOE NEPA Guidelines, SEN-15-90, the DOE NEPA Compliance Guide, and any other related guidance and requirements; reviews/coordinates and concurs on ERWM NEPA and NEPA-related documents.
6. **Technical Integration Staff.** Since groundwater monitoring and investigations [Remedial Investigation/Feasibility Study (RI/FS), etc.] are common to all ORR facilities, and because of the high level of interest given to groundwater by the regulators, one individual is responsible for this area of emphasis. This staff is also responsible for Natural Resource Damage Assessment, Waste Management, environmental data management, technology development, analytical services, human health and environmental risk assessment efforts, QA efforts, and ensuring consistency in RI/FS approaches across all the facilities.
7. **Program Integration Staff.** These people support those activities that are common to more than one facility, specifically:
 - budget prioritization;
 - cost estimating;
 - reporting;
 - baseline tracking and scheduling;
 - development of the Five-Year Plans;
 - development of Activity Data Sheets (ADSs), roadmaps, Current-Year Work Plans (CYWPs), and the Progress Tracking System (PTS);
 - document management, including development of document processing technology;
 - management of state oversight agreements;
 - management of the TSC;
 - management of the Oak Ridge Environmental Information System (OREIS);
 - management of the OR-1 data base;
 - project interface with the AMCE and the ERWMDC;

- training on, and application of, lessons learned; and
- data base management.

The DOE-OR ERD is responsible for the day-to-day execution of the OR-1. Line management responsibility for program execution rests with the DOE-HQ Program Office through the DOE-OR Manager. For the sake of brevity, the ensuing paragraphs simply list many activities rather than describing them in detail. In general, the DOE-OR ERD will implement the policies stated in the May 29, 1989, letter from J. LaGrone to C. C. Hopkins and the June 6, 1990, letter from W. D. Adams to C. A. Hall and J. R. Merriman, both of which are presented in Appendix II. Specific DOE-OR ERD activities include the following:

1. Managing and providing direction as the COR for the Energy Systems effort related to this Project (except those performed by Central Engineering) and providing S&M at ORR, ORISE, PORTS, and PGDP. This includes both project and budget direction.
2. Managing the RCRA/CERCLA/NEPA technical support services contracts (with the Radian Corporation for ORR and SAIC for Paducah and Portsmouth).
3. Providing the project interface with the AMCE and the ERWM design contractor.
4. Acting as the primary official contact with EPA, state regulatory agencies, TVA, the Army Corps of Engineers, community leaders, the public, the news media (on Project matters at ORR) and other outside parties.
5. Managing contracts for the OR-1 at the ORAU facilities.
6. Coordinating activities on FFA, FFCA's, RCRA permits, and OR-1 matters that affect operations with the CORs.
7. Conducting regulatory meetings.
8. Prioritizing the OR-1 budget activities.
9. Administering the Agreement in Principle (AIP) with the states.
10. Managing the OR-1 Administrative Records.
11. Specifying and analyzing the progress reporting in conjunction with the program/project team(s).
12. Conducting the CRPs.
13. Preparing the decision documents and selecting recommended alternatives for the Energy Systems-operated facilities in coordination with the AMCE and the DOE site managers.
14. Evaluating the cost-plus-award-fee performance of the CM and FMC/IC on the OR-1 Project.

15. Resolving differences of opinion and overlaps in roles and responsibilities among the various members of the Contractors Team.
16. Chairing the OR-1 level II Baseline Change Control Board (BCCB), which will manage major changes to the OR-1 baselines.
17. Directing the preparation of the OR-1 portion of the Five-Year Plan, Site-Specific Plans, and ADSs for DOE-OR.
18. Providing a chairman for the level II subproject-specific Configuration Control Board for all construction subprojects of the size, complexity, or significance to require such a board.
19. Coordinating the OR-1 Project with OER Environmental Management on NEPA strategy and the NEPA document approvals.

3.1.3 Relationships Between AMERWM and DOE-OR Plant/Project Offices

Specific relationships for OR-1, as currently understood, are documented in the letters by J. LaGrone and W. D. Adams presented in Appendix II of this document. In addition, the division of roles and responsibilities between AMERWM and the Y-12 Plant, the K-25 Site, ORNL, PGDP, and PORTS CORs is being codified by Memoranda of Understanding (MOUs). These MOUs will be added to Appendix II as they become effective.

3.1.4 Responsibilities of the Assistant Manager for Construction and Engineering

The AMCE will manage or provide oversight for all OR-1 activities performed by the ERWMDC and the Construction Management Contractor and administer these contracts. The AMCE will verify the accuracy of the cost, schedule, and progress reporting of these contractors and their subcontractors; will work closely with DOE-OR ERD; and will establish control systems that will provide early warning of problems affecting regulatory commitments and cost or schedule status.

The AMCE is responsible for the following activities or functions in support of the OR-1:

- Providing support to DOE-OR ERD and DOE-OR Waste Management Division during the characterization, FS, and ROD phases of the Project.
- Managing and directing the planning for the design and construction activities in support of the ROD or other pre-Title II documents.
- Managing and directing the A-E contract for ERWM engineering services, including individual design tasks; monitoring progress; inspecting all deliverables; and accepting all deliverables.

- Managing and directing the Construction Manager; monitoring progress; directing the inspection of deliverables; and accepting all deliverables.
- Preparing and/or directing the preparation by the ERWMDC and the CM of a variety of reports to reflect work status, cost, and schedule trends; work force adequacy; funding availability and needs; and uncertainties.
- Providing a member for the level II BCCB.

The above activities are very broad and are not intended to describe all functions to be performed by the AMCE. The AMCE will support DOE-OR ERD as required throughout the Project to ensure that subprojects meet technical criteria and comply with regulatory requirements.

3.2 UNDERSTANDINGS BETWEEN DOE-OR AND THE FACILITIES MANAGEMENT CONTRACTOR

The understandings between DOE-OR and Energy Systems are defined in the management contracts recently negotiated. The principal impacts of these facilities contracts on the working relationships related to OR-1 have to do with Energy Systems' oversight responsibility and, therefore, its authority to oversee health, safety, and environmental law compliance, QA, and compliance with security and safeguard standards for all sites under the contracts and all activities on those sites or performed for those sites. Energy Systems will provide site-specific procedures to DOE-OR, which, in turn, will provide them to DOE-OR's prime contractors who work on site.

Energy Systems is also assigned the role of IC for OR-1 activities within the scope of this PMP, including the ORAU sites. The FMC in its role as IC will be the focal point each year for the preparation of the ADSs, CYWPs, roadmaps, contributions to the Five-Year Plan, the Site-Specific Plans, budget, schedules, and budget packages for the prioritization process. In this IC role, regarding other contractors, Energy Systems will conduct meetings, collect information, and assemble total packages related to these activities for use by DOE-OR. The IC will ensure that technical consistency is achieved among the participants in areas such as risk assessment and waste management. The IC will have primary responsibility for reporting total OR-1 cost and schedule status each month. The IC will obtain budget, cost, schedule, and progress information from the TSC, the ERWMDC, the CM, and DOE-OR each month and consolidate this information in the reports to be submitted to the Director of DOE-OR ERD. The preparation and schedule for these reports are discussed in Chap. 10 of this document.

Energy Systems acting as both the FMC and IC will be responsible for the following:

- Performing on-site RIs and D&D characterizations as required.
- Evaluating other DOE prime contractor, subcontractor, and prospective subcontractor ER procedures, systems, processes, and policies regarding health and safety, housekeeping, environmental requirements, radiation protection, security, QA, and related operations for work performed on sites managed by Energy Systems. MK-Ferguson will validate its own documentation in these areas for its use and for its subcontractors.
- Providing coordination of on-site OR-1 fieldwork with plant operations.
- Assuming responsibility for selected Title III services.
- Evaluating the on-site design, strategies, and sequencing of the work of the ERWMDC in accordance with existing AMCE project management procedures.
- Managing selected service subcontracts required for on-site RA or D&D.
- Providing program management support to DOE for activities such as community relations, the Administrative Record, public meetings, program level planning, QA and quality control (QC), and work plan development.
- Ensuring consistency in areas such as modeling, risk assessment, applicable or relevant and appropriate requirements (ARARs), configuration management, data reporting, document control, and planning.
- Establishing, operating, and maintaining OREIS as the integrated consolidated data base for all environmental monitoring.
- Prepare subproject construction completion reports, which must include the requirements contained in DOE Order 5820.2A, *Radioactive Waste Management* (ref. 16).

3.3 RCRA/CERCLA/NEPA TECHNICAL SUPPORT CONTRACTORS

The TSC for the ORR is the Radian Corporation. The TSC at PGDP and PORTS is SAIC.

The role of the RCRA/CERCLA/NEPA TSCs is to provide technical support in the following categories of work through the use of DOE-issued task orders:

Remedial Investigations. RIs will be carried out by the TSC when tasked by DOE-OR. The FMC will assist at the direction of DOE.

Feasibility Studies. FSs will be the responsibility of the TSC.

Integrated Decision Documents. The TSC will have the primary responsibility to produce for DOE RA decision documents that meet the integrated requirements of RCRA, CERCLA, and NEPA. These decision documents, and the studies and assessments necessary to produce them, may include a Corrective Measures Study (CMS)/FS/Environmental Assessment (EA), a CMS/FS/Environmental Impact Statement (EIS), a proposed RA plan, and a ROD. The TSC will also prepare documents in support of NEPA for off-site projects and on-site OR-1 subprojects which involve interaction with other subprojects or legal requirements.

Project Management Support. The TSC will provide support to DOE for project management activities such as the Public Administrative Record and limited information management.

Related Studies. The TSC will provide to DOE support for related activities, including regulatory compliance, waste management, special studies, or other technical assistance during the design or construction phases of the project.

The performance of tasks in the general categories just listed will require effective interface of the TSC with all other participants in OR-1 including DOE, the FMC, the ERWMDC, and the CMC. The specific requirements for interface will vary with the nature of activities being performed, but the general interface requirements will be as follows:

DOE-OR. The TSC will interface with DOE for both contractual and technical needs. Contractual interface will be facilitated by the TSC Project Manager and the DOE COR for task assignment, reporting, invoicing, and technical direction. The TSC will also interface with the COR and other DOE project managers for technical coordination of TSC activities in support of DOE.

Facilities Management Contractor. The TSC will interface with the FMC to facilitate TSC involvement in RIs or characterization studies being carried out by the FMC so that transition to the FS phase is effective and timely. The FMC will provide an interface with the TSC in areas such as modeling, risk assessment, ARARs, configuration management, data reporting, document control, and planning. The FMC will share with the TSC information related to the consistency and technical defensibility of risk assessment, modeling, ARARs, configuration management, data reporting, and planning.

ERWM Design Contractor. The TSC will interface with the ERWMDC to (1) facilitate input from the ERWMDC during the FS phase relative to implementability, constructability, or cost analysis; and (2) facilitate timely and effective transition from the FS to the design phase. The ERWMDC will also support the RI and preparation of the Proposed Plan and ROD as requested by DOE-OR.

Construction Manager. During the construction phase, the TSC may be directed by DOE to provide technical support to ensure effective implementation of the design to comply with the intent of the ROD.

Independent Verification Contractor. The TSC will interface with the IVC to ensure proper implementation of the ROD.

3.4 ERWM DESIGN CONTRACTOR

Ebasco Services, Inc., the ERWMDC, is a prime contractor to DOE-OR (which includes all of the ORR, ORISE, PORTS, and PGDP) and will provide support as required during the FSs conducted by the TSC. After the TSC staff has recommended an alternative to DOE-OR, the ERWMDC will begin the design of the selected alternative sufficient for either the draft ROD or the draft RD or D&D Work Plan. The ERWMDC will revise the design after the public comment period and will support the preparation of the proposed ROD and RA or D&D Work Plans for submittal to the regulators. After the ROD is signed, the ERWMDC will complete the DOE-OR Work Plans, Decommissioning Subproject Plans (ref. 16), and the design details sufficient for issue for bidding and award by the DOE-OR Construction Manager.

The ERWMDC will provide Title III field services, including vendor data review and as-built drawings, to ensure design compliance with the ROD and RA or D&D Work Plan.

3.5 CONSTRUCTION MANAGER

MK-Ferguson of Oak Ridge Co., as the Construction Management Contractor (CMC) for OR-1, will provide construction management service for the ORR, PORTS, and PGDP. As the CMC, MK-Ferguson is responsible for managing the construction and service contracts during the RA and D&D phases of the project and ensuring work is accomplished in a safe, environmentally sound, and cost-effective manner. In keeping with the philosophy of the DOE model and DOE-OR policy, the CMC is to involve the private sector as much as possible, under the most competitive conditions. As much OR-1 work as possible will be done by subcontracted arrangements including, but not limited to, fixed-price lump sum and fixed-unit price subcontracts. The CMC will manage subcontracts for all sites under the direction of DOE-OR, and provide input to and/or prepare selected OR-1 Project documents as directed by AMCE.

3.6 INDEPENDENT VERIFICATION CONTRACTOR

Ebasco Services, Inc., a prime contractor to the DOE-OR, is responsible for verification that the performance of the RA is in compliance with the technical performance criteria for each subproject. This will be accomplished by monitoring, activity inspections, and review of construction documentation.

The IVCs assigned the responsibility for regulatory compliance review will prepare final subproject reports, which must contain the information specified in DOE Order 5820.2A, *Radioactive Waste Management*.

3.7 RELATIONSHIPS AND AUTHORITY WITHIN ENERGY SYSTEMS

The Energy Systems ER Program was established in October 1989 to accomplish the RA work within an FMC organizational framework. The D&D Program Division was established

in October 1990. In February 1992, the two divisions were combined into a single organization responsible for both RA and D&D activities. The PI&A Division was also created to provide technical and administrative services in support of both ER and Waste Management work. The summary-level relationships currently in place for OR-1 are described in the following subsections.

3.7.1 General Guidance for ER Project Sites

- DOE-OR ERD and the Energy Systems ER Program are to be informed by the operating plants (OPs) of all activities proposed or planned for any OR-1 sites.
- Maintenance and surveillance, and associated compliance activities, will be performed by the OPs with concurrence and oversight of The Energy Systems ER Program. The Energy Systems ER Program will budget for S&M.
- The Energy Systems ER Program will assist DOE-OR in planning, coordinating prioritization technical guidance, and budgeting all activities required specifically to accomplish the OR-1 objectives at all sites.
- The Energy Systems ER Program will support implementation of the FFA, FFCA and deliverable requirements as specific Energy Systems ER Program responsibilities are developed and documented in later revisions of this PMP.
- The Energy Systems ER Program will coordinate monthly status review meetings and semi-annual project briefings.
- Plant sites will ensure the generation of timely and proper NEPA documentation as appropriate to support the OR-1. The Energy Systems ER Program will provide management oversight and support.
- Energy Systems PI&A may assist DOE-OR, when requested, to develop an agenda and strategies for regulatory negotiation.
- Energy Systems PI&A will coordinate and submit ADSs to DOE-OR ERD for the DOE-HQ Five-Year Plan.
- Energy Systems PI&A serves as the IC focal point for the preparation of CYWPs and roadmaps.
- Energy Systems PI&A will implement a tracking system and a data management system to meet the requirements of DOE, EPA, and TDEC for project management and for execution of the FFA, FFCA and AIP.
- Energy Systems PI&A serves as the IC focal point for planning and procedures, scheduling, baseline maintenance, and reporting the on-site OR-1 work to be submitted to DOE-OR ERD for approval.

3.7.2 Groundwater Monitoring

- The Energy Systems ER Program has the overall lead responsibility for planning and coordination of the comprehensive groundwater monitoring network for each facility.
- The comprehensive network will integrate existing groundwater monitoring projects at the facilities.
- OPs and the Energy Systems ER Program will participate in the planning and development of the comprehensive groundwater monitoring network.
- OPs will be responsible for installation and sampling analysis costs of wells installed strictly for compliance monitoring.

3.7.3 Budget/Prioritization

- The Energy Systems ER Program will coordinate and recommend budget priorities to DOE-OR.
- OPs and the Core Team members provide input to, participate in, and review the prioritization process.
- The Energy Systems ER Program Business Management Organization submits the OR-1 budget to DOE-OR ERD and DOE-OR Planning and Budget Division (P&BD) for all five Energy Systems sites with OPs' input of necessary budget information in accordance with the agreed-upon schedule. The ORAU and ORISE OR-1 budget will be submitted to the Energy Systems ER Program for consolidation.
- The Energy Systems ER Program Business Management Organization will provide required OR-1 financial reporting to DOE-OR for all five installations that Energy Systems manages. The ORAU and ORISE monthly status information will be consolidated by Energy Systems PI&A.

3.7.4 Regulatory Interfaces

- Energy Systems PI&A will recommend strategy and agenda for meetings with regulators and obtain concurrence from the Environmental and Safety Activities Organization before meetings are scheduled. DOE-OR will establish overall regulatory policy.

3.7.5 NEPA Documentation

- The Energy Systems ER Program will support the TSC in its NEPA role as defined in Sect. 3.3.
- NEPA documentation required for Energy Systems ER Program activities will be submitted either by the Energy Systems ER Program or the TSC to DOE-OR ERD.

3.7.6 RA/D&D Alternatives

- The Energy Systems ER Program may provide support to DOE-OR ERD and the TSC as appropriate in drafting the ROD.
- The TSC prepares the ROD.
- ERWMDC ensures that construction plans are implemented as designed.

3.7.7 Waste Management*

- The Energy Systems Central Waste Management Division (CWMD) is responsible for operation of long-term treatment/storage/disposal facilities. Waste in long-term storage after 3 years will become a waste management responsibility. (Funding changes from ERD to CWMD.)
- The Energy Systems ER Program identifies waste projections and waste management needs resulting from OR-1 activities.
- OPs are responsible for interim storage capability until final treatment or disposal.
- Energy Systems CWMD is responsible for ensuring regulatory compliance in storage, disposal, and treatment of the wastes it receives.

Management of wastes generated by OR-1 is subject to the standards of RCRA; pertinent DOE orders; and, in certain cases at the ORR, CERCLA standards. Wastes generated in implementing OR-1 can be categorized by the waste form (solid, liquid, or gas); by waste category (conventional, low-level radioactive, transuranic, hazardous, or mixed); and/or by security classification (classified or unclassified). Minimizing radioactive, hazardous, and mixed waste generation will be an important consideration in the selection of the preferred alternative.

Waste storage and treatment facilities, although limited in capacity, are available to all DOE-OR installations. No mixed waste disposal facility is currently available to DOE-OR installations. As a result, mixed waste management must include efforts to separate the hazardous and radioactive components of the waste. This will allow the resulting waste products to be handled as either radioactive or hazardous waste.

A Waste Management Plan referenced in Annex E addresses management of waste generated by OR-1. The amount of waste to be generated will be estimated by category; treatment, storage, and disposal needs will be identified. OR-1 will also provide estimates of waste in each category both 1 and 5 years in advance; characterize and package waste to Energy Systems CWMD specifications; and take responsibility for treating waste on site (i.e., pump and treat). For wastes generated by OR-1, Energy Systems CWMD will budget for and operate storage areas and treatment facilities; provide certification requirements; take

*The management of waste includes waste generated by the Energy Systems ER Program in sampling, remediation, interim corrective measures, etc.

responsibility for compliance for wastes it accepts; and operate interim storage areas. Facilities totally dedicated to OR-1 wastes will be funded by the Project.

3.7.8 Environmental Compliance Monitoring

- OPs have overall responsibility for environmental compliance funding and monitoring.
- Energy Systems PI&A will prepare monthly and quarterly reports summarizing OR-1 noncompliance issues. Site offices are responsible for communicating results of audits (internal and external) to the Energy Systems ER Program for inclusion in the OR-1 noncompliance report. Quarterly, DOE-OR ERD is responsible for preparing the SEN-7A Report to DOE-HQ on all DOE-OR noncompliances.

3.7.9 Safety and Health

- OPs, when requested, prepare and approve safety documentation and obtain DOE approval if required.
- The Energy Systems ER Program is responsible for ensuring that operational readiness reviews are conducted as needed.
- OPs comply with the Occupational Safety and Health Administration requirements for the OR-1 Project.

3.7.10 Emergency Response

- The Energy Systems ER Program prepares emergency response plans for the OR-1 activities as part of environmental, safety, and health plans; DOE-ERD and OPs approve the related emergency response plans.
- OPs are responsible for notifying DOE-OR ERD of OR-1-related events and will make appropriate and necessary notifications to site personnel for reporting in accordance with the requirements of DOE Order 5000.3A (R) *Occurrence Reporting and Processing of Operations Information*. Sites are also responsible for implementing procedures.

3.7.11 Reporting

- The Energy Systems ER Program will assist DOE-OR in preparing integrated OR-1 financial, milestone, and operating reports.

3.7.12 Financial Planning

- Energy Systems PI&A will assist DOE-OR in the financial planning in support of OR-1.
- Financial information will be reported through the DOE financial information system.

- Work performed at each site will receive appropriate overhead charges.
- UE Program funds must be segregated and used at UE-funded sites.

3.7.13 Planning

- The Energy Systems ER Program will support DOE-OR in the development of OR-1 plans that have been reviewed by the OPs.

3.8 RESPONSIBILITY MATRIX

The functional responsibilities of the Core Team are shown at the program level in Table 3.1 and at the subproject level in Table 3.2.

Table 3.1. DOE-OR Environmental Restoration Program responsibility matrix at three levels

Actions/Decisions	Headquarters	DOE-OR AMERWM	DOE-OR DOE Site (COR)	FMC/IC (Energy Systems)	TSC (Radion or SAIC)	ERWMDC (Ebasco)	CMC (MK-Ferguson)
<i>Headquarters level</i>							
Manage the on-site ER Program	R	C	C	N/A	N/A	N/A	N/A
Issue program guidance	R	C	C	N/A	N/A	N/A	N/A
Interface with Congress	R	C	C	N/A	N/A	N/A	N/A
Prepare program budget	R	C	C	N/A	N/A	N/A	N/A
Prepare program execution guidance	R	I	I	I	I	I	N/A
Support Five-Year Plan revisions	R	C	C	S	S	S	N/A
Conduct program reviews	R	C	C	S	S	I	N/A
Approve site-specific and CYWPs	R	C	C	I	I	I	N/A
Manage program baselines	R	C	C	I	I	I	N/A
<i>Oak Ridge Field Office level</i>							
Manage the field office on-site ER project	C	R	C	S	S	I	N/A
Prepare field office project management plan	C	R, A	C	P	S	S	S
Prepare field office activity data sheets	A	R	C	P	S	S	S
Prepare field office OR-1 budget	A	R	C	P ^a	S	S	S
Prepare Current Year Work Plans	A	R	C	P	S	S	S
Prepare field office OR-1 status reports	I	R	C	P	S	S	S

Table 3.1 (continued)

Actions/Decisions	Headquarters	DOE-OR AMERWM	DOE-OR DOE Site (COR)	FMC/IC (Energy Systems)	TSC (Radion or SAIC)	ERWMDC (Ebasco)	CMC (MK-Ferguson)
<i>Oak Ridge Field Office level (continued)</i>							
Conduct field office OR-1 reviews	I	R, P	C	S	S	S	S
Prepare site-specific plan	A	R	C	P	S	S	S
Manage field office OR-1 baselines	C	R, C	C	S	S	S	S
<i>Installation level</i>							
Manage the OR-1	I	R, C	C	P	S, P ^b	S	S
Report status of OR-1 activities	I	R, C	I	P	S, P	S	S, P
Manage contracted work	I	R, C	C	I	I, R	S	P
Staff, execute, and control OR-1 activities	I	R, C	I	P	S, P ^b	S	S
Prepare project management plan	I	R, C	I	P	S, P ^b	S	S
Prepare Current Year Work Plans	I	R, C	I	P	S, P ^b	S	S
Prepare activity data sheets	I	R, C	C	P	S, P ^b	S	S
Prepare site-specific plan	I	R, C	I	P	S	S	S
Manage project baselines	I	R, C	I	P	S, P ^b	S	S

R = responsible; C = consult/coordinate; N/A = not applicable; I = informed; S = support; A = approve; P = perform.

^aIn conjunction with DOE-OR P&BD.

^bAssumes ORAU ER Program managed by TSC and handled as an "installation."

Table 3.2. Environmental Restoration projects functional responsibility matrix

Participants	Activities												
	PA	RI	S&M	NEPA	FS	Proposed Plan	ROD	RD/ Title II	RA Work Plan	RA/ D&D	RV	Title III	PCM/ O&M
DOE-HQ ER	I	I	I	A	I	I	A	I	I	I	I	I	I
DOE AMERWM	C	D, A	C	D	D, A	D, A	D, A	C	D, C	C	D, C	C	C
DOE Site	D	I	S	I	I	S	I	I	I	I	N/A	N/A	D
DOE AMCE	S	I	N/A	I	S	P	S	D, A	D, A	D, A	D, A	D	N/A
TSC	I, P ^a	R, P ^a	N/A	P	P ^b	R	P	R	P, R	R	P, S	S	N/A
ERWMDC	S	S	N/A	I	S, R	R	S	P	P, R	S	P, S	P	N/A
CMC	N/A	S, A	N/A	I	S, R	R	R	R	P, R	P	S	S	N/A
FMC/IC	P ^b , R ^a	P ^b , R ^a	P	C	R	C	R, S	C	C	R	P, S	S	P

Activities: PA = Preliminary Assessment; RI = Remedial Investigation; NEPA = National Environmental Policy Act; FS = Feasibility Study; ROD = Record of Decision; RD = Remedial Design; RA = Remedial Action; D&D = Decontamination and Decommissioning; RV = remedial verification; PCM = postclosure monitoring; O&M = operation and maintenance.

Participants: DOE-HQ ER = DOE Headquarters Office of Environmental Restoration; DOE AMERWM = DOE Assistant Manager for Environmental Restoration and Waste Management; DOE Site = DOE site offices and/or Contracting Officer's Representative; DOE AMCE = DOE Assistant Manager for Construction and Engineering; TSC = Technical Support Contractor (Radian for ORR or SAIC for PGDP or PORTS); ERWMDC = Environmental Restoration and Waste Management Design Contractor (Ebasco); CMC = Construction Management Contractor (MK-Ferguson); FMC = Facilities Management Contractor (Martin Marietta Energy Systems, Inc.); IC = Integrating Contractor (Energy Systems).

Responsibilities: I = informed; A = approve; C = concur; D = direct; S = support; N/A = not applicable; P = perform; R = review.

^aORAU/non-FFA sites handled as installation by TSC.

^bNEPA request for categorical exclusion is the responsibility of the performing organization.

Chapter 4

WORK PLAN

The technical mission of the DOE-OR segment of the ER Program is to remediate contaminated inactive sites and decommission contaminated surplus facilities at ORISE, ORR, PGDP, and PORTS as defined in MSA OR-1. The primary goal is to bring the sites managed by DOE-OR that have been contaminated as a result of DOE operations into compliance with the laws, regulations, and legal agreements aimed at protecting human health and the environment and to reduce or eliminate future liability to the government. Media of primary concern are contaminated soil and groundwater; however, concerns may include surface water contamination, air contamination, or waste tanks.

Project management should ensure that all environmental documents, including formal NEPA documentation, are submitted as early as is feasible in the subproject planning stage. The following references will provide guidance concerning the appropriate format and content:

- The National Environmental Policy Act of January 1, 1970.
- CEQ Regulations (40 CFR, Parts 1500-1508).
- DOE Organization Act (42 U.S.C. 7112), August 4, 1977.
- DOE Regulations for Compliance with the National Environmental Policy Act, 10 CFR Part 1021 (55 FR 46444, April 1992).
- DOE Secretary of Energy Notice SEN-15-90, February 5, 1990.
- DOE Order 5440.1 D, *National Environmental Policy Act*.
- DOE Order 5440.4, *Comprehensive Environmental Response, Compensation, and Liability Act Requirements*.

The OR-1 activities to be accomplished are organized as shown on the Project Summary Work Breakdown Structure (PSWBS). (See Chap. 5.) The work is categorized by project, installation, summary subproject, and subproject. The activities at the top three levels will involve primarily management and planning. At the fourth level, DOE-OR sites have identified many subprojects associated with either remediation of contaminated sites or D&D of surplus facilities, which will be implemented in phases, and which may differ depending on several variables. Some subprojects address inactive contaminated sites (or combinations of contaminated sites) that include burial grounds, holding basins and ponds, waste treatment and storage areas, waste tanks, etc. As the phases of these subprojects progress, cleanup sites may be combined or divided into a number of operable units (OUs) to comprehensively address site problems. Generally, the surplus facilities requiring D&D will be grouped in a similar fashion, where feasible. Technical performance criteria (see Chap. 7) to be used for performance measurement and documentation of progress must be established for each RA subproject.

The working language at ORR for the RA phase of OR-1, and the language used in this document, tends toward CERCLA terminology, and business, in general, is conducted using CERCLA terminology. However, nothing shall be construed to indicate that RCRA will not receive strict adherence where RCRA requirements apply or are more stringent than CERCLA requirements. A similar situation may exist at other facilities where RCRA terminology predominates. In that case, RCRA terminology and conformance will apply, but CERCLA requirements will also be met where applicable. Additionally, NEPA documentation requirements will be integrated with those of other applicable regulations.

4.1 MANAGEMENT AND PLANNING

OR-1 management roles and responsibilities are addressed in Chap. 3. Project, installation, and summary subproject Work Breakdown Structure (WBS) elements represent summaries that are suitable for management control and allow for reasonable identification of the type of work. Activities to be accomplished include management planning and control, project documentation, data base development, prioritization listings, document and project reviews, audits, or surveillance. Activities at the subproject level include baseline management of the work, preparation of subproject and budget documentation, procurement and coordination of subcontract services, reporting, and performing readiness reviews, audits, or surveillance. Other key management and planning activities to be covered on a summary subproject, installation, or project basis include data management and validation, QA/QC, and waste management.

As stated previously, the RI/RA phase of OR-1 is governed to a significant extent by CERCLA and RCRA requirements, whereas the D&D characterization/implementation phase is influenced to a greater extent by DOE orders and regulations rather than federal statutes. For these reasons, the technical approach to the implementation of the RA and D&D phases are somewhat different, as described in the following sections.

4.2 TECHNICAL APPROACH—REMEDIAL ACTION

DOE-OR remediation subprojects will be accomplished in phases technically organized as described in detail in CERCLA, RCRA, and NEPA guidance documents, as appropriate. An example of the phases that will be used for most site remediation projects at DOE-OR installations is shown in Table 4.1. The following subsections describe phases and activities that will be accomplished during the two major tasks: assessment and cleanup. Terminology used to describe phases and phase activities is intended to be generic and may vary depending on applicable regulations.

Table 4.1 Environmental Restoration phases^a

	DOE task phase terminology	RCRA task phase terminology	CERCLA task phase terminology
Assessment task			
PA	Preliminary Assessment	RCRA Facility Assessment (RFA)	Preliminary Assessment
IN	Inspection	RFA	Site Inspection
CH	Characterization	RCRA Facility Investigation	Remedial Investigation
EV	Evaluation of cleanup alternatives	RCRA Corrective Measures Study	Feasibility Study Record of Decision
Cleanup task			
CA	Cleanup action	RCRA Corrective Measures Implementation	Remedial Design Remedial Action
CP	Compliance	Postclosure monitoring	Operation and maintenance

^aAn interim RA may be undertaken during any phase of the assessment task. Appropriate NEPA documentation will be developed to support each task phase as required.

Source: Department of Energy, *Environmental Restoration On-Site Remediation Program Management Plan*, Draft 5, ER/ORP-100, Vol. I, Washington, D.C., June 29, 1990.

4.2.1 Assessment Task

4.2.1.1 Preliminary Assessment and Inspection

Candidate sites that may be contaminated with transuranic, low-level, hazardous, and/or mixed wastes are identified and screened in this phase. Knowledge of past operations, records review, and employee and retiree interviews have been used to identify sites that may be up to 47 years old. Several hundred sites and facilities where hazardous materials and/or wastes were managed or contained have been identified by the FMC.

Many of the initially identified sites have been eliminated from further characterization based on evidence that these sites were managed in such a way that environmental contamination and human health risks are minimal. Such evidence includes inspections, which augment collected data by walkovers and/or limited sampling and analysis to confirm the presence or absence of site contamination. The current list of sites requiring further characterization has ~500 units for ORR and 150 more for PGDP and PORTS. More sites may be added or deleted during this phase as information is gathered.

Preliminary Assessments and Inspections will determine whether further characterization is warranted. In preparation for the characterization phase, many of these sites have been

grouped [e.g., Waste Area Groupings (WAGs), Quadrants, etc.], and characterization plans have been and will continue to be prepared.

4.2.1.2 Characterization

Sites not eliminated by Preliminary Assessments or Inspections require more intensive site characterization. Site Investigation plans (e.g., RI plans) are prepared and implemented to obtain the site data required to conduct risk assessments and remediation alternatives studies. The goal of the Site Investigation is to define the nature and extent of contamination and its impact on public health and the environment. A baseline human health and environmental risk assessment will be conducted based on analytical data obtained through sampling and analysis. The Site Investigation may include a preliminary identification and preliminary screening of alternative RA technologies. RA alternatives will be screened based on effectiveness, implementability, and cost. Most of the characterization work is coordinated by the FMC with support as needed from subcontractors; in some cases, the TSC will be responsible for performing characterizations.

4.2.1.3 Interim Remedial Action

Interim RAs (interim corrective measures) are cleanup activities that may be required to reduce health and safety risks identified during any phase of the assessment task. Actions may be required to stabilize sites until the long-term RA is identified and implemented. An example of the use of interim corrective measures at DOE-OR is the interim capping of Solid Waste Storage Area (SWSA) 6 at ORNL. Interim corrective measures will normally be handled as removal actions or expedited OUs.

4.2.1.4 Evaluation of cleanup alternatives

Alternatives remaining after the initial screening will be subjected to a more detailed analysis by the TSC. The detailed analysis will include further definition of each alternative, individual and comparative analysis against evaluation criteria, and selection of a recommended alternative. The alternative analysis will be based on characterization documentation and, in most cases, will overlap with the characterization phase. NEPA documentation will impact remediation efforts and will be completed as a part of this phase. Needed treatability studies will be identified and performed to supplement alternatives assessments and design activities. The results of the evaluation process will be documented and subjected to public review in the Proposed Plan submitted by the DOE as the lead agency and approved by the regulators. A decision document (e.g., ROD), which addresses public comments and includes a definition of the selected remedy, will be prepared and submitted for approval to the appropriate regulatory agencies. Documentation of all information considered in the decision will be included with other phase documents in the Administrative Record. When the ROD stipulates RA at the OU, the RD phase will be initiated with the development of the RD Work Plan and RD Report, followed by the RA Work Plan and ultimately the Postconstruction Report.

4.2.2 Cleanup Task

4.2.2.1 Cleanup action

Detailed engineering design of the approved remedial alternative will be performed by the ERWMDC. The FMC will provide technical support to DOE-OR during the design phase. After the ROD is approved, detailed design will be completed and bid packages will be prepared as expeditiously as possible to allow cleanup to start within 15 months after ROD approval. Remediation at the site and development of any verification documents will follow. RA activities will involve multiple participants.

4.2.2.2 Compliance

Measures taken to verify performance may include monitoring, facility inspections, and review of construction documentation. The technical performance criteria for each RA subproject (Chap. 7) will provide the bases for measuring compliance. Independent verification contractors will be involved in the compliance activities.

The necessary maintenance or postclosure monitoring plans, personnel training, and equipment required to maintain compliance after implementation of the RA will be provided to the installations. Postclosure monitoring, which is the responsibility of the FMC, may result in a later decision to do further remediation, such as treatment of groundwater. S&M of the FMC sites will be the responsibility of the installation FMC. Postclosure monitoring and S&M of sites not operated by the FMC will be the responsibility of the site custodian per the DOE-OR Realtor Office. Each participant will manage and retain records in accordance with DOE, EPA, and state requirements.

4.2.3 Summary Descriptions

The descriptions of the RA subprojects for which assessment and cleanup activities will be performed are defined in the PSWBS element descriptions as contained in the DOE-OR EM-40 baseline document, latest issue (ref. 15).

4.3 TECHNICAL APPROACH—D&D

Decontamination for purposes of this PMP is defined as the removal of contamination from the internal and external surfaces of components, structures, and systems. Decontamination can also address equipment material salvage, volume reduction of contaminated solutions, and reduction of personnel/environmental risks due to radiation hazards. In a broad sense, decontamination is the process of actually cleaning the equipment and facilities to permit either reuse or material disposal, whereas decommissioning is the removal of the contaminated equipment and structural elements and the eventual dismantlement, mothballing, or entombment of a site/facility with a goal of allowing reuse of the facility and land.

The general work plan for the D&D segment of OR-1 begins with integrating the surplus contaminated sites/facilities identified by the responsible organizations into the project, followed by establishing the necessary S&M while the sites and facilities await D&D. Most

D&D sites/facilities were essentially included in OR-1 by DOE when the facilities were shut down without use of a formal acceptance procedure. Since that time DOE has issued a policy defining the acceptance process, which involves an integrated approach between the DOE-HQ Operating Program Office and the DOE-HQ Office of ERWM. The process begins with a facility being declared surplus or inactive by the operating program, followed by acceptance of a formal application submitted by the Operating Program Office by the DOE-HQ D&D Program Office. Acceptance is usually in the form of an MOU between the DOE-HQ Office of ERWM and the DOE-HQ Office of the Operating Program. UE facilities are handled on a case-by-case basis. Subsequently, the Five-Year Plan is updated to reflect activities related to the shutdown, acceptance, and transfer of surplus sites/facilities into the D&D segment of OR-1.

After acceptance of a site/facility, a transition period begins, which can last as long as 3 years. During the transition period, funds are appropriated, and turnover activities and a compliance assessment are completed. Shutdown operations, program termination, facility assessment, and S&M planning are also completed during this time. A very important part of the transition period involves the removal of radioactive and hazardous materials from the site/facility. Upon completion of these tasks, the facility is turned over to D&D for management and cleanup.

There are three distinct D&D phases: S&M; decontamination (hazardous material removal); and decommissioning. S&M, which is an integral part of D&D, will continue throughout the life of the project to ensure that the shutdown facilities remain safe and environmentally sound until decommissioning is complete. In some cases, it may become necessary to continue S&M at a reduced level indefinitely after D&D has been completed. The hazardous removal phase focuses on: (1) planning, characterization, and data collection; (2) development of design criteria and preliminary engineering; (3) environmental compliance; and (4) removal of remaining hazardous materials. This phase entails those actions necessary to bring the facilities into compliance with applicable laws and regulations prior to the start of actual decommissioning activities. These tasks are governed by such statutes as RCRA and its amendments, TSCA, and CERCLA and its amendments. The decommissioning phase focuses on dismantlement and the construction aspects of a subproject, including health physics and radiation protection, waste disposal, restoration, certification, verification, closeout and turnover.

4.3.1 Characterization

The D&D of a facility is a multistep process that entails two primary segments: D&D planning, which culminates in a project readiness review, and D&D operation. D&D planning begins with a characterization of the radiological, hazardous, and mixed wastes and contaminants and the safety risks important to planning the safe and effective D&D of a site/facility. Characterization encompasses the collection of the data and documentation required to ensure a thorough physical, chemical, and radiological assessment of the contaminants present to support the subsequent evaluation of the viable alternatives and the Title II design of the preferred solution.

4.3.2 Evaluation of Alternatives

After characterization is complete, the conceptual designs of the viable alternatives are developed, and human health and environmental risk assessment are considered. The preferred solution is selected based on these activities. Concurrent with the analyses of the viable alternatives, or shortly after selection of the preferred approach, an environmental review is conducted to ascertain the documentation necessary to comply with NEPA. Concurrent with this NEPA study, any required regulatory permits are also identified. The second segment, or D&D operations, cannot be started until the NEPA documentation and regulatory permit issues are resolved.

4.3.3 Title II Design

The detailed Title II design of the approved D&D alternative will be performed primarily by the ERWMDC. The FMC will provide technical support to DOE-OR during the design phase. The Title II engineering documentation will not be accepted until technical reviews have been completed and all public comments, if required by a regulatory process, are resolved. Bid packages will be prepared by the ERWMDC for all procurement and construction activities.

4.3.4 D&D Tasks

Initial activities in the D&D operations phase may include such site preparations as removal of regulated hazardous substances, installation of monitoring equipment or instrumentation, or modification necessary to provide appropriate containment upgrades and barriers. The D&D process could include any combination of equipment removal, decontamination, dismantlement, or entombment, depending on the alternative selected and documented through the NEPA process. The detailed work in this area developed to date for each site is discussed in Sect. 4.3.6.

4.3.5 Compliance

Measures taken to verify performance may include monitoring, sampling, inspection of facilities, and review of construction documentation. The applicable DOE orders or the technical performance criteria developed specifically for each subproject will be the basis for compliance measures. IVCs will be involved in the compliance activities.

4.3.6 Summary Descriptions

4.3.6.1 K-25 Site Gaseous Diffusion Facilities

The first gaseous diffusion facilities were constructed at Oak Ridge K-25 Site in the early 1940s to produce highly enriched uranium for the World War II Manhattan Project. (The installation was then called the Oak Ridge Gaseous Diffusion Plant.) Additional facilities were added between 1950 and 1954 to satisfy defense needs. The K-25 Site gaseous diffusion facilities produced enriched uranium primarily for defense needs until the mid-1960s. Then defense needs declined drastically, and supplying enriched uranium to commercial power companies became the primary mission of the plant. In 1985 the DOE UE Division placed the gaseous diffusion facilities at the K-25 Site on standby because of reduced need for

enriched uranium. In 1987 it was determined that the plant was not needed for the UE Program. Efforts were initiated to transfer responsibility for cleanup and D&D of the plant to the appropriate DOE program.

In 1990, the gaseous diffusion plant (renamed the K-25 Site) was transferred to the ERWM Division, and the removal of extensive quantities of regulated hazardous materials was begun. This activity is the first phase of a two-phase project to decontaminate and decommission the shutdown gaseous diffusion facilities to an acceptable endpoint (e.g., safe storage, consolidation/entombment, greenfield, etc.) as required under DOE Order 5820.2A for Radioactive Waste Management. The K-25 Site D&D segment of OR-1 currently includes 56 facilities, and an additional 53 facilities are under review for inclusion at a later date.

Other K-25 Site facilities are currently being used to support site missions in the ERWM organization. These missions include waste management programs, including the TSCA incinerator; "work for others" at other federal agencies and in the private sector; support to demonstrate the Atomic Vapor Laser Isotope Separation process for UE; and the use of the K-25 Site as a center for developing and demonstrating ER and waste management technology and transferring it both to and from the private sector. The current K-25 Site subprojects include the following activities:

- Surveillance and Maintenance
- Hazardous Material Management for Health and Safety of Personnel (Asbestos)
- Hazardous Material Management for Regulatory Compliance
- Polychlorinated Biphenyl (PCB) Ventilation Gaskets
- Assessment Activities in Support of D&D
- Construction of D&D Support Facilities
- Radiation Contamination Control
- Special Projects in Support of Baseline Surveillance and Maintenance

The purpose of Phase I is to reduce the potential for environmental insult or for adverse effects on the health or safety of personnel and the public from the regulated hazardous constituents in the process facilities. Phase I is expected to be completed by FY 2001. The purpose of Phase II is to deal with the large quantity of process equipment contaminated internally with uranium, the auxiliary equipment, the buildings, and the associated contaminated concrete and soil to abate the environmental, health, and safety liability associated with the shutdown gaseous diffusion facilities. Physical Phase II work is forecast to start in FY 2003 and reach an endpoint by FY 2017. Planning, engineering, and support facility construction for Phase II will take place concurrently with the Phase I activity to prepare for the FY 2003 start of physical decommissioning operations.

43.6.2 K-25 Centrifuge Facilities

The K-25 Centrifuge task will be accomplished by the following activities:

- Surveillance and Maintenance of Former Centrifuge Facilities
- Hazardous Centrifuge Equipment and Materials Storage and Disposal
- Centrifuge Facilities Cleanup

The first task of the K-25 Centrifuge D&D segment includes S&M of the contaminated former centrifuge buildings that are unused and management and oversight of former centrifuge buildings now being used in alternative programs. There are 22 buildings and structures. Periodic facility inspections will be conducted and repairs made as necessary to prevent deterioration and to comply with standards relating to contamination control, fire protection, safety, security, and environmental protection. Minimum levels of heating and ventilation will be necessary for facilities with wet sprinkler systems. S&M of centrifuge equipment and materials storage areas also will be performed.

The second task assigned to the K-25 Centrifuge D&D segment is the interim and/or long-term storage and disposal of hazardous centrifuge equipment and waste materials. The principal activities of this task are the sale or disposition of raw materials and the disposal and/or long-term storage of process waste both from the K-25 Site and from centrifuge manufacturers who ship it to the K-25 Site to expedite centrifuge facilities closeout.

The initial storage area included about 200,000 ft² on site and about 100,000 ft² off site. One of the subproject goals is to reduce the combined long-term storage requirements to 100,000 ft² or less.

The third task of the K-25 Centrifuge D&D Project is the centrifuge facilities cleanup.

43.6.3 Paducah Gaseous Diffusion Plant

The C-410, C-411, C-420, and C-340 uranium process buildings at PGDP are being kept on standby in accordance with DOE directives. Currently, no ongoing mission for these buildings has been identified, and they will receive routine S&M until DOE formally decides to change their status from standby to shutdown. Their D&D will be scheduled after the decision is made to shut them down. Until then, the buildings will require a reduced level of general maintenance, fire protection, and general surveillance. Environmental monitoring to comply with state and federal standards, radiation monitoring for personnel safety, and a minimum amount of engineering and technical support for those activities are required.

43.6.4 The Portsmouth Site

The Portsmouth site consists of an operating gaseous diffusion plant built in the 1950s and a gas centrifuge enrichment plant that was partially constructed, started up, and then shut down in the late 1970s and early 1980s.

The Portsmouth Gaseous Diffusion Plant was built in the 1950s to supply UE services for the United States. It has operated continuously since startup. Two abandoned facilities within the plant are included in the D&D segment of OR-1: the X-705 Radicator (an incinerator) and the High-Assay Sampling Area (HASA).

The X-705 Radicator is a pre-engineered, factory-assembled, automated, forced-air, multiple-chamber incinerator. The incinerator and site are contaminated with hazardous materials and low-level uranium. The X-705 Radicator was used to incinerate radioactively contaminated burnables, such as paper, plastic shoe covers, wood, and rags. In July 1986, EPA was notified that unauthorized materials had been incinerated. Between August 1984 and April 1986, ~400 L of flammable liquids was mixed with burnable solids and incinerated. Operation of the incinerator was stopped immediately upon discovery that unauthorized materials had been incinerated. The RCRA Part A permit was revised to include the X-705 Radicator as a formerly-used hazardous waste incinerator. The D&D activity consists of demolition and removal of structures, utilities, contaminated soil, and associated equipment.

The old X-326 HASA started operations in the 1950s and was used until August 1987, when a new X-326 HASA was placed in operation. The X-326 HASA measured assays of highly enriched UF_6 . The area and associated piping are contaminated with UF_6 . The location of the old X-326 HASA is not considered a health and safety hazard to the operating personnel in the area. The D&D activity consists of decontamination, demolition, and removal of structures, utilities, and associated equipment.

The Portsmouth Gas Centrifuge Enrichment Plant was designed and built in the late 1970s and early 1980s. Some UF_6 was enriched in 1985 just prior to the shutdown of the facility. Some areas of X-3001 and some areas of X-7725 within the centrifuge plant do have some UF_6 -contaminated equipment.

The centrifuge plant D&D actions will remove the surplus unclassified and uncontaminated equipment located in the following centrifuge facilities:

- X-3001 Process Building (303,680 ft²)
- X-3012 Process Support Building (56,243 ft²)
- X-7727H Transfer Corridor (24,246 ft²)
- X-3346 Feed/Withdrawal Building (167,236 ft²)
- X-1107Av Southeast Portal
- X-2207F Feed and Withdrawal Portal

The costs associated with these D&D actions also include the effort required to prepare salvage package descriptions to solicit bids for the removal of equipment remaining in the recycle/assembly and feed/withdrawal buildings.

The General Services Administration/Reportable Excess Automated Property System activity will be continued following the delay in FY 1991. Also, D&D will continue to support cleaning out the facilities, including the removal of contaminated and classified equipment and a minimal disassembly of centrifuge machines and the associated support equipment. Following partial disassembly, this equipment may be shipped to Oak Ridge for storage and future decontamination and, possibly, declassification.

The centrifuge plant S&M budget includes costs for what is considered the caretaker or standby activity of plant termination. Costs of maintenance of sprinkler systems and fire protection, S&M of facilities, security, and monitoring also are included in this category. The facilities requiring ongoing S&M are the six listed previously in this subsection.

4.3.6.5 The Oak Ridge Y-12 Plant

The Y-12 Plant was originally constructed by the U.S. Army Corps of Engineers in 1943 as a part of the highly classified Manhattan Project. The plant was one of three constructed in the Oak Ridge area, the other two being ORNL and the K-25 Site.

More than 250 separate buildings are located within the Y-12 Plant complex. Building 9201-4 (also referred to as Alpha-4) has been accepted into the D&D segment of OR-1 and is currently receiving funding for S&M planning and minimal D&D activities. Other buildings have been identified as candidates for D&D but have yet to be accepted into the project.

Building 9201-4 and the equipment associated with it operated in the late 1950s and early 1960s. Mercury was used as a solvent in a mercury/solvent extraction process for lithium isotope separation (also known as the COLEX process). The system consisted of liquid-liquid separation columns and associated pumps, piping, trays, and tanks, which remain contaminated with mercury. Additionally, the building structure is contaminated with mercury from previous losses during operations. Previous estimates place the amount of mercury remaining in the building and on/in equipment at about 250 tons. D&D activities will include development of a baseline cost estimate to include activities necessary to meet regulatory requirements and for waste management; completion of a risk assessment and safety assessments; preparation of a D&D plan (including two phases of D&D activity, with phase I encompassing the equipment/piping removal and decontamination, phase II involving removal of the structure below grade level and closure of the site); design/construction/operation of decontamination equipment and waste treatment, storage, and disposal activities; construction activities to complete the D&D of the facility; and activities necessary to comply with NEPA and other regulatory requirements.

Various efforts in research, demonstrations, development, testing, and evaluation will be initiated as funding allows to evaluate decontamination of mercury-contaminated materials. These efforts will be beneficial for the D&D of several other candidate D&D facilities at the Y-12 Plant that are also contaminated with mercury. Drainable mercury has been removed from most of the equipment in Building 9201-4; the remaining mercury is closely held in the process equipment/piping and the facility structure and cannot be removed until D&D activities are begun.

Stripping of the process equipment/piping and removal of all waste in Building 9201-4 will continue until FY 2010 or later. D&D planning activities (including a development of a D&D plan, risk assessment, safety assessment, and completion of the baseline cost estimate for Building 9201-4) and completion of appropriate NEPA documentation are scheduled to be completed in FY 1993.

4.3.6.6 Oak Ridge National Laboratory

Past research and development, isotope production, and waste management programs at ORNL have resulted in a significant inventory of surplus contaminated facilities. These facilities range in size and complexity from shielded shipping casks to large experimental reactors. The Surplus Facilities Management Program was established at ORNL in 1976 to provide collective management of these facilities. The programs that formerly used these facilities had both defense and nondefense sponsors. Since the inception of the D&D segment of OR-1, seven decommissioning projects have been completed at ORNL: the Curium Source Fabrication Facility, the Carbon-14 Facility, the Dosimetry Applications Research Accelerator, the Standard Pile, the 3026-C Radiochemical Waste System, the Intermediate-Level Waste Transfer Line, and the 3033 Storage Garden.

There are 34 individual facilities awaiting decommissioning. They are grouped into 11 major decommissioning projects:

- Molten Salt Reactor
- Shielded Transfer Tanks
- Oak Ridge Research Reactor Experimental Facilities
- Metal Recovery Facility
- Fission Product Development Laboratory
- Homogeneous Reactor Experiment
- Fission Product Pilot Plant
- Waste Evaporator Facility
- Old Hydrofracture Facility
- Low Intensity Test Reactor
- ORNL Graphite Reactor

In addition, S&M activities are conducted under the following ADSs:

- Surplus Facilities Management Program Surveillance and Maintenance
- Defense D&D Surveillance and Maintenance
- Energy Research Surveillance and Maintenance

Decommissioning activities have been conducted intermittently since 1984 at the Metal Recovery Facility and at inactive cells at the Fission Product Development Laboratory. High

priority also has been placed on beginning to plan the decommissioning of the Fission Product Pilot Plant, the Homogenous Reactor Experiment, and the Shielded Transfer Tanks.

In addition to the 26 facilities currently included in OR-1, 5 facilities previously accepted by DOE-HQ were transferred to the project formally in FY 1992. Three other facilities will probably be transferred in FY 1993. Also, 27 ORNL facilities are inactive and are undergoing safe shutdown before being accepted into the project. These include the Oak Ridge Research Reactor and 17 isotope facilities.

4.3.6.7 Oak Ridge Institute of Science and Education

In 1981, ORISE assumed management responsibility for several parcels of DOE land ~3 miles south of downtown Oak Ridge. One tract of ~70 acres had been used since the late 1940s as the core headquarters of an agriculture experiment station owned by the federal government and operated by the University of Tennessee. Known as the Comparative Animal Research Laboratory, it conducted a range of research programs in agricultural science and veterinary medicine. DOE and ORISE phased out those activities in the mid-1980s. Part of the site is used today by the ORISE Energy/Environmental Systems Division.

Funding has been requested for D&D of nine abandoned buildings and the unused Wastewater Treatment Plant. There is some concern that hazardous materials might be present in drains at the plant.

Chapter 5

WORK BREAKDOWN STRUCTURE

5.1 INTRODUCTION

The WBS for OR-1 forms the framework for planning, assignment of responsibilities, technical baseline, schedule control, cost summaries, and change control. The WBS graphically portrays OR-1 by relating elements of work to each other and to the end products. The WBS is structured in accordance with the way the work is to be accomplished, including project management. The WBS includes a PSWBS and a Contract Work Breakdown Structure (CWBS) for each participant. A WBS dictionary containing an index and a set of element definitions has been prepared for the PSWBS and will be prepared for each element of the CWBS. The index will list the WBS elements, showing their hierarchical relationship, where descending levels show increasingly detailed definition of the work to be accomplished. The element definitions describe each element, stating the technical objectives as well as the specific work tasks, resources, materials, and processes required to complete the task.

An important feature of OR-1 is that any activity may generate several new activities. The overall needs will evolve as the Project proceeds, and, as a result, the overall scope will be revised using the formal baseline change control process as referenced in Annex C. Consequently, it is anticipated that the CWBS and CWBS dictionaries for several contractors may be revised frequently to reflect changes in work scope and to keep work definitions current throughout the life of the Project.

5.2 PROJECT SUMMARY WORK BREAKDOWN STRUCTURE AND CONTRACT WORK BREAKDOWN STRUCTURE

It is essential, for effective planning and budgeting, that all required work products necessary for the completion of OR-1 be identified and assigned. The PSWBS (Fig. 5.1) provides basic information to managers and participating organizations to aid them in accomplishing their assigned objectives. In the CWBS, the activities are broken down into increasingly detailed definitions of the work to eliminate duplication, identify the appropriate management level responsible for each work product, and facilitate project management. Various elements of the WBS provide logical summary points for assessing technical accomplishments, identifying the funding requirements, and measuring the cost and schedule performance.

The top three tiers of the PSWBS (which begins at the third level of the Program Summary Work Breakdown Structure) show the project, installation, and summary subproject levels for OR-1. The fourth level reflects the subprojects, which divide the work for RAs, S&M, D&D facilities, and project management into manageable segments. On the fifth level,

Approved By: _____ Date: _____

Keith G. Kahl, Director
Program Integration and Administration

Approved By: _____ Date: _____

Robert C. Sleeman, Director
Environmental Restoration Division
DOE-OR Field Office

Fig. 5.1. Project Summary

York Breakdown Structure.

work at each site/facility will be subdivided into various work elements, as appropriate. The PSWBS dictionary is presented in Appendix I. The detailed element descriptions by subproject can be found in the latest EM-40 Baseline for OR-1 (ref. 15).

Each contractor and subcontractor will prepare a CWBS for its assigned work. All of the CWBSs will have the same general structure; however, due to the large variation in the nature of the subprojects, the actual work elements will vary. For example, the first level in the CWBS could include the phases of work associated with an FS or a specific area under S&M, etc. An example of the progression of work for both the RA and D&D segments of OR-1 is outlined in more detail in Chap. 4. The PSWBS has the flexibility to handle each type of subproject, and ensures proper cost, schedule, and technical baseline control.

5.3 RELATIONSHIP OF WBS TO THE DOE FINANCIAL SYSTEM

The DOE financial system provides for the authorization of funds and the accumulation and reporting of costs related to these funds. The budget and reporting (B&R) codes are used to categorize the nature of work being funded and the program responsible, which provides the structure for the DOE financial system. Appropriate B&R codes will be entered into the WBS dictionary to define the specific relationship for each WBS element. Two major subtasks used in the B&R code structure have been established for OR-1: one for assessment/characterization and one for cleanup/D&D. The ADSs are planning and control documents used as the basis for authorizing funds and accumulating costs. ADSs will be prepared at the highest manageable level of the WBS. The WBS will be structured to allow authorization of funds and cost accumulation by ADS, B&R code, and installation.

Work will be authorized by the separate issuance of Funding and Work Authorizations, which clearly outline the scope of work, method of accomplishment, and funding required. The Funding and Work Authorizations will clearly distinguish the work, so the expenditures can be costed to the proper WBS element.

All work will be authorized according to the system described in Chap. 9.

Chapter 6

SCHEDULE AND MILESTONES

The IC will support the establishment and maintenance of project management systems for OR-1 that include a scheduling function capable of supporting planning, scheduling, and control activities as an integrated process.

The IC will use techniques typically employed in current computerized network logic project management systems to provide the framework for the control of the individual activities and subprojects by establishing schedules, measuring progress against those schedules, and interactively making management decisions based on schedule information. As a result, individual subprojects will be managed as constituent parts of OR-1. All schedules produced for OR-1 will be on OPEN PLAN™ software or OPEN PLAN™-compatible files.

6.1 SCHEDULE HIERARCHY

Schedules are being developed for DOE-OR by the IC based on input from all project participants and are being maintained on several different levels; these are updated annually as a part of the planning process. This hierarchy of schedules will integrate all activities [e.g., Consent Order and Compliance Agreements, FFAs, FFCAs, AIPs, design, and construction] in OR-1 and allow those at the lowest level to be summarized through successive higher levels of schedules to the project baseline schedule. Schedules are being developed at the work element level of the CWBS. Individual activities are included to identify deliverable products (e.g., taking core samples, drilling wells, delivering primary documents, taking bids, etc.). It is not intended to duplicate the lowest-level detailed work schedules of participating contractors.

The lowest-level schedule will employ network logic techniques with precedence notation. Deliverables to be tracked and their associated milestones will be entered in the schedule as individual activities. Summary schedules at higher levels will reflect the range of the activities included from the lower-level schedule.

The hierarchy consists of the project baseline schedule, the site summary schedule, and the detailed subproject schedules.

- The project baseline schedule provides the programmatic, total project schedule, and control milestones for the MSA.
- The site summary schedule is a summary of subprojects at a particular site. It will reflect the applicable phases and related DOE-controlled milestones for each subproject.

- Detailed subproject schedules are developed as part of the annual planning process or as directed by DOE and reflect fiscal-year programmatic schedule/milestone direction provided by DOE. This schedule represents the lowest level used to monitor progress.

Schedules are being developed with a "top-down-bottom-up" approach from the project baseline schedule down to the detailed subproject schedules. The hierarchy is preserved by resolving conflicts through adjustment of the detailed schedules to meet the MSA baseline schedule.

6.2 LOGIC DIAGRAMS

Logic diagrams depict the sequencing of activities required to attain the milestones promulgated in the OR-1 baseline schedule. The IC will maintain the detailed subproject schedules as logic diagrams. The diagrams reflect the work activities, major events, milestones, and relationships between activities. Time analysis of the logic diagram will determine the activity schedule and will indicate the critical path and float for each activity. Impacts to OR-1 milestones will be identified.

OR-1 participants will develop logic diagrams as necessary to control their individual portions of the subproject. Although more detailed, the participant schedules are consistent with, and an extension of, the reporting level of the PSWBS schedules.

6.3 DATA BASES

Schedule information is maintained in a data base that is structured to be compatible with the data base(s) developed for handling other project information.

6.4 SCHEDULE MAINTENANCE

The status of actual OR-1 work is determined monthly (1) to establish the progress to date and (2) to forecast completion of each activity that is under way. At the same time, comments are solicited as to any revisions to the network logic and/or activity durations required to refine the schedule without impacting OR-1 milestones.

Status is reflected on the detailed site network logic schedules. Time analysis is performed and summarized to the higher-level schedules to determine the effect on MSA milestones.

6.5 SCHEDULE DOCUMENT

The project baseline schedule will be completed in FY 1993. The current 7-year schedule is listed in the ADS submitted for each site.

The 7-year summary bar chart schedule for OR-1 is shown in Appendix V. Also included in Appendix V is a typical logic sequence used for each individual facility to generate the summary bar chart. All schedules for long-term RA or D&D should be viewed as very preliminary strategies.

The summary plans for the K-25 Site, PORTS, and PGDP are based upon the "Base Case" schedules developed by Ebasco.

The dates shown for Y-12 Plant and ORNL facilities are preliminary and subject to verification by the responsible organizations. The details on buildings at the ORISE South Campus Facility will be incorporated when the information becomes available. Details for D&D of individual buildings will be incorporated when information becomes available.

Chapter 7

TECHNICAL PERFORMANCE CRITERIA

Technical performance criteria for the RA phase of OR-1 are defined principally by applicable federal regulations, whereas for the D&D phase, DOE orders provide the major guidance. As a result, this section addresses the federal statutes applicable to RA which can affect project definition, cleanup criteria, and waste management, as described in the following subsections.

7.1 PROGRAM DEFINITION

In establishing technical requirements for OR-1, DOE-OR and the FMC will interface with three states and two EPA regions, as shown in Table 7.1. States authorized to administer their own compliance programs may substitute the same or more stringent state standards in lieu of federal standards.

The RA segment of OR-1 is primarily driven by either CERCLA, as amended by Superfund Amendments and Reauthorization Act (SARA), or RCRA, as amended by HSWA. The ORR has been placed on the National Priorities List (NPL), and an FFA between DOE, EPA, and TDEC has been negotiated to address implementation of the ER Program for the ORR. Parties to the FFA have agreed to coordination of the CERCLA and RCRA response obligations to minimize the duplication of effort.

The EPA has established separate Administrative Orders by Consent (ACOs) for the Paducah and Portsmouth installations. A Consent Decree, State of Ohio vs U.S. DOE et al., for the Portsmouth installation also establishes requirements for implementing facility investigations, alternative selection, and cleanup action. A HSWA permit for the Paducah installation has been approved and will affect RA activities.

An AIP between DOE and the respective state agency is being formulated for each reservation/installation (ORR, Paducah, and Portsmouth). The AIP defines and funds oversight by the respective state agency for OR-1. The AIP in Tennessee is referred to as the Tennessee Oversight Agreement (TOA).

Some level of NEPA determination and documentation (e.g., categorical exclusions, EAs, EISs) will be required for OR-1 to ensure that planning and decisions reflect environmental values. These determinations may affect project decisions and direction. NEPA requirements are documented in 40 CFR 1500-1508 (ref. 6), 45 FR 20694-20701 (ref. 7), DOE Order 5440.1D (ref. 8), and SEN-15-90 (ref. 9). The integration of NEPA and CERCLA requirements is required by DOE Order 5400.4 (ref. 1).

Table 7.1. Summary of regulatory agencies, agreements, and permits for the ORR, Paducah, and Portsmouth installations

Installation	Agreements in Principal	Regulatory agencies
ORR (NPL site)	FFA, FFCA, TOA, RCRA permit	EPA-IV, TDEC
Paducah	ACO, FFCA, AIP, HSWA permit	EPA-IV, Kentucky Department of Environmental Protection
Portsmouth	ACO, FFCA, AIP, Consent Decree, director's findings and orders	EPA-V, Ohio EPA

7.2 CLEANUP STANDARDS

The basic technical cleanup criteria for inactive sites are derived from CERCLA, Sect. 121, as codified in 40 CFR 300.5, Subpart F (ref. 10). This includes guidelines for evaluating remedies and determining ARARs with respect to the required degree of cleanup. Application of guidelines may result in the use of RCRA standards in 40 CFR 264-265 (ref. 11) or standards derived from DOE requirements, Nuclear Regulatory Commission standards, TSCA, the Clean Air Act, the Clean Water Act, state standards, or others. ARARs are developed on a subproject-specific basis. The DOE-OR installations cover large geographic areas, and subprojects may number in the hundreds.

The identification of ARARs is an iterative process and will be finalized by identifying those required for implementation of the selected alternative. The selection of ARARs is influenced by the site-specific contamination, the proposed RA alternatives, the site characteristics, and risk considerations. For the ORR, such documents as *Applicable or Relevant and Appropriate Requirements (ARARs) for ORR—A Compendium of Major Environmental Laws*, will be used for identifying the applicable regulations and the approach for selecting ARARs. Other sites will be handled on a similar basis.

7.3 WASTE MANAGEMENT

Management of wastes generated from implementing recommended RAs is subject to RCRA standards, pertinent DOE orders, and in certain cases at the ORR, CERCLA standards. Wastes generated by the implementation of OR-1 can be categorized by waste form (solid, liquid, or gas), waste category (conventional, low-level radioactive, transuranic, hazardous, or mixed), and security classification (classified or unclassified). Minimization of radioactive, hazardous, and mixed waste generated will be an important consideration in remedial alternative selection.

Mixed waste storage and treatment facilities, although limited in capacity, are available to all DOE-OR installations. Because no mixed waste disposal facility is currently available to DOE-OR installations, mixed waste management will include efforts to eliminate either the hazardous or radioactive components of the waste and allow its handling as a radioactive or a hazardous waste. However, limited space is currently available for approved on-site storage of waste that is solely radioactive or hazardous.

A Waste Management Plan, referenced in Annex E, addresses management of OR-1 waste. The amount of categories of waste to be generated by OR-1 will be estimated, and treatment, storage, and disposal needs will be identified. OR-1 will be identified as the generator. OR-1 will also provide estimates of waste in each category both 1 and 5 years in advance; characterize and package waste to Energy Systems CWMD specifications; fund CWMD for waste management (up to 3 years for storage of waste); and be responsible for treating waste on site (i.e., pump/treat). Relative to OR-1-generated wastes, CWMD will build and operate storage areas; design treatment facilities and storage areas; provide certification requirements; be responsible for compliance upon waste acceptance; and operate interim storage areas.

Chapter 8

COST ESTIMATES

8.1 BASELINE COST ESTIMATE

The total cost estimate for OR-1 will be composed of two segments: (1) the work defined in the first 7 years and (2) the forecast cost for the work to be included in the total project. As the 7-year window is updated, both segments of the baseline cost estimate will be revised at least annually by the IC with input from the other prime contractors. The baseline may be updated at other times in compliance with approved baseline change control actions. A revised life-cycle cost estimate will be submitted to DOE-OR for review through the approval process.

8.2 GENERAL

The cost baseline, as well as other cost estimates and forecasts prepared for OR-1, will conform to the requirements of DOE Order 4700.1, and their bases and how they were developed will be documented. As a minimum, the following major topics will be covered.

1. **Task Description:** A description of the tasks that the estimate covers. The level of detail will depend on the level and purpose of the estimate.
2. **WBS:** A description of how the tasks relate to the WBS and ADSs.
3. **Type of Estimate:** A description of the phase of the subproject for which the estimate was prepared (Site Inspection, S&M, Characterization, FS, Remedial or D&D Design, etc.), the use of the estimate (budget request, alternatives assessment, bid check, etc.), and the level of detail (planning, preliminary, detailed). See Sect. 8.5 for a detailed discussion.
4. **Schedule and Escalation:** A schedule for the tasks, the year/quarter on which the costs were based, and the escalation rates used with the schedule to produce a final year spent cost.
5. **Basis for the Cost Estimate:** A description of the methodology used to develop the cost for the tasks, the source of the cost data, and the confidence in that data. Discussion of the wage rates and indirect rates used and what they include will be documented as appropriate.
6. **Participants:** An identification of the anticipated participants and the tasks that each will be accomplishing.

7. **Assumptions:** A description of the decisions that were made concerning the scope, schedule, method of accomplishment, or other unknowns that affect the outcome of the estimate, and justification for those assumptions if appropriate.
8. **Contingency Analysis:** A description of the percentage of contingency applied to the various parts of the estimate and justification of that percentage. Application of contingency shall conform to the latest DOE guidelines.
9. **Cost Risk Assessment:** A cost risk assessment will be performed for each revision of the baseline cost estimate to evaluate the probable cost impact of major risk areas that could impact the project but that have not yet been incorporated. Some of the risk areas follow:
 - Scope changes
 - Inaccurate projection of inflation
 - Regulatory changes
 - External factors (strikes, bad weather, labor shortages, etc.)
 - Budget constraints
 - Regulatory approval delays
 - Technology changes
 - Schedule impacts
 - Environmental, safety, and health

The baseline cost estimate for all phases will be continually reviewed and updated as required by all participants to ensure that the estimate reflects the latest authorized scope, technical requirements, schedule, and other cost elements for each subproject in accordance with approved DOE-OR change control policy. All changes in the estimated baseline cost for each subproject will be documented through the change control process. This documentation will provide continuity between estimates and the reasons for changes since the previous approved baseline estimate.

8.3 REMEDIAL ACTION COST ESTIMATES

During the assessment phase of an RA subproject, detailed information is gathered about the nature of the contaminated area, and a list of feasible alternatives for remediating the site is developed. The assessment stage concludes with the approval of a specific alternative by the appropriate regulatory authority to be implemented at the site. Under CERCLA/SARA, this stage includes the Preliminary Assessment/Site Inspection (PA/SI) and the RI/FS. A corrective action under RCRA considers the RCRA Facility Assessment (RFA), the RCRA Facility Investigation (RFI), and the CMS to be the major elements of the assessment stage.

There are three major types of assessment cost estimates: planning estimates, preliminary estimates, and detailed estimates. Figure 8.1 identifies when these estimates are likely to be generated for CERCLA/SARA projects. Generally, planning estimates for the cost of the assessment work will be generated during the PA stage. After completion of the PA/SI, a preliminary estimate will be generated, utilizing the additional information gathered during the PA/SI. This will serve as the first baseline estimate. Upon completion of the Work Plan

Fig. 8.1. Estimate types for costing RA assessment phase (CERCLA/SARA terminology).

for the RI, estimates of the cost of assessment (RI/FS) will be developed and periodically updated during the remaining assessment activities. Each estimate type is discussed in Sect. 8.5.

The cleanup stage commences after an alternative has been selected for remediating the site and continues through completion of construction of the remedial alternative. The two dominant components of this stage of an environmental cleanup activity are RD and RA. Although operations and maintenance of the remedial alternative may be required, they are not included as part of this PMP.

Cost estimates are required for the cleanup during the assessment stage even though the remedial technology for the activity has not been determined. At these preliminary stages, estimates for a variety of possible technical alternatives may be requested.

Several documents that contain cleanup cost estimates are required as part of the regulatory process. Under CERCLA/SARA, the FS includes cost estimates for all considered remedial alternatives. The ROD generally includes all design information developed for the selected alternative during the assessment stage FS and must include a cost estimate for that alternative. Generally, this estimate is updated to a preliminary estimate and will serve as the baseline estimate. The next formal document containing an estimate is developed for the construction bidding process. At this point, 90% of the design has been completed. A time line outlining the CERCLA/SARA steps and the estimate types discussed in the following subsections shown in Fig. 8.2.

Cleanup costs will be estimated at the lowest level of detail that can be developed within each cost element. For conventional cost elements, such as excavation, this will normally consist of quantity takeoffs made on the basis of drawings supplemented with information obtained from calculations and outline specifications. When sufficient detailed information is not available, estimates can only be developed on the basis of historical data or engineered standards. Examples of this type of estimating include unit costs based on historical data for items such as temporary facilities and unit quantity standards that relate quantities of one item, such as leak testing, to another item, such as installation labor. Particular care will be exercised when using historical data to prepare estimates so that traceability can be maintained in areas such as indirect cost.

For cleanup subprojects, the four major types of cost estimates are: planning estimates, feasibility estimates, preliminary estimates, and detailed estimates. These estimate types are discussed in Sect. 8.5.

8.4 DECONTAMINATION AND DECOMMISSIONING COST ESTIMATES

During the initial S&M stage of a D&D subproject, detailed information is gathered on the nature of the contaminated facility and on the feasible alternatives for D&D of the facility as technology is developed. The S&M will continue throughout the life of the D&D project. When D&D begins, the S&M may be reduced to the appropriate level as required. Initial S&M planning estimates are based on historical data gathered from the operating records of

Fig. 8.2. Estimate types for costing the RA cleanup phase (CERCLA/SARA terminology).

the facility. During the development of viable alternative methods for D&D of the facility, feasibility estimates are prepared to assist in the selection of the preferred alternative. The feasibility estimates are then updated to preliminary/baseline estimates for the preferred alternative. For the detailed estimate, the two dominant components of a D&D activity are design and construction, both of which require firm estimates based on approved engineering documentation prepared by the ERWMDC. Although costs for routine maintenance may ultimately be needed, they are not included as a part of this PMP.

Planning estimates are sometimes required during the S&M stage even though the D&D technology for the specific activity may not have been developed. At this preliminary stage, estimates for a variety of possible technical alternatives may also be requested. Regardless of when required, estimates at this stage of the project will be done at the level considered most appropriate based on the information available at the time.

D&D cost estimates must be included in several documents that are required as part of the regulatory process. The D&D design information developed for the selected alternative during the S&M stage must include a cost estimate for that alternative. Generally, this estimate is updated to a preliminary estimate and will serve as the baseline estimate. The next document that must be developed is a detailed estimate for the construction bidding process.

For D&D subprojects, there are four major types of cost estimates: planning estimates, feasibility estimates, preliminary estimates, and detailed estimates. Figures 8.3 and 8.4 identify when these estimates are generated for D&D subprojects. These estimate types are discussed in detail in Sect. 8.5.

8.5 COST ESTIMATE TYPES

8.5.1 Planning Estimate

Early estimates for various phases of OR-1 will be required to satisfy preliminary budget requests or for other budgetary purposes. Cost information for inclusion in the Five-Year Plan generally falls under this category. These estimates are normally based on planning documents unless more definitive information is available. All that may be known about an activity at this estimate state is its location, likely contaminants, and prior or current use of the site/facility. Only minimal design information is available, if any. Analogy, historical data, simple cost-estimating relationships, and selected parametric tools are utilized to develop planning estimates.

8.5.2 Feasibility Estimate

FSs prepared during the latter part of the site assessment/facility characterization require cost estimates supported by quantity takeoffs, current pricing information, and equipment usage for cleanup/D&D activities. The design, schedule, and cost estimate developed for an FS are all part of the detailed information needed to support selection of the preferred alternative. This estimate and the associated schedule also form the first formal baseline for performance measurement against which future progress will be measured and evaluated. The cost estimate requires an accuracy that is commensurate with the completion of the

Fig. 8.3. D&D characterization phase cost estimate types.

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Fig. 8.4. D&D implementation phase cost estimate types.

assessment/characterization work and that can support appropriate management decisions. Evaluations of the alternative technical solutions are supported by these estimates, which are incorporated in the FS report. The purpose of these estimates is to allow comparison of cost elements in parallel with the evaluation of technical and regulatory requirements. As such, an FS estimate performs two functions: it provides the total estimated cost (TEC) of each alternative on the basis of the best information available, and it provides a logical, traceable framework for comparing alternatives with each other.

8.5.3 Preliminary Estimate

After an alternative has been selected, a more detailed cost estimate than was developed for the FS is required. This preliminary estimate must be based on sufficient detail to permit use as a cost control tool. All major cost elements will be included. The design costs will be based on the negotiated contract cost or the current working estimate for this effort. Unit costs will be applied to such activities as sampling and analyses, well drilling, major excavations, etc. These estimates are somewhat similar to conceptual design estimates performed for line-item projects and should be of such quality that they can be verified by an independent organization. These estimates may also serve as baseline estimates.

8.5.4 Detailed Estimate

Detailed estimates are made on the basis of all approved engineering data, including drawings, specifications, and calculations; the schedule; and the anticipated method of accomplishment (contracting plan for each procurement and construction package). To facilitate bid evaluation, the detailed estimate will be grouped into bid packages that correspond to the contracting plan. The use of computer-aided estimate systems will help maintain traceability between the multiple reporting formats required. All costs will be escalated to the schedule midpoint of the activity (that is, design, purchase of major equipment, field work) using the approved escalation rates established for OR-1. Subproject costs (expenditures to date plus estimates for uncompleted work) will be maintained by periodic updates to incorporate the latest cost information.

Chapter 9

MANAGEMENT CONTROLS

DOE-OR will provide guidance and use the reported technical, cost, and schedule status data from all prime participants for assessing OR-1 performance. Energy Systems PI&A has been assigned the responsibility for integrating the cost and schedule networks and monitoring technical performance.

The management systems used by all DOE-OR prime contractors will provide for planning and budgeting, tracking funds and cost, cost estimating, scheduling, performance measurement, and baseline change control. These management control systems are to meet the standards set by DOE Order 4700.1, *Project Management System*. Specific contractor responsibilities are delineated contractually by DOE-OR.

OR-1 tasks are baselined for TEC, schedule, and scope of work by WBS element and tracked for performance against goals. These activities are identified by the prime participants at the lowest practical level of their CWBS consistent with prudent management. Baseline change control procedures, performance measurement techniques as appropriate, integrated scheduling, and variance thresholds for analysis of performance are used throughout the project.

9.1 WORK DEFINITION (WBS)

Documents that are integral to work definition are the WBS, the WBS dictionary, and the Responsibility Assignment Matrix (see Fig. 9.1). The PSWBS defines the lowest level of the WBS common to all prime participants. It is the baseline integrator for the tasks to be accomplished by OR-1. The PSWBS provides a consistent framework for all participants to facilitate planning and assigning management and technical responsibilities as well as controlling and reporting the progress and status of OR-1 efforts, resource allocation, cost estimates, expenditures, and procurement actions.

A PSWBS dictionary has been prepared to provide a narrative description of the work tasks to be accomplished within each PSWBS element. The PSWBS and the associated dictionary are reviewed regularly by the OR-1 Core Team for completeness and updated through established baseline change control procedures to ensure that (1) all work is defined; (2) work is structured to permit planning, scheduling, budgeting, estimating, and performance measurement in a logical manner; and (3) work elements can be easily related to subproject objectives and technical requirements. The PSWBS can be changed only with DOE-HQ approval.

**OR Project Summary
Work Breakdown Structure**

DWG. NO. KOG-92-544BWH
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Legend	
CA - Cleanup Action	
CH - Characterization	
D - Decommissioning	
D&D - Decontamination & Decommissioning	
EV - Evaluation of Alternatives	
IN - Inspection	
Mgmt - Management	
PA - Preliminary Assessment	
RA - Remedial Action	
RV - Remedial Verification	
S&M - Surveillance and Maintenance	
T II - Title II Engineering	
T III - Title III Engineering	

Level 3 PGSWBS

Level 4

Level 5

Level 6

Participants (Lead Role)

DOE-OR _____

Facilities Manager/Integrating Contractor _____

Technical Support Contractors _____

ERWM Design Contractor _____

Construction Management Contractor _____

Independent Verification Contractor _____

				Management
	PA, IN CH, S&M	PA IN	CH IN	S&M
	EV	EV	EV	Integration
	TII TIII	TII TIII	TII TIII	
	CA D	CA	D	
	RV	RV	RV	

Fig. 9.1. WBS Responsibility Assignment Matrix.

The management control systems utilized by all DOE-OR contractors are based upon their CWBS, which is an extension of the PSWBS and defines their component tasks as discussed in Chap. 5.

The Responsibility Assignment Matrix as shown in Fig. 9.1 has been developed to identify the OR-1 participants involved with specific elements of the PSWBS and is used to integrate and coordinate all participants' work descriptions, cost estimates, and schedules.

9.2 WORK SCHEDULE (BASELINE)

A hierarchy of schedules has been developed for OR-1, as discussed in Chap. 6. This provides successively greater detail for each lower element, from the project baseline schedule through the lowest level, the work element schedule. These schedules formulate the overall logic of a time-phased performance baseline for which DOE-OR identifies the key milestones. Among the most important OR-1 milestones are the primary document deliverables listed in the FFA for ORR, the ACO and Consent Decree for Portsmouth, and the ACO and HSWA permit for Paducah. Primary document milestones are subject to stipulated penalties and will receive paramount attention. These key milestones are baselined and can be changed only through baseline change control procedures. All prime participant Project Managers are accountable to DOE-OR for key milestones considered critical to the Project.

9.3 BUDGET FORMULATION

9.3.1 Budget Prioritization Process

In order to facilitate management decision-making regarding the timing and application of resources to OR-1 work activities, DOE-OR employs a standardized prioritization process that evaluates subproject tasks and assigns a numeric score to them based on the tasks' criticality with respect to the following three categories: risk reduction, regulatory requirements, and project mission.

The prioritization process begins with each project manager identifying all subproject tasks that are required during a fiscal year. The tasks are then scored (High = 3, Medium = 2, and Low = 1) in the aforementioned categories of risk reduction, regulatory requirements, and project mission. The scoring algorithm then weighs the risk reduction, regulatory requirements, and project mission scores by 40%, 35%, and 25%, respectively, to reflect the OR-1's emphasis on protecting human health and safety and the environment.

The category of risk reduction attempts to capture worker safety and/or health risk if the task in question is not performed, as well as the potential for off-site and/or on-site contamination. The category of regulatory requirements considers agreements or permits with near-term or fixed milestones/deliverables as well as AIP and TOA efforts. The final category, project mission, evaluates tasks with respect to ongoing operation or continuity of operation, such as S&M or groundwater monitoring. Other factors addressed in this category include project management efforts and actions supporting near-term ROD, Interim ROD, or corrective measures.

To make the process as objective as possible, an algorithm is applied to convert the tasks' scores into an overall numeric value to facilitate task comparison. All tasks for the Project are then force-ranked according to this value to generate a prioritization list for management review and action. The distribution of the national budget will be done according to this priority system for OR-1 as shown in Fig. 9.2.

9.3.2 Flow of Funds

The following narrative describes how the funds for the OR-1 budget will flow at DOE-OR:

- For the work managed by the FMC, the funds will be obligated to the Energy Systems contract by DOE-OR to Energy Systems' central financial plan. Landlord-designated OR-1 sites will receive landlord funds from DOE-OR in the respective site's financial plan.
- For the work performed by DOE-OR TSCs, the funds will be placed in the DOE-OR financial plan and obligated to the TSCs.
- Work performed for DOE by the ERWMDC will generally be funded directly to the ERWMDC contract. However, any task orders that require significant interface with Energy Systems personnel on site will be funded in the FMC's financial plan. Also, when the FMC utilizes the ERWMDC and a task order is established to support the FMC directly, that task order will be funded in the FMC financial plan.
- For work performed directly by the CMC and its subcontractors, the funds will be placed in the FMC financial plan and will be designated by ADS number. The CMC will report costs against the applicable ADS and WBS elements.
- For other miscellaneous budgets, such as the AIP grants, the Agency for Toxic Substances and Disease Registry reimbursement, etc., funds will be held in the DOE-OR financial plan and obligated as appropriate for DOE-OR-related activities.

9.3.3 Funding Work

The definitive elements of the WBS are time-oriented in the scheduling process. The combinations of costs and schedules for these activities are then grouped to determine the projected annual costs and associated obligational requirements to match the costs. The requirements for annual funding in any given budget year are identified through the submission of ADSs.

The primary documents for funding work for a fiscal year are the funding authorizations (FAs) issued by DOE-OR, which identify prior-year uncosted and current fiscal year budget outlay (BO) and budget authority (BA). Although OR-1 is operationally funded, these funds can also be used for related capital equipment and construction work. The FA provides both administrative and legal control over the commitment and the expenditure of funds. The actual obligation of the allocated funds is accomplished by contract modification.

Fig. 9.2. The federal budget process for Environmental Restoration.

Once OR-1 funds are obligated/committed to the prime contractors, a performance measurement system is used to compare actual expenditures or costs with those originally planned or scheduled for each identified element of the PSWBS.

Funding is the release of dollars to perform authorized work. Funds-control techniques are utilized by DOE-OR to ensure that obligations do not exceed the funds available and that the obligations are stated correctly. Financial information is collected monthly, and the budgeted rate is compared to the actual rate of obligation and expenditure of funds. Funds-control subtier plans and/or procedures are developed by each prime participant.

9.4 WORK AUTHORIZATION

At the beginning of each fiscal year, new work not previously identified will be authorized by DOE-OR ERD Project Management Division using the DOE-OR ERD Directive System. The IC will work with the Core Team to prepare and submit Requests for Work Authorization to the DOE-OR ERD prior to the beginning of each fiscal year. DOE-OR ERD will use a modified version of Form OR-637 as the mechanism for work authorization (see Appendix IV). A separate Request for Work Authorization will be submitted by the IC for each level 2 WBS activity (e.g, one for the Y-12 Plant, one for Off-Site, one for RA project management, etc.).

The initial Work Authorization (WA) will be assigned a unique WA number (i.e., ADS no.), which will be retained for the duration of the work. Modifications to the WA will be numbered sequentially.

The WA is the mechanism which authorizes (1) the execution of Contract Obligation Notices in the case of nonintegrated prime contractors and (2) the performance of work by the FMC.

Funds for performing the work authorized by the WAs are made available to the various contractors as described in Sect. 9.3.2.

9.5 ALLOCATION OF FUNDS

9.5.1 Financial Plans

DOE-OR receives funding to execute OR-1 assignments through the Approved Funding Program (AFP) and allotment process. The cornerstone of the DOE-OR funds-control system is the *funding authorization system*.

FAs are issued to the prime contractors by the tenth of each month. These documents provide authority to incur commitments and costs against their contract. The FAs identify both the congressional controls and administrative controls that are mandatory for financial compliance.

The process for preparation of the FA is as follows:

- Upon receipt of the AFP, DOE-OR's P&BD revises the data bases to reflect changes in funding (both additions and reductions).
- Energy Systems PI&A will request a revised ER Directive based on the latest project estimates. DOE-ERD Project Management Division will revise the ER Directive and advise P&BD of the allocation for cost and commitments for each ADS. P&BD will revise the Financial Plan to reflect the ER Directive amounts and will mark up the data bases to reflect the ADS allocations.
- The FAs will be issued to the prime contractors as funds become available.

9.5.2 Prime Procurement and Purchase Orders

In accordance with the AFP, P&BD will maintain a tracking system for allocating funds for all prime procurement.

To ensure funds control, all procurement actions should be routed through P&BD for certification of funding availability.

9.5.3 Funds-Certification Officials

The P&BD budget analyst for the DOE-OR ERD (or his/her supervisors) is the DOE official who has the authority to certify funding availability that results in the government acquiring a financial commitment.

All documents that increase or reduce funding for any OR-1 participant should be routed through the certifying official.

9.6 PERFORMANCE MEASUREMENT

All OR-1 participants will use management control systems that facilitate performance measurement within their CWBS framework. Detail project schedules and cost estimates are to be developed for each element of their CWBS for assistance in determining the most appropriate technique for measuring cost and schedule performance. Reports prepared for DOE-OR will (1) portray budget allocated to specific OR-1 tasks; (2) indicate work progress; (3) properly relate cost, schedule, and technical accomplishments; and (4) supply management with a practical level of summarization.

Each prime participant in OR-1 develops its own performance measurement baseline from the summarization of all internal organizations' time-phased budgets and undistributed budget, which represents authorized work not yet assigned to a specific organization. This baseline plus the management reserve budget, which is negotiated with DOE-OR and utilized for internal performance measurement baseline changes, is each participant's contract budget base.

The management control system allows project management to gauge progress toward subproject objectives and work tasks. Work accomplished is assessed as objectively as possible. Budgets and schedules are identified directly and consistently with the accomplishment of work, so that the measurement of performance is more than the measurement of spending.

DOE-OR contractors will develop system description documents that define their management control systems to be utilized in OR-1.

9.7 DATA ANALYSIS

The data utilized by all participants to facilitate performance measurement are budgeted cost of work scheduled (BCWS), budgeted cost of work performed (BCWP), actual cost of work performed, estimate at completion, or current working estimate, budget at completion, schedule variance (SV), and cost variance (CV). Individual contractor performance measurement data, OR-1 BA, BO, and schedule data, and in-depth review information are utilized to analyze the status; to forecast, verify, or question the future status; to identify areas that require attention; and to form a basis for management and control decisions.

The cost and schedule data from all OR-1 participants are analyzed by the IC and included as a part of periodic performance reviews. The information is used to identify trends, identify the need for corrective actions, and evaluate the effectiveness of actions previously taken.

Two types of variances monitored are CV and SV. Cumulative-to-date and incremental variances are evaluated monthly. Variance analyses are reported by OR-1 participants at the appropriate level of the PSWBS.

The IC incorporates/integrates OR-1 status for all participants. Other DOE-OR prime participants provide cost and schedule data and variance explanations to the IC for integration and analyses for the OR-1 total.

9.8 BASELINE CONTROL

The technical scope, cost, and schedule baseline for the total OR-1 will be termed the "life-cycle baseline" and will be composed of two segments: (1) the work defined in the first 7 years and (2) the forecast for the total project. The cost, schedule, and technical baseline associated with the work in the 7-year period will be subject to formal baseline control through established procedures. As the 7-year window is updated, the second segment of the baseline will also be revised at least annually by the IC based on input from participating prime contractors. The baseline may be updated at other times based on significant project developments, such as impacts resulting from unplanned events during the assessment process, etc. The revised life-cycle baseline will be submitted to DOE-OR for review as a part of the approval process.

After establishment of cost, schedule, and technical baselines, control is maintained jointly by DOE-OR and the prime contractors through established procedures as referenced in Annex C. These baseline change control procedures specify the threshold limits that, if exceeded, require changes to the original MSA project plan for record purposes.

Chapter 10

INFORMATION AND REPORTING

Effective management of the OR-1 requires a formal system for the exchange of information between participants and the documentation of cost and schedule information and technical progress. To fulfill this need, all project participants are contractually required to submit external reports with defined content and timing to DOE-OR. OR-1 reporting will be accomplished through monthly progress reports, project coordination meetings, and project review meetings.

10.1 PROGRESS REPORTS

DOE-OR requires that all contractor reporting be in accordance with the policies established by DOE Order 1332.1A, *Uniform Reporting System*. The Cost Performance Report (CPR) is the vehicle used to accumulate and report cost and schedule performance data for OR-1, and it will be provided on a monthly basis. Copies of each contractor's CPRs will be provided to the IC, which will integrate the actual cost and performance data for each contractor with data reported by other participants to provide integrated reports for DOE-OR. Status reports containing funding information will also be issued to track BA/BO, commitments, and accrued cost. Progress, accomplishments, problems, impacts, and corrective actions will be reported on a periodic basis, as specified in the Reporting Requirements Checklist that is negotiated between OR-1 participants and DOE-OR. (See Fig. 10.1 for a sample checklist.) Special instructions will be included on the Reporting Requirements Checklist to identify any supplemental information required, such as the month through which cost data are accrued and reported. The Milestone Schedule Status Report is the vehicle used to reflect status for all prime participants. The format and content of these progress reports are to be coordinated with DOE-OR and defined in lower-tier plans and procedures. The OR-1 monthly PTS reporting schedule provided in Fig. 10.2 shows the information that needs to be provided to the IC by *all participants* and when this information needs to be provided. The PTS tracks progress data for costs, milestone/schedule, and technical parameters, including baseline tracking data for each subproject. The IC consolidates the Project data and issues monthly reports covering this information to DOE-OR.

10.2 CONTRACTOR COST PLANS

Each OR-1 contractor is required to establish and maintain a time-phased cost plan that interfaces with the integrated installation cost plans. Contractors develop their cost plans in a manner that permits integration with the detailed schedules. Contractors may use any cost/scheduling software package as long as it allows for the electronic transfer of cost information to the IC's data base.

DOE F1332.1
(11-84)U.S. DEPARTMENT OF ENERGY
REPORTING REQUIREMENTS CHECKLISTFORM APPROVED
OMB NO. 1900-1401

1. PROGRAM/PROJECT TITLE Environmental Restoration Program		2. IDENTIFICATION NUMBER		
3. PARTICIPANT NAME AND ADDRESS				
4. PLANNING AND REPORTING REQUIREMENTS				
A. General Management		Frequency	E. Financial Incentives	
☒ Management Plan		O	☐ Statement of Income and Expense	
☒ Status Report		M	☐ Balance Sheet	
☐ Summary Report			☐ Cash Flow Statement	
B. Schedule/Labor/Cost			☐ Statement of Changes in Financial Position	
☒ Milestone Schedule/Plan		M	☐ Loan Drawdown Report	
☐ Labor Plan			☐ Operating Budget	
☐ Facilities Capital Cost of Money Factors			☐ Supplementary Information	
☐ Computation			F. Technical	
☐ Contract Facilities Capital and Cost of Money			☐ Notice of Energy RD & D Project (Required with any of the following)	
☒ Cost Plan		Y	☐ Technical Progress Report	
☒ Milestone Schedule/Status		M	☐ Draft for Review Final for Approval	
☐ Labor Management Report			☐ Topical Report Final Technical Report	
☐ Cost Management Report			☐ Draft for Review Final for Approval	
C. Exception Reports			☐ Software Other (Specify)	
☐ Conference Record			☒ Contract Funds Status Report	
☐ Hot Line Report			☒ BCWS Plan	
D. Performance Measurement			☒ Regulatory Compliance Reports	
☒ Management Control System Description		O	☒ Program Review	
☒ WBS Dictionary		A	☒ Current Year Work Plans	
☒ Index		A	☒ Project Review	
☒ Element Definition		A		
☒ Cost Performance Reports		M		
☒ Format 1 - WBS		M		
☒ Format 2 - Function		M		
☒ Format 3 - Baseline		M		
☒ Format 5 - Variance Analysis		M		
5. FREQUENCY CODES				
A - As Required		M - Monthly	S - Semi-Annually	
C - Change to Contractual Agreement		O - Once After Award	X - With Proposal/Bid/Application or with Significant Changes	
F - Final (end of effort)		Q - Quarterly	Y - Yearly or Upon Renewal of Contractual Agreement	
6. SPECIAL INSTRUCTIONS (ATTACHMENTS)				
☐ Report Distribution List/Addressees		☒ Analysis Thresholds		
☐ Reporting Elements		☐ Work Breakdown Structure		
☒ Due Dates		☐ Other		
7. PREPARED BY (SIGNATURE AND DATE)		8. REVIEWED BY (SIGNATURE AND DATE)		

Fig. 10.1. Sample Reporting Requirements Checklist.

Fig. 10.2. Typical monthly reporting schedule for the ER Program.

10.3 PROJECT REVIEW

The semiannual review of OR-1 involves the Core Team performing a thorough analysis of all cost and schedule data through the cutoff date for the reporting period; evaluating the current status of each subproject; identifying overall accomplishments, problems, and potential problems at the summary subproject level; and forecasting ultimate overall performance. The cost and schedule analysis involves a detailed evaluation of the remaining work to be performed by subproject, an analysis of contingency requirements necessary to complete the work, and a reassessment of all work schedules for performance of the work.

10.4 REGULATORY STATUS REPORTS

10.4.1 FFA, FFCA, and TSCA Reporting Requirements

The FFA requires written quarterly progress reports that describe in detail the actions taken during the quarter to implement the requirements of the FFA. Each report must also include a detailed statement identifying any anticipated delays in meeting time schedules, the reasons for the delays, and the actions taken to prevent or mitigate the delays. These reports are to be submitted to the EPA and TDEC.

The TSCA FFCA requires annual progress reports to be included in the DOE Annual Compliance Agreement Report. These reports are subject to EPA inspection. The IC is responsible for providing the information to DOE-OR for the reports. The progress reports will include an inventory of items disposed of. Certifications to EPA will also be required as work items are completed in accordance with the compliance dates.

10.4.2 Administrative Orders by Consent

DOE-OR provides monthly written progress reports to the EPA, the commonwealth of Kentucky, and the state of Ohio, according to the schedule contained in the work plans (Chap. 4 of this document). As a minimum, these reports (1) describe the actions that have been taken toward achieving compliance with the ACO; (2) include all the results of sampling, tests, and all other data received by DOE-OR within the reporting period; and (3) include all plans and procedures that are completed subsequent to EPA approval of the work plan, as well as such actions, data, and plans that are scheduled for the next month. These reports are to be submitted to the EPA no later than the 15th day of each month following the commencement of work by DOE-OR under the work plan.

10.4.3 SARA 120 Reporting Requirements

SARA, Sect. 120(e)(5), requires federal agencies to submit an annual report to Congress regarding progress in implementing SARA requirements. Input for the report on both the ORR NPL site and the non-NPL sites (Paducah and Portsmouth) is to be submitted to DOE-OR each year by the IC in late November or early December. Each prime participant provides input by mid-November to the IC, who consolidates the information and transmits it to DOE-OR.

10.5 ADMINISTRATIVE RECORD

DOE-OR has assigned responsibility for maintaining the off-site Administrative Records and an index for all records for the OR-1 to its TSCs. In support of this activity, Energy Systems will provide the TSCs with all cleared documents they identify for the Administrative Record, based on criteria developed by Energy Systems and the TSCs and approved by DOE-OR. Documents that do not have clearance will be cleared or documented as classified material in the index. Energy Systems will maintain a backup Administrative Record for DOE-OR.

10.6 PROJECT STATUS MEETINGS

To facilitate the effective and timely exchange of information between OR-1 participants, regular coordination meetings and review meetings are held to exchange general information, review and identify action items, report subproject and project status, and exchange technical information. Other meetings are scheduled on an as-needed basis, including technical review meetings, change control meetings, and project/subproject reviews. All OR-1 participants are to provide up-to-date information to the IC.

10.7 DATA MANAGEMENT FOR REGULATORY AGREEMENTS

All data and studies produced under regulatory agreements are managed and presented in accordance with the requirements contained in a Data Management Plan developed by the regulatory agency and DOE-OR. The plan is appended to the regulatory agreements after the effective date of the agreements. DOE-OR will maintain a consolidated data base (or Environmental Information System) for the ORR that includes all data and studies generated pursuant to the regulatory agreements and those generated under federal and state environmental permits.

10.8 DOCUMENT TRACKING SYSTEM

The Intelligent Document Control System (IDCS) is an automated system designed to track technical documents and associated milestones in support of the FFA governing OR-1 at ORR and in support of other facility agreements for Portsmouth and Paducah. This tracking system is to be used for scheduling, tracking, and reporting on the status of the creation, transmission, review, comment, response, extensions, and approval of required regulatory primary, secondary, and other selected documents. This system is to be integrated with other OR-1 scheduling systems. NEPA documents will also be tracked by IDCS. The types of documents that this system will allow DOE-OR to complete and transmit to the EPA, the TDEC, the commonwealth of Kentucky, and the Ohio EPA are shown in Table 10.1.

Table 10.1. Regulatory reporting documents

General FFA Documents

Administrative Record Index
Community Relations Plan
Closeout Report
Quarterly Status Report
Corrective Measure Study (CMS) Work Plan

NEPA Documents

Environmental Impact Statement
Environmental Assessment
Categorical Exclusion

FFA Primary Documents (Region IV)

RI Work Plan
Remedial Investigation (RI) Report
Feasibility Study (FS) Reports
Proposed Remedial Action Plan
Interim Record of Decision
Record of Decision
Remedial Design Work Plan
Design Report
Remedial Action Work Plan
Final Remediation Report

FFA Secondary Documents—if required (EPA-IV)

Site Sampling and Analysis Plan
Preliminary Characterization Summary Report
Baseline Risk Assessment Report
Treatability Study Report

ACO Documents (EPA-V)

Quadrant Work Plan
Quadrant RCRA Facility Investigation Report
Quadrant CMS Work Plan
Quadrant CMS Report
Quadrant Correct Measures Implementation
Work Plan
Monthly Progress Report

RCRA Documents (Region IV)

Quadrant Work Plan
Quadrant RCRA Facility Investigation NPL
Report
Quadrant Corrective Measures Study
Quadrant CMS Report
Quadrant Correct Measures
Implementation Work Plan
Monthly Progress Report

Other Required Documents

Safety Analysis Report
Operable Unit Proposed Plan
Draft Permit Modification
Design Plans and Specification
Environmental Monitoring Plan
Field Sampling Plan
Progress Report

Chapter 11

REFERENCES

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14. Department of Energy, Environmental Restoration Program, Major System Acquisition OR-1, Project Plan (latest revision).

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Appendix I
WORK BREAKDOWN STRUCTURE DICTIONARY

DOE F1332.11
(11-84)U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART I - INDEXFORM APPROVED
OMB NO. 1901-1400

PROJECT TITLE/PARTICIPANT										2. DATE		3. IDENTIFICATION NUMBER		
Environmental Restoration/Martin Marietta Energy Systems										12/19/91		DE-AC03-84OR21400		
4. LINE NO.	5. WBS ELEMENTS							6. PARTICIPANT WBS ELEMENT CODE	7. BUDGET AND REPORTING NO.	8. PHASE	9.			
	INDENTURE LEVEL										TITLE	OTHER		
												COA	SON	
	1	2	3	4	5	6	7	-						
1				X					OR-1	1.4.12				
2				X					Y-12 PLANT	1.4.12.1				
3					X				REMEDIAL ACTION	1.4.12.1.1				
4						X			CHESTNUT RIDGE	1.4.12.1.1.01				
5						X			BEAR CREEK VALLEY	1.4.12.1.1.02				
6						X			UPPER EAST FORK POPLAR CREEK	1.4.12.1.1.03				
7						X			CAPCA PHASE I	1.4.12.1.1.04				
8						X			CAPCA PHASE II	1.4.12.1.1.05				
9						X			RA S & M	1.4.12.1.1.06				
10					X				D&D FACILITIES	1.4.12.1.2				
11						X			Y-12 PLANT FACILITIES D&D	1.4.12.1.2.01				
12						X			PROGRAM MANAGEMENT SUPPORT	1.4.12.1.3				
13						X			PROGRAM MANAGEMENT SUPPORT	1.4.12.1.3.01				
14						X			SEM	1.4.12.1.4				
15						X			SEM	1.4.12.1.4.01				
16					X				FIELD OFFICE SUPPORT	1.4.12.2				
17						X			PROGRAM MANAGEMENT SUPPORT	1.4.12.2.1				
18						X			DOE DIRECT	1.4.12.2.1.01				
19						X			AIP	1.4.12.2.1.02				
20						X			CONTRACT MANAGEMENT SUPPORT	1.4.12.2.1.03				
21						X			TECHNICAL INTEGRATION	1.4.12.2.1.04				
22						X			T/S/D FACILITIES	1.4.12.2.2				
23						X			WASTE MANAGEMENT	1.4.12.2.2.01				
24					X				OAK RIDGE RESERVATION	1.4.12.3				
25						X			REMEDIAL ACTION	1.4.12.3.1				
26						X			WHITE OAK CREEK EMBAYMENT	1.4.12.3.1.01				
27						X			WATTS BAR RESERVATION	1.4.12.3.1.02				
28						X			NON-FFA PROJECTS	1.4.12.3.1.03				
29						X			EAST FORK POPLAR CREEK	1.4.12.3.1.04				
30					X				K-25 SITE	1.4.12.4				
31						X			REMEDIAL ACTION	1.4.12.4.1				
32						X			MAIN PLANT AREA	1.4.12.4.1.01				
33						X			PROCESS AREA	1.4.12.4.1.02				
34						X			EXTERNAL AREA	1.4.12.4.1.03				
35						X			POND WASTE MANAGEMENT	1.4.12.4.1.04				
36						X			GROUNDWATER PROTECTION	1.4.12.4.1.05				
37						X			RA S & M	1.4.12.4.1.06				
38						X			D&D FACILITIES	1.4.12.4.2				
39						X			K-25 FACILITIES D&D	1.4.12.4.2.01				
40						X			PROGRAM MANAGEMENT SUPPORT	1.4.12.4.3				
41						X			PROGRAM MANAGEMENT SUPPORT	1.4.12.4.3.01				
42						X			SEM	1.4.12.4.4				
43						X			SEM	1.4.12.4.4.01				
44						X			LANDLORD	1.4.12.4.5				
45						X			LANDLORD CAPITAL EQUIPMENT	1.4.12.4.5.01				
46						X			LANDLORD CAPITAL CONSTRUCTION	1.4.12.4.5.02				
47						X			ORISE	1.4.12.5				
48						X			REMEDIAL ACTION	1.4.12.5.1				
49						X			ORISE RA INV	1.4.12.5.1.01				
50						X			OAK RIDGE NATIONAL LABORATORY	1.4.12.6				
51						X			REMEDIAL ACTION	1.4.12.6.1				
52						X			WAG 1	1.4.12.6.1.01				
53						X			WAG 2	1.4.12.6.1.02				
54						X			WAG 3	1.4.12.6.1.03				
55						X			WAG 4	1.4.12.6.1.04				
56						X			WAG 5	1.4.12.6.1.05				
COA = Code of Accounts														
SON = Statement of Work														

COA = Code of Accounts

SON = Statement of Work

DOE F1332.11
(11-84)U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART I - INDEXFORM APPROVED
OMB NO. 1901-1400

PROJECT TITLE/PARTICIPANT										2. DATE		3. IDENTIFICATION NUMBER	
Environmental Restoration/Martin Marietta Energy Systems										12/19/91		DE-AC05-84OR21400	
4. LINE NO.	5. WBS ELEMENTS							6. PARTICIPANT WBS ELEMENT CODE	7. BUDGET AND REPORTING NO.	8. PHASE	9. OTHER		
	INDENTURE LEVEL										TITLE	COA	SOW
	1	2	3	4	5	6	7						
113						X		SEM	1.4.12.8.4.01				

COA = Code of Accounts
SOW = Statement of Work

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1.4.12 OR-1

The objective of this project, which is a segment of the ER Program, is to eliminate or reduce to prescribed safe levels the risks to human health and safety and the environment posed by inactive and surplus sites and facilities managed by DOE-OR that have been contaminated by radioactive, hazardous, or mixed wastes. Further, after each surplus facility is formally accepted into the ER Program, S&M will be conducted on the facility, as necessary, until the appropriate D&D has been completed.

1.4.12.1 Y-12 Plant

This element is a summation of RA, D&D, and S&M activities associated with the Y-12 Plant necessary to comply with applicable federal and state laws and minimize the danger to human health and safety and the environment. Project management is included to support those necessary management and administrative activities.

1.4.12.1.1 Remedial Action

This element includes work in three geographical regions: Chestnut Ridge, Bear Creek Valley, and Upper East Fork Poplar Creek, each of which comprises OUs, study areas, and interim RAs. Each OU consists of both ground- and surface-water integrator units and source-term units. The first step in the remedial action process is to identify sites that have potential for releasing hazardous wastes into the environment. An assessment or investigation is then performed to determine whether the groundwater, surface water, or soil affected by the facility contains hazardous contaminants. If the investigation shows that the environment at the facility is not contaminated, the area adjacent to the site is declared clean and the investigation work is documented; however, if the investigation shows that the environment is contaminated and poses a current or future unacceptable risk to human health or the environment, appropriate RAs are developed and implemented.

1.4.12.1.2 D&D Facilities

This element includes all Y-12 Plant D&D activities, including S&M; D&D planning, which includes characterization of the radiological, hazardous, and mixed wastes and contaminants and safety risk; and D&D field tasks, which include removal, decontamination, ad dismantlement, or entombment. Building 9201-4 is the only facility accepted to date by MSA OR-1.

1.4.12.1.3 Project Management Support

The Project Management support functions for the Y-12 Plant typically include, but are not limited to, daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting, and subcontract administration.

1.4.12.1.4 S&M

The S&M activities at the Y-12 Plant, which are required to ensure adequate containment and site control after RA is completed, typically include the following: monitoring of sites or facilities that contain some level of residual contamination after

cleanup; maintaining physical protection from the public or potential intruders; and long-term cleanup actions such as groundwater treatment.

1.4.12.2 Field Office Support

This element is a summation of DOE-OR support consisting of Project Management, which includes AIPs, Contract Management support, and Technical Integration and treatment, storage, and disposal facilities associated with Waste Management.

1.4.12.2.1 Project Management Support

The Project Management support functions for DOE-OR typically include, but are not limited to, direct project oversight, QA, health and safety, cost/schedule control, baseline management, project reporting, and contract administration. Additional work entails support for the Tennessee Department of Energy Oversight, formed in May 1992, following the signing of the AIP between the state of Tennessee and DOE.

1.4.12.2.2 Treatment, Storage, and Disposal Facilities

The activities in this element include, but are not limited to, planning, support, and operation of the ER Waste Management facilities; development and implementation of methods for waste minimization; design, construction, and operation of waste storage facilities; development and operation of treatment and disposal facilities; and typical staff functions, such as procedure development and training, project planning (to include waste generation rate forecasting and facility capacity evaluations), and waste data management and tracking.

1.4.12.3 Oak Ridge Reservation

This element is a summation of off-site RA activities associated with the DOE-OR ORR necessary to comply with applicable federal and state laws, DOE orders, and FFA agreements to minimize the danger to human health and safety and the environment.

1.4.12.3.1 Remedial Action

This element includes RAs on White Oak Creek Embayment, Watts Bar Reservation, Non-FFA Projects, and East Fork Poplar Creek. Activities include both assessment and remediation work in off-site locations in the Oak Ridge area.

1.4.12.4 K-25 Site

This element is a summation of RA, D&D, S&M, and Landlord (which includes capital equipment and capital construction) activities associated with the K-25 Site necessary to comply with applicable federal and state laws and minimize the danger to human health and safety and the environment. Project Management is included to support those necessary management and administrative activities.

1.4.12.4.1 Remedial Action

The K-25 Site RA element encompasses site inspections, RIs, RDs, and RAs within three geographical regions in addition to Pond Waste Management and Groundwater Protection. The three geographical areas are designated main plant area, process area, and external area, each of which comprises OUs, study areas, and interim RAs. The Pond Waste Management scope includes performing corrective measures activities at various locations within the K-25 Site.

Groundwater Protection activities include management of the K-25 Groundwater Protection Program, RCRA compliance activities, program integrity, surveillance, hydrogeologic characterization, and well monitoring and installation for the purpose of assisting ER investigations.

1.4.12.4.2 D&D Facilities

This element includes all K-25 Site D&D activities, including S&M; D&D planning, which includes characterization of the radiological, hazardous, and mixed wastes and contaminants and safety risk; and D&D field tasks, which include removal, decontamination, ad dismantlement, or entombment. To date, 70 UE facilities in this category have been identified, of which 56 are gaseous diffusion facilities and 20 were involved with the centrifuge process. These facilities occupy over 307 acres of floor space, contain more than 5000 stages of process equipment, and were serviced by numerous utility, electrical, ventilation, and cooling systems.

1.4.12.4.3 Project Management Support

The Project Management support functions for the K-25 Site typically include, but are not limited to, daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting and subcontract administration.

1.4.12.4.4 S&M

The S&M activities at the K-25 Site that are required to ensure adequate containment and site control after RA include the following: scheduled site inspections, health physics surveys, industrial hygiene surveys, maintenance of containment systems, monitoring instrumentation calibration, and general building maintenance. These activities are conducted to protect the health and safety of on-site workers, the general public, and the environment, and will be continued as long as necessary.

1.4.12.4.5 Landlord

The K-25 Site Landlord program provides for general site support of facilities and equipment that by design or use are not dedicated to a single subproject. The Landlord function primarily entails replacement/upgrades of building, systems, and equipment.

1.4.12.5.1 Remedial Action

This element includes assessment and cleanup of contaminated areas within the ORAU South Campus Facility, where research with a variety of animals took place, and the Freels Bend Area, where the low-level dose facility, the variable-rate facility, and three landfills used for animal carcass disposal were located.

1.4.12.6 Oak Ridge National Laboratory

This element is a summation of RA, D&D, and S&M activities associated with ORNL necessary to bring it into compliance with applicable federal and state laws and minimize the danger to human health and safety and the environment. Project Management is included to support those necessary management and administrative activities.

1.4.12.6.1 Remedial Action

This task provides for the assessment and cleanup of contaminated areas within ORNL. A wide variety of liquid and solid wastes, primarily radioactive or mixed wastes, has been disposed of on site; 300 contaminated sites have been identified within the 2900-acre plant area. Such sites include SWSAs, waste ponds and seepage pits, underground low-level liquid waste storage tanks, radioactive waste processing and transfer facilities, research laboratories, dedicated environmental research areas, experimental reactors, radioisotope development facilities, and the areas surrounding these sites.

In view of the large number of sites to be considered and the hydrogeologic complexity of the ORNL area, the RAs strategy is oriented toward WAGs. Currently, ORNL has been divided into 12 such groupings defined by watersheds that contained contiguous and similar RA sites, each representing distinct small drainage areas into which similar contaminants were introduced.

1.4.12.6.2 D&D Facilities

This element includes all ORNL D&D activities, including S&M; D&D planning, which includes characterization of the radiological, hazardous, and mixed wastes and contaminants and safety risk; and D&D field tasks, which include equipment removal, decontamination, dismantlement, or entombment. To date, 34 facilities have been accepted by the MSA OR-1. The facilities are grouped in the following D&D projects:

Molten Salt Reactor Experiment
Shielded Transfer Tanks
Oak Ridge Research Reactor
Experimental Facilities
Metal Recovery Facility
Fission Product Development Laboratory
Inactive Cells
Homogeneous Reactor Experiment
Fission Product Pilot Plant
Waste Evaporator Facility

Old Hydrofracture Facility
Low-Intensity Test Reactor
ORNL Graphite Reactor
High-Level Chemical Development Laboratory
Molten Salt Corrosion Loop
Coolant Salt Technology Facility
Oil Storage Tank
Decontamination Facility (9419-1)

1.4.12.6.3 Project Management Support

The Project Management support functions for ORNL typically include, but are not limited to, daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting and subcontract administration.

1.4.12.6.4 S&M

The S&M activities at ORNL which are required to ensure adequate containment and site control after RA include the following: scheduled site inspections, health physics surveys, industrial hygiene surveys, maintenance of containment systems, monitoring instrumentation calibration, and general building maintenance. These activities are conducted to protect health and safety of on-site workers, the general public, and the environment, and will be continued as long as necessary.

1.4.12.7 Paducah Gaseous Diffusion Plant

This element is a summation of RA, D&D, and S&M activities associated with PGDP necessary to bring it into compliance with applicable federal and state laws and minimize the danger to human health and safety and the environment. Project Management is included to support those necessary management and administrative activities.

1.4.12.7.1 Remedial Action

The PGDP RA element represents an effort to meet regulatory requirements and to protect both on-site and off-site personnel, as well as the environment, through investigation and corrective actions of solid waste management units (SWMUs) and identified areas of concern (AOCs). The SWMUs/AOCs include spill sites, landfills, surface impoundments, treatment units, scrap yards, and other facilities that have received wastes at any time, regardless of the type of waste placed in the unit. The SWMUs/AOCs to be investigated and/or remediated have been identified in Appendix A-1 of the HSWA Permit.

1.4.12.7.2 D&D

This element includes all PGDP D&D activities, including S&M; D&D planning, which includes characterization of the radiological, hazardous, and mixed wastes and contaminants and safety risk; and D&D field tasks, which include equipment removal, decontamination, dismantlement, or entombment. Two major complexes have been accepted by MSA OR-1: the C-340 metals plant and the C-410 feed plant.

1.4.12.7.3 Project Management Support

The Project Management support functions for PGDP typically include, but are not limited to, daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting, and subcontract administration.

1.4.12.7.3 Project Management Support

The Project Management support functions for PGDP typically include, but are not limited to, daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting, and subcontract administration.

1.4.12.7.4 S&M

The S&M activities at PGDP that are required to ensure adequate containment and site control after RA include the following: scheduled site inspections, health physics surveys, industrial hygiene surveys, maintenance of containment systems, monitoring instrumentation calibration, and general building maintenance. These activities are conducted to protect health and safety of on-site workers, the general public, and the environment, and will be continued as long as necessary.

1.4.12.8 Portsmouth Gaseous Diffusion Plant

This element is a summation of RA, D&D, and S&M activities associated with PORTS necessary to bring it into compliance with applicable federal and state laws and minimize the danger to human health and safety and the environment. Project Management is included to support those necessary management and administrative activities.

1.4.12.8.1 Remedial Action

The PORTS RA element consists of those activities included within the RCRA corrective action process, closures, interim remedial measure, RCRA surface impoundment and landfill closures, actions involving storage tanks, and other projects specified in the state of Ohio Consent Decree. The RCRA corrective actions to be carried out in each of four on-site quadrants, in the RCRA closures, and in specified off-site areas include those activities defined by the state of Ohio Consent Decree and the U.S. EPA ACO involving the RFI, CMS, and Corrective Measures Investigation process. The RFA has already been completed. Principal substances identified preliminarily are chlorinated solvents, chlorinated solvents mixed with low-level radioactive isotopes, and PCBs. The RAs will be integrated into NEPA.

1.4.12.8.2 D&D Facilities

This element includes all PORTS D&D activities, including S&M; D&D planning, which includes characterization of the radiological, hazardous, and mixed wastes and contaminants and safety risk and D&D field tasks, which include equipment removal, decontamination, dismantlement, or entombment. Eight facilities have been accepted by MSA OR-1. Six facilities are associated with past centrifuge plant construction, and two facilities are associated with past diffusion plant operations.

1.4.12.8.3 Project Management Support

The Project Management support functions for PORTS typically include, but are not limited to daily project supervision, QA, health and safety, cost/schedule control, project integration, project reporting, and subcontract administration.

1.4.12.8.4 S&M

The S&M activities at PORTS that are required to ensure adequate containment and site control after RA include the following: scheduled site inspections, health physics surveys, industrial hygiene surveys, maintenance of containment systems, monitoring instrumentation calibration, and general building maintenance. These activities are conducted to protect health and safety of on-site workers, the general public, and the environment, and will be continued as long as necessary.

Appendix II
CHARTER DOCUMENTS

Secretary of Energy Notice SEN-6B-90, Departmental Organizational and Management Arrangements, August 2, 1990. (Not included in Appendix II.)

J. LaGrone (Manager, DOE-OR), letter to C. C. Hopkins Martin Marietta Energy Systems, Inc., "Management of Oak Ridge Environmental Cleanup Program," May 29, 1989.

W. D. Adams (DOE-OR AMERWM), letter to C. A. Hall and J. R. Merriman, Martin Marietta Energy Systems, Inc., "Management of Paducah and Portsmouth Environmental Restoration and Waste Management Programs," June 6, 1990.

W. D. Adams (DOE-OR AMERWM), letter to L. D. Bates (Martin Marietta Energy Systems, Inc.) et al., "Environmental Restoration Community Relations—Roles and Responsibilities," June 21, 1990.

Memorandum of Agreement Between the AMERWM and the AMERD, DOE-OR, August 30, 1990.

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8621

May 29, 1989

Mr. Clyde C. Hopkins, President
Martin Marietta Energy Systems, Inc.
Post Office Box 2009
Oak Ridge, Tennessee 37831-8001

Dear Clyde:

MANAGEMENT OF OAK RIDGE ENVIRONMENTAL CLEANUP PROGRAM

An interagency agreement (IAG) is currently being negotiated with the Environmental Protection Agency-Region IV and Tennessee Department of Health and Environment for cleanup of the Oak Ridge Reservation (ORR) and off-site contamination. The IAG designates a DOE Project Engineer who will be responsible for IAG regulatory deliverables, including remedial investigation reports and completion of cleanup milestones. As a result of the IAG, Oak Ridge Operations (ORO) has consolidated management of the Oak Ridge environmental cleanup program under the Waste, Environmental and Emergency Management (WEEM) Division. The Oak Ridge environmental cleanup program includes cleanup activities funded by the Defense Program's (DP) Environmental Restoration Program at the Y-12 Plant, Oak Ridge National Laboratory, Oak Ridge Gaseous Diffusion Plant, and off-site areas contaminated from past operations of these facilities. This program also includes cleanup activities funded by Nuclear Energy and Energy Research that by Headquarters agreement are managed by DP. To make this new management approach work, your proposal for a central Martin Marietta Energy Systems, Inc. (Energy Systems) environmental restoration office needs to be implemented. The enclosed chart (Enclosure I) shows the basic interfaces between WEEM, the Energy Systems central environmental restoration organization, other ORO organizations and regulatory agencies.

An Oak Ridge Environmental Restoration Program Management Plan is being developed which will define the interfaces between the new central organizations and the facilities. However, some guidance is provided below:

1. The facility operator will be responsible for routine maintenance, surveillance, and compliance monitoring of an inactive site prior to remedial actions (site construction) and after remedial actions are completed.
2. Once remedial investigations of an inactive site begin, sampling and analysis of groundwater wells that support the work plan will be the responsibility of the central environmental restoration organization.

Mr. Clyde C. Hopkins

-2-

May 29, 1989

3. RCRA closures under way will be completed by the facilities (e.g., CAPCA).
4. New treatment/storage facilities exclusively required for remediation will be the responsibility of the central environmental restoration organization.
5. Facility Operator has overall plant health, safety and environmental responsibility. Worker health and safety during remedial investigations and remedial actions are the responsibility of the central environmental restoration organization. The central organization must assure that subcontractors have in place effective health and safety procedures in accordance with my October 17, 1986, letter to Ken Jarmolow, subject "Work in Contaminated Areas."
6. Implementation of the decommissioning and decontamination program will be the responsibility of the facilities unless it is an integral part of remediating a land unit.

Please have your appropriate staff work with Bob Sleeman (6-0715) to further define interfaces between the central organizations and the facilities and to finalize the program management plan. Enclosure II, Interfaces Between Central Environmental Restoration Office and Operating Plants, will be the basis for this effort.

Sincerely,

Joe La Grone
Manager

Enclosures

cc w/enclosures:

A. W. Trivelpiece, Director, ORNL
G. G. Fee, Y-12 Plant Mgr., Bldg. 9704-2
W. R. Gollither, K-25 Site Manager, Bldg. 1001
M. E. Mitchell, ES&H, Bldg. 1001, K-25

MANAGEMENT OF OAK RIDGE ENVIRONMENTAL CLEANUP PROGRAM

ENCLOSURE 1

ENCLOSURE II

**INTERFACES BETWEEN CENTRAL ENVIRONMENTAL RESTORATION OFFICE
AND OPERATING PLANTS****OVERALL RESPONSIBILITIES****1. Environmental Restoration Office (ERO)**

- Inactive site covered by the Oak Ridge IAG during remediation
- Inactive ORNL LLW tanks covered by the IAG during remediation
- Conduct remedial investigations, including well drilling, sampling and analysis
- Prepare Decision Documents
- Implement remedial actions as required by Record of Decision

2. Operating Plants (OPs)

- Active waste treatment, storage and disposal facilities
- Replacement and new ORNL waste systems, including tanks and Waste Handling and Packaging Plant (WHPP)
- Surveillance and maintenance of inactive sites/tanks prior to and after remediation

INTERFACES**1. Budgets/Prioritization**

- ERO has overall responsibility for prioritization, including regulatory interface
- OPs provide input, participate and concur with prioritization
- OPs submit Defense Program requirements for D&D and surveillance and maintenance to ERO
- ERO submits overall Defense Programs ER program budget to Headquarters
- OPs submit other (everything except GF) IAG ER budget request to Planning and Budget as part of normal budget process
- OPs develop plant ES&H budget cross-cuts and other plant budget studies and report. including ER with input from ERO

-2-

2. Interagency Agreement (IAG)

- ERO has overall responsibility
- OPs participate in negotiating agreements with EPA & TDHE on existing affected waste operating systems and on replacement of waste system
- ERO must clearly define split in environmental responsibility between ERO and OPs and obtain EPA and TDHE concurrence of understanding

3. NEPA Documentation

- OPs provide plan and documentation, operating commitments in permits, environmental data, etc., to ERO for preparation of documents
- ERO has overall responsibility for preparation
- Documents prepared by independent contractor
- OPs concur in determination recommendation

4. Selection of Remedial Action Alternative

- OPs provide plant and system data to ERO for preparation of decision documents
- ERO/OPs determine recommended alternative
- ERO prepares decision documents and transmits to regulators with OPs concurrence

5. Surveillance and Maintenance

- Surveillance and maintenance has highest priority under Five-Year Plan priority system and will be funded by Environmental Restoration
- Requests for additional funds for surveillance and maintenance during a fiscal year will be made to ERO
- OPs responsible for identifying new site to ERO
- ERO responsible for surveillance and maintenance of inactive sites during remediation only

-3-

6. Waste Management

- Includes waste generated by ERO in sampling, remediation and interim corrective actions
- OPs are responsible for operation of onsite waste TSD facilities that handle ERO generated waste
- ERO needs to characterize and package waste in the form specified by the OPs
- ERO funds TSD of waste generated during remedial actions
- ERO would define types and quantities of waste to be generated and be responsible for interim storage until OPs can accept for treatment, storage and disposal

7. Environmental Monitoring

- OPs have overall responsibility
- ERO performs well installation and sampling and analysis required by approved work plans
- OPs approve ERO procedures for well installation, sampling, waste management, and worker safety
- Post-closure monitoring is the responsibility of the OPs
- ERO provides data and analysis to OPs for environmental monitoring reports
- ERO closes wells not required for post-closure monitoring
- Refer to Section 11 for accidental releases

8. Decontamination and Decommissioning of Inactive Facilities

- ERO/OPs determine interaction between site to be remediated and inactive facility
- ERO/OPs agree on responsibility for implementation
- OPs responsible for implementation unless facility removal is required as an integral part of remediating a land unit

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9. Permits

- OPs are responsible for new and existing onsite TSD facilities
- New facilities for clean-up only should be handled by ERO as required in the IAG
- Any permits will be reviewed by the OPs prior to submittal to the regulators

10. Safety and Health

- OPs have overall plant safety and health responsibility
- ERO develops plans and procedures to support sampling and remedial activities
- OPs approve the plans and procedures
- ERO implements the plans and procedures
- OPs oversee activities and have shutdown authority
- OPs provide plant documentation and conduct site review in support of safety documentation (safety assessment and safety analysis report)
- ERO prepares safety documentation
- OPs review and approve safety documentation and obtain Headquarters approval if required
- OPs/ERO conduct preoperational safety reviews with plant safety board

11. Accidental Releases

- ERO identifies and characterizes potential releases
- ERO immediately notifies OPs of a release
- ERO prepares incident report and submits it to OPs for review, approval, and transmittal to HQ or TDHE as appropriate
- ERO and OPs agree on corrective action plan and implementation responsibility
- ERO funds corrective action implementation

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12. Operational

- OPs input requirements to ERO on process system, utility and other support systems
- ERO generates interface plan which OPs approve
- OPs develop work permit system that ERO will use to ensure interfaces, outages, etc., are properly handled

13. Emergency Response

- ERO would prepare an emergency response plan as needed to OPs for approval
- OPs would provide training to ERO prior to any on-site work
- OPs responsible for emergency response

14. Engineering/Design

- ERO responsible for engineering/design to perform sampling, interim corrective measures and remediation
- OPs review and concur in design packages for operational interface and ES&H-related requirements
- OPs provide system and plant documentation/data to ERO for engineering/design
- ERO obtains EPA and TDHE approval

15. Construction (Wells, Corrective Measures and Remediation)

- ERO must obtain appropriate health, safety and plant training from OPs
- OPs monitor construction to assure procedures are being followed and coordination activities related to plant personnel health and safety
- OPs have authority to stop construction if approved procedures are not being followed or health and safety risks exist
- ERO responsible for compliance of health physics monitoring and decontamination of equipment and workers when required
- ERO prepares radiation work permits and complies with associated procedure

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- OPs will monitor construction activity and exit of equipment and workers to assure contamination does not leave site
- ERO funds OPs costs to provide above services

16. Planning

- ERO develops ER Program Plan and obtains OPs concurrence
- OPs update Environmental Long-Range Plan with ER program input from ERO

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8541

002604

June 6, 1990

Dr. Charles A. Hall
Vice President for Technical Operations
Martin Marietta Energy Systems, Inc.
Post Office Box 2009
Oak Ridge, Tennessee 37831-8004

Dr. J. R. Merriman
Vice President, Applied Technology
Martin Marietta Energy Systems, Inc.
Post Office Box 2003
Oak Ridge, Tennessee 37831-7133

Dear Drs. Hall and Merriman:

MANAGEMENT OF PADUCAH AND PORTSMOUTH ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT PROGRAMS

Recently, DOE Headquarters established the Office of Environmental Restoration and Waste Management to provide a central management of all the agency's environmental restoration and waste management programs, and ORO established a corresponding Assistant Manager for Environmental Restoration and Waste Management. At our request, Martin Marietta Energy Systems, Inc. (Energy Systems) established a central organization to manage the environmental restoration program for the Oak Ridge Reservation and a new, separate organization to manage the waste programs. To align the Energy Systems' management structure with DOE's, you are requested to expand the charter of your environmental restoration and waste management central organizations to include those corresponding programs at the Paducah and Portsmouth Gaseous Diffusion Plants.

The interfaces between the DOE Site Offices at Paducah and Portsmouth and ORO's Environmental Restoration and Waste Management Divisions at ORO have been concurred in by the COR for the Paducah and Portsmouth plants and is described in the enclosure to this letter. Your relations with the five

Drs. Hall & Merriman

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June 6, 1990

sites operated by Energy Systems should be consistent with the enclosure. To reflect this change, the Environmental Restoration Program Management Plan that you are currently developing should be expanded to include Paducah and Portsmouth.

If you have any questions, please call me at extension 6-0742.

Sincerely,

W. D. Adams, Acting Assistant Manager
Environmental Restoration and
Waste Management

EW-91:Sleeman

Enclosure

cc w/enclosure:

--Lanny Bates, 1210, ORGDP
Tim Myrick, 1037, ORGDP
David Allen, EO-222
Gene Gillespie, EO-221
Jim Hall, EO-20

ENCLOSURE

**INTERFACES BETWEEN
ORO ASSISTANT MANAGER FOR ENVIRONMENTAL RESTORATION
AND WASTE MANAGEMENT (AMERWM) AND
DOE PADUCAH AND PORTSMOUTH SITE OFFICES (SO)**

1. GENERAL

- The Site Offices have responsibility for routine maintenance, surveillance, and compliance monitoring of an inactive site prior to remedial actions (site construction) and after remedial actions are completed.
- Once remedial investigations of an inactive site begin, sampling and analysis of groundwater wells that support the work plan will be the responsibility of the Environmental Restoration Division (ERD).
- Dedicated waste treatment/storage/disposal (TSD) facilities will be the responsibility of AMERWM (including obtaining permits). Responsibility for waste treatment and storage facilities within UE production facilities will be assigned to the Site Offices.
- Site Offices have overall plant health and safety responsibility. Worker health and safety during remedial investigations/remedial actions (RI/RA) and operation of TSD facilities are the responsibility of AMERWM.
- AMERWM personnel stationed on-site report administratively to the DOE Site Managers.

2. BUDGETS/PRIORITIZATION

- AMERWM has overall responsibility for prioritization, including regulatory interface.
- Site Offices provide input on waste facilities managed by UE and participate in prioritization.
- AMERWM submits Environmental Restoration/Waste Management (ER/WM) program budget to EM and provides interface with EM organization.
- Site Offices/AMERWM review operating contractor ER/WM long-range plans, budget requests, and Activity Data Sheets.

3. ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT REGULATORY INTERFACE

- AMERWM has lead in day-to-day interface with regulatory agencies.
- Site Offices participate in regulatory meetings and in negotiating agreements as they may apply to non-ER/WM activities.

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- Site Offices maintain overall interface with regulators.
- Formal environmental restoration regulatory agreements are signed by AMERWM.
- Transmittals required by regulatory agreement are signed by AMERWM with concurrence of Site Offices.

4. REGULATORY DOCUMENTATION (NEPA, CERCLA, RCRA)

- Site Offices provide interface documentation, environmental data, etc., to AMERWM for preparation of documents.
- AMERWM has overall responsibility for preparation and execution of documentation related to ER/WM activities and facilities.
- Site Offices concur in determination recommendation.

5. SELECTION OF REMEDIAL ACTION ALTERNATIVE

- Site Offices provide plant and system data to ERD for preparation of decision documents.
- ERD/Site Offices determine recommended alternative.
- ERD prepares decision documents and transmits to regulators with Site Office concurrence.

6. WASTE MANAGEMENT

- Includes waste generated by production programs and ERD in sampling, remediation, and interim corrective actions.
- Waste Management Division (WMD) has responsibility for design, construction, and operation of on-site waste TSD facilities dedicated to waste management.
- Site Offices are responsible for characterization and packaging of waste generated by production programs in a form specified by WMD.
- ERD is responsible for characterization and packaging of waste generated by ER programs in a form specified by WMD.
- Site Offices are responsible for waste treatment/storage facilities located within production facilities and related directly to production activities.
- Site Offices are responsible for sanitary/industrial waste facilities.

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- WMD will establish policy and certification requirements for all waste activities.

7. ENGINEERING/DESIGN

- AMERWM is responsible for engineering/design of interim corrective measures, remediation, and TSD facilities.
- Site Offices review and concur in design packages for operational interface and ES&H-related requirements.
- Site Offices provide system and plant documentation/data to AMERWM for engineering/design activities.
- AMERWM obtains regulatory approval.

8. CONSTRUCTION (CORRECTIVE MEASURES, REMEDIATION, AND TSD FACILITIES)

- AMERWM will assure appropriate health and safety procedures are followed at waste TSD and RI/RA facilities.
- Site Offices assure procedures are being followed and coordinate activities related to plant personnel health and safety.
- Site Offices have authority to stop construction if approved procedures are not being followed or health and safety risks exist.
- AMERWM is responsible for health physics monitoring and decontamination of equipment and workers when required at waste TSD facilities and ER sites.
- The Site Offices will be responsible for security at all ER/WM facilities and sites.

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831 - 8541

002791

June 21, 1990

Those on Attached List

Ladies/Gentlemen:

ENVIRONMENTAL RESTORATION COMMUNITY RELATIONS - ROLES AND RESPONSIBILITIES

A meeting was held on June 20 to reconfirm the roles and responsibilities assigned for the environmental restoration community relations activities for the Oak Ridge Reservation. These responsibilities/activities cover multiple participants and were reviewed to assure all participants understood their roles and responsibilities.

Enclosed are the minutes of the meeting (Enclosure 1), a listing of roles and responsibilities (Enclosure 2), and a list of attendees (Enclosure 3). These activities were agreed to by all participants in the meeting, without exception.

It was agreed by all attendees that as the program progresses over the years, these may need to be expanded and reclarified.

If you have any questions concerning this letter, please give me a call.

Sincerely,

A handwritten signature in cursive script, appearing to read "W. D. Adams".

W. D. Adams, Assistant Manager
Environmental Restoration and
Waste Management

EW-91:Perkins

Enclosures

cc w/enclosures:
Jim Alexander, M-4
Bob Sleeman, EW-91

Addressees - Letter dated June 21, 1990

ENVIRONMENTAL RESTORATION COMMUNITY RELATIONS - ROLES AND RESPONSIBILITIES

Mr. Lanny D. Bates, Deputy Director
Environmental Restoration Division
Martin Marietta Energy Systems, Inc.
Post Office Box 2003
Oak Ridge, Tennessee 37831-7256

Mrs. Carol Grametbauer, Director
Director of Public Relations
Martin Marietta Energy Systems, Inc.
Post Office Box 2009
Oak Ridge, Tennessee 37831-8015

Dr. Charles A. Hall
Vice President for Technical Operations
Martin Marietta Energy Systems, Inc.
Post Office Box 2003
Oak Ridge, Tennessee 37831-7133

Mr. Paul Edmonds
Lee Wan and Associates, Inc.
120 South Jefferson Circle
Oak Ridge, Tennessee 37830

ENCLOSURE 1

**MINUTES OF MEETING
ROLES AND RESPONSIBILITIES
FOR
COMMUNITY RELATIONS ACTIVITIES**

JUNE 20, 1990

The meeting was held at ORO on the morning of June 20, 1990. Staff representing ORO Environmental Restoration and Waste Management; ORO Public Information; Lee Wan & Associates, Inc; Energy Systems Environmental Restoration Central Division; and Energy Systems Public Information Office attended the meeting.

Bill Adams, ORO Assistant Manager for Environmental Restoration and Waste Management, opened the meeting, stating that it had been called by him to reclarify the roles and responsibilities previously assigned to Energy Systems and Lee Wan in support of the Environmental Restoration community relations activities.

Mr. Adams refreshed everyone's memory on the roles and responsibilities assigned earlier.

Carol Grametbauer expressed her concern that Energy Systems was not shown on the previously issued roles and responsibilities chart as having an opportunity to review the public information products developed by Lee Wan before they are published. The chart was revised to include public information products in item no. 14.

Paul Edmonds expressed that the issues being addressed on technical documents may change in years to come as the program moves from a remedial investigation stage to a feasibility study stage and how the decisions we make early in the program will affect work in the later phases of the program. This issue was discussed by the group and it was recognized that DOE must resolve any conflicts at that time, or whenever they arise.

Jim Alexander expressed concern over the use of the term "community relations" and how people were using it interchangeably with the role of the public information groups. This issue was discussed and it was the consensus of the group that community relations is viewed as a behind-the-scenes activity, is long term in nature, includes routine strategy planning and a continuing activity versus an event-response activity. The event-response activity was seen as a public information role.

Lanny Bates asked for clarification on the administrative record, and who really had the official record. It was agreed by Bill Adams, Suzy Riddle and Bob Sleeman that the legal/official administrative record was to be established and maintained by Lee Wan. Energy Systems will have copies of the documents which will be maintained in the Energy Systems central file.

ENCLOSURE 1

-2-

Paul Edmonds asked for clarification on who makes distribution of the Program Bulletin with Energy Systems. The resolution to this issue is for Lanny Bates to get Paul Edmonds/Lee Wan a distribution list of Energy Systems employees who should get copies of the bulletin. Energy Systems may at their discretion use articles from the bulletin for other Energy Systems public information publications.

All other items on the roles and responsibilities charts were discussed one by one and agreement reached by all participants. Some of the items on the original chart were changed and are reflected in the revised chart. Other items did not change from their original description.

ENCLOSURE 2

ROLES AND RESPONSIBILITIES

1. Lead responsibility for program overview. Establish, maintain and coordinate ongoing community relations program activities.	ORO
2. Support to DOE as required to implement effective community relations program	LWA
3. Technical support for public information activities and lead responsibility to DOE for unexpected site development (e.g. releases, discovery of new contaminants.)	MMES
4. Provide documentation to LWA for Administrative Record to allow complete documented record	All
Participants
5. Establishment and maintenance of Administrative Record/Information Repository	LWA
6. Establish and maintain the monitoring function described in the Community Relations Implementation Plan	ORO
7. Identification of appropriate articles/topics for Program Bulletin; provide technical and public information review of content before publication	All
Participants
8. Production and distribution of Program Bulletin	LWA
9. Handle logistics/arrangements for all meetings, and open houses.	LWA
10. Coordination of speaker/speaking skills training conducted by any contractor(s)	ORO
11. Provide technical staff for meetings/open houses, etc.	All
Participants
12. Selection of topics for fact sheets, posters, and exhibits, if required (based on quarterly and annual summaries of upcoming technical activities)	ORO

ENCLOSURE 2

Roles and Responsibilities, Page 2

13. Responsible for production and distribution of posters, Program Bulletin, fact sheets, etc.	LWA
14. Input and review of technical and public information content of materials prepared by LWA; production and printing of fact sheets and other information materials, as requested by LWA	MMES
15. Establish and maintain site visits program	ORO
16. Preparation of Responsiveness Summary from required meetings and public comments	ORO
17. Provide support to LWA as requested for audio visual equipment, etc.	All Participants

ROLES AND RESPONSIBILITIES

Lead responsibility for program overview. Establish, maintain and coordinate ongoing community relations program activities.	ORO
Support to DOE as required to implement effective community relations program	LWA
Technical support for community relations activities and lead responsibility to DOE for unexpected site development (e.g. releases, discovery of new contaminants.)	MMES
Establishment and maintenance of Administrative Record	LWA
Provide documentation to LWA for Administrative Record to allow complete documented record	MMES
Establishment and maintenance of Administrative Record/ Information Repository	LWA
Establish and maintain the monitoring function described in the Community Relations Implementation Plan	ORO
Production and distribution of Program Bulletin	LWA
Coordinate identification of appropriate articles/topics for Program Bulletin; provide technical review of content before publication	MMES
Handle logistics/arrangements for all meetings, and open houses, including speaker training	LWA
Provide technical staff support for meetings/open houses, etc.	MMES
Selection of topics for fact sheets, posters, and exhibits, if required (based on quarterly and annual summaries of upcoming technical activities)	ORO
Responsible for production (writing, printing, distribution)	LWA
Input and review of technical content of information materials prepared by LWA; production and printing of fact sheets and other information materials	MMES
Establish and maintain site visits program	ORO
Preparation of Responsiveness Summary	ORO
Assistance in preparation of Responsiveness Summary	LWA

ENCLOSURE 3

ROLES & RESPONSIBILITIES
JUNE 20, 1990

<u>NAME</u>	<u>ORGANIZATION</u>
SANDY PERKINS	AMERWUM
BOB SLEGHAN	"
PAUL EDWARDS	LWA
BILL ADAMS	ORO
Suey Riddle	AMERWUM
BRYAN D WALKER	"
DANIELLE JONES	ORO / PIO
Steven Wight	ORO / PIO
LANNY BATES	ES-ER
Jim Alexander	ORO / PIO
Carol Grametbauer	MMES

**MEMORANDUM OF AGREEMENT BETWEEN
AMERWM AND AMERD**

August 30, 1990

**Department of Energy
Oak Ridge Operations Office**

I. INTRODUCTION

An initiative has been undertaken within the Department in establishing the Office of Environmental Restoration and Waste Management (EM). This office consolidates environmental cleanup, compliance, and waste management activities identified in the Five-Year Plan (FYP).

A mirror organization has been established within the Oak Ridge Operations (ORO) Office. This organization reports to the Operations Office Manager through the Assistant Manager for Environmental Restoration and Waste Management (AMERWM). The AMERWM organization has overall responsibility for activities described within the FYP. The FYP outlines Department needs within four major categories: Corrective Activities (CA), Environmental Restoration (ER), Waste Management (WM), and Research Development Demonstration Testing and Evaluation (RDDT&E).

The Management and Operating (M&O) contractors for ORO receive direction on an individual plant by plant basis through their respective Contracting Officer's Representative (COR). The COR for the Oak Ridge National Laboratory (ORNL) is the Deputy Assistant Manager for Energy Research and Development (AMERD), and the COR for Oak Ridge Associated Universities (ORAU) is the Director of the Energy Programs Division. AMERD has overall responsibility for all activities conducted at the ORNL and ORAU.

II. DEFINITION OF RESPONSIBILITIES

This document has been prepared to adapt the HQ MOU approved by the Secretary of Energy on March 17, 1990 to the ORO office and to better define the roles and responsibilities of the AMERWM and AMERD organizations in the environmental restoration, waste management and corrective activity areas, and in the waste management and environmental restoration technology areas. A list of Waste Management facilities at the Oak Ridge National Laboratory and the organizational lead for that facility has been prepared and will be maintained and periodically updated. An AMERWM waste management participation matrix is provided in Attachment 1. An AMERD waste management participation matrix is provided in Attachment 2. In general, AMERWM is responsible for all environmental restoration activities including the RI/FS process and decontamination and decommissioning activities. An explanation of the roles and responsibilities is provided below.

In general, the AMERD will be responsible for:

- 1) Operation and maintenance of process related surge tanks located within each R&D/production facility that feeds the plant waste system.
- 2) Operation and maintenance of sanitary treatment facilities (e.g. sewage treatment plant, coal yard runoff treatment and steam plant treatment) at ORNL with AMERWM monitoring activities at these facilities. AMERD also manages those projects that address sanitary waste needs (other than sanitary waste landfills).

- 3) Operation and maintenance of interim waste storage facilities (satellite and accumulation areas within R&D/production facilities that do not require permits).
- 4) Waste management operations associated with industrial activities supporting R&D/production (e.g., plating shop, photography shop, domestic water treatment facility) that are inside those facilities and cannot be easily separated from the ongoing operation.
- 5) Planning, budgeting, and executing waste management related activities described in items 1 through 4 listed above. Therefore, they will ensure that an ADS is prepared for any of the activities that are described above for incorporation into the EW Budget by the Headquarters Office of Environmental Restoration and Waste Management. The B&R Category will be EW 30 40 XX.
- 6) Participation in reviews and provides input on AMERWM waste management tasks which may have an impact on R&D or production activities.
- 7) Management of Health and Safety oversight functions for all ORNL facilities.
- 8) Coordination of responses to requests for ORNL sitewide information involving AMERD and AMERWM facilities.
- 9) Management of the petroleum and petroleum product underground storage tank compliance activities at ORNL and ORAU.
- 10) Management of existing active low level waste piping and lines within production and R&D facilities to the point of delivery to the first valve, or valve box outside the facility. When the line is gravity drain from the facility to a waste tank, the AMERWM responsibility begins five feet from the exterior wall of the production or R&D building.
- 11) Identification of plans for any active tank systems or facilities that will be taken out of service and transferred to the AMERWM.
- 12) Elimination of flow to a waste system once it is determined to be leaking. AMERD will also be responsible for contingency planning to shutdown or maintain the operations (e.g. through bottling waste).
- 13) Cosigning the sitewide NPDES and RCRA permits, RCRA permit applications and the annual NESHAPS report.
- 14) Commenting on budget prioritizations set by AMERWM.
- 15) Ensuring waste generators continue to evaluate ways to reduce or minimize waste generation.
- 16) Meeting waste acceptance criteria including packaging requirements for waste generated at their facilities.

The AMERWM will be responsible for:

- 1) Planning, scheduling, budgeting, operations and maintenance of all active and inactive buildings, operations, and systems that are primarily used for radioactive, hazardous, and mixed waste management activities (including collection/transport, treatment, storage, and disposal), and the restoration program.
- 2) Identifying potential funding level shortfalls in waste operations activities and determining with AMERD the R&D or production impacts.
- 3) Within budgets provided, sets priorities for EM funded facilities/activities at ORNL to accomplish goals. AMERD is represented on the ORO change control board which baselines and approves changes to all ADSs as defined in the ADS Baseline and Change Control Document (DOE/OR-915).
- 4) Management of each environmental restoration, waste management, corrective activity or technology area project or programmatic activity separately using existing project and program management rules governing general plant projects, line item projects, capital equipment requests, and operating expense budgets.
- 5) Management and resolution of environmental compliance issues as well as all CWA, CAA, SDWA, TSCA, RCRA, CERCLA, NEPA issues for EM funded tasks that are identified as environmental restoration, or active, standby, and planned waste management systems and facilities at ORNL (With the exception of those tasks that show up in the Five Year Plan but are managed by AMERD). Is the central point of contact for these active facility issues with TDHE and EPA. The AMERD organization will be notified of meetings and the progress being made in the permitting process. AMERD will also receive information copies of correspondence that is exchanged between the regulators and AMERWM.
- 6) Management and direction of all activities funded by EM in the area of technology development. These activities are primarily to support research, development, demonstration, testing, evaluation and education in the areas of environmental restoration and waste management. These tasks may be at ORNL or at ORAU.
- 7) Development and maintenance of an overall planning, reporting, tracking, and program control system for activities included in the Five Year Plan.
- 8) Ensuring ORO waste generators continue to evaluate ways to reduce or minimize waste generation.
- 9) Developing guidelines and policy for the characterization, packaging, storage, and monitoring of newly generated waste prior to transfer to an AMERWM treatment, storage, or disposal (TSD) facility.

- 10) Characterization of waste already in facilities whose sole purpose is to treat, store or dispose waste materials.
- 11) Provide annual program review.
- 12) Cosigning the sitewide NPDES and RCRA permits and RCRA permit applications, signing DMR certifications for AMERWM facilities or projects, and cosigning the NESHAPS annual report.
- 13) Assuring the consistent application of DOE Health and Safety requirements are met at waste management facilities and restoration projects.
- 14) Issuing remedial facility assessments to address leaking LLW waste systems, and accommodate regulation driven needs related to the newly inactive system.
- 15) Transportation of generator waste to AMERWM managed treatment, storage, or disposal facilities.

The management responsibility of the current ADSs is provided in Attachment 3.

III. RESOLUTION OF ISSUES

All issues or concerns between AMERD and AMERWM should be resolved at the lowest possible level within the organizations. In some instances this will not be possible and the issue will have to be raised to higher levels of management. The COR of the ORNL or ORAU and the AMERWM will agree to the changes to this document. Any changes will be incorporated into a revised agreement.

IV. EFFECTIVE DATE AND TERMS OF AGREEMENT

This agreement shall take effect on September 1, 1990 and shall be annually reviewed and revised as appropriate:

B. D. Walker, Deputy Assistant
Manager for Environmental
Restoration and Waste
Management

8/31/90
Date

J. A. Reafsnyder, Deputy
Assistant Manager for
Energy Research and
Development

8-31-90
Date

W. D. Adams, Assistant Manager
for Environmental Restoration
and Waste Management

8-31-90
Date

R. L. Egli, Assistant
Manager for Energy Research
and Development

8/31/90
Date

	Response To Audits/Appraisals	Planning	Scheduling	Operations	Maintenance	Operational Readiness Review	Construction	Budget	Emergency Management	Health & Safety Compliance	Environmental Compliance/NEPA	Security Compliance	Q A Compliance	Routine Reports	Incident Reports	Performance Evaluations	EM Orders	EM Policies	Contract Administration
AMERD	I	I	C	I	I	C	I	I	P	P	I	P	I	I	I	O	C	C	I
AMERWM	P	P	P	P	P	P	P	P	O	C	P	I	P	P	P	P	P	P	P
*AMCE						I	C	P									I		
*DP Emergency Preparedness									O	I					I		I		
*EPD		O				C			O		O				I		C	I	I
*P & B Div.		O		S	S		S	S									I		
*P E Div.																S	I		
*S & H Div.				O	O	C	O		O	O	I				I		I		
*S & S Div.									O			O					I		
*Q A Div.						C							O				I		

P - The Principal Or Lead
Role, Or Significant On
Documentation

C - Organization Is In The
Concurrence Chain

O - Provides Technical
Oversight Or Input To The
Process

I - Data Applies To Organization
For Information Relevant
To The Performance Of
Their Specific Mission

S - Provide Administrative
Support To The Function

AMERWM ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT PARTICIPATION MATRIX

* The AMERD and AMERWM Intends To Utilize The Support Organizations As Indicated.

ATTACHMENT 1

000004.01

Chapter 6

SCHEDULE AND MILESTONES

The IC will support the establishment and maintenance of project management systems for OR-1 that include a scheduling function capable of supporting planning, scheduling, and control activities as an integrated process.

The IC will use techniques typically employed in current computerized network logic project management systems to provide the framework for the control of the individual activities and subprojects by establishing schedules, measuring progress against those schedules, and interactively making management decisions based on schedule information. As a result, individual subprojects will be managed as constituent parts of OR-1. All schedules produced for OR-1 will be on OPEN PLAN™ software or OPEN PLAN™-compatible files.

6.1 SCHEDULE HIERARCHY

Schedules are being developed for DOE-OR by the IC based on input from all project participants and are being maintained on several different levels; these are updated annually as a part of the planning process. This hierarchy of schedules will integrate all activities [e.g., Consent Order and Compliance Agreements, FFAs, FFCAs, AIPs, design, and construction] in OR-1 and allow those at the lowest level to be summarized through successive higher levels of schedules to the project baseline schedule. Schedules are being developed at the work element level of the CWBS. Individual activities are included to identify deliverable products (e.g., taking core samples, drilling wells, delivering primary documents, taking bids, etc.). It is not intended to duplicate the lowest-level detailed work schedules of participating contractors.

The lowest-level schedule will employ network logic techniques with precedence notation. Deliverables to be tracked and their associated milestones will be entered in the schedule as individual activities. Summary schedules at higher levels will reflect the range of the activities included from the lower-level schedule.

The hierarchy consists of the project baseline schedule, the site summary schedule, and the detailed subproject schedules.

- The project baseline schedule provides the programmatic, total project schedule, and control milestones for the MSA.
- The site summary schedule is a summary of subprojects at a particular site. It will reflect the applicable phases and related DOE-controlled milestones for each subproject.

- **Detailed subproject schedules** are developed as part of the annual planning process or as directed by DOE and reflect fiscal-year programmatic schedule/milestone direction provided by DOE. This schedule represents the lowest level used to monitor progress.

Schedules are being developed with a "top-down-bottom-up" approach from the project baseline schedule down to the detailed subproject schedules. The hierarchy is preserved by resolving conflicts through adjustment of the detailed schedules to meet the MSA baseline schedule.

6.2 LOGIC DIAGRAMS

Logic diagrams depict the sequencing of activities required to attain the milestones promulgated in the OR-1 baseline schedule. The IC will maintain the detailed subproject schedules as logic diagrams. The diagrams reflect the work activities, major events, milestones, and relationships between activities. Time analysis of the logic diagram will determine the activity schedule and will indicate the critical path and float for each activity. Impacts to OR-1 milestones will be identified.

OR-1 participants will develop logic diagrams as necessary to control their individual portions of the subproject. Although more detailed, the participant schedules are consistent with, and an extension of, the reporting level of the PSWBS schedules.

6.3 DATA BASES

Schedule information is maintained in a data base that is structured to be compatible with the data base(s) developed for handling other project information.

6.4 SCHEDULE MAINTENANCE

The status of actual OR-1 work is determined monthly (1) to establish the progress to date and (2) to forecast completion of each activity that is under way. At the same time, comments are solicited as to any revisions to the network logic and/or activity durations required to refine the schedule without impacting OR-1 milestones.

Status is reflected on the detailed site network logic schedules. Time analysis is performed and summarized to the higher-level schedules to determine the effect on MSA milestones.

6.5 SCHEDULE DOCUMENT

The project baseline schedule will be completed in FY 1993. The current 7-year schedule is listed in the ADS submitted for each site.

The 7-year summary bar chart schedule for OR-1 is shown in Appendix V. Also included in Appendix V is a typical logic sequence used for each individual facility to generate the summary bar chart. All schedules for long-term RA or D&D should be viewed as very preliminary strategies.

The summary plans for the K-25 Site, PORTS, and PGDP are based upon the "Base Case" schedules developed by Ebasco.

The dates shown for Y-12 Plant and ORNL facilities are preliminary and subject to verification by the responsible organizations. The details on buildings at the ORISE South Campus Facility will be incorporated when the information becomes available. Details for D&D of individual buildings will be incorporated when information becomes available.

ATTACHMENT 1 SUPPLEMENT

Response to Audits/Appraisals	AMERWM prepares responses to address audits or appraisals that impact or involve AMERWM facilities, projects, or programs.
Planning	Includes functions such as project management planning, criteria, program management planning, and configuration management planning. The AMERD organization will take the lead on site development and institutional planning with input from AMERWM on waste facilities.
Scheduling	In some instances, top level scheduling of activities is required to ensure adequate site resources are available. AMERWM is responsible for scheduling these activities, and AMERD concurs in those schedules to minimize impacts to site or program missions.
Operations	AMERWM has the management responsibility for assuring that the waste operations and restoration program organizations are adequately staffed and trained to perform their functions. Also assures that all proper documentation (procedures, etc.) is in place to operate the AMERWM facilities, programs, and projects. AMERWM is also responsible for implementing the following functional areas for their facilities, projects, or programs: real property management, in-house energy management, nuclear materials control, ADP, internal control, (financial integrity, vulnerability assessments, etc.), FOIA, technology transfer, education, visits and assignments, and public information.
Maintenance	AMERWM has the management responsibility for assuring the restoration program and waste operations have adequate maintenance support to maintain operations. Since maintenance is a service function, AMERD will ensure that maintenance needs of AMERWM are addressed. AMERWM will have an interest in assuring that maintenance forces are adequately trained and are capable of maintaining waste operations facilities.

ATTACHMENT 1 SUPPLEMENT CONTINUED

Operational
Readiness Review

AMERWM will be responsible for assuring that waste operations facilities are ready for operations or restart or that restoration projects are in a state of readiness through the use of readiness reviews. Other organizations will provide support or concurrence in these activities.

Construction

AMERWM is responsible for the management of the construction project efforts, and assuring that the project meets the operational needs. Coordinates activities with AMCE organization. Includes responsibility for QA, acceptance, checkout, configuration management, training, and documentation. AMERD will retain responsibility for ensuring site services can be made available to new waste operations facilities and restoration projects (with AMERWM funding the cost of those services).

Budget

AMERWM is responsible for assuring that the budget is requested from HQ and is adequate to perform the job. Also responsible for budget guidance and preparations for program reviews. P&B Division is responsible for managing the budget process for AMERWM. Budget information concerning environmental restoration, waste operations and technology activities will be provided to AMERD when needed so they may roll up ORNL total cost information.

Emergency
Management

AMERD is responsible for providing emergency management services to waste operations facilities and the restoration program. AMERWM is responsible for making programmatic notifications.

Health & Safety
Compliance

AMERD has the lead in assuring that AMERWM facilities and projects are being managed according to DOE or site requirements and has shutdown authority when it is clear that a significant hazard exists at a AMERWM facility or project. AMERWM has the responsibility to assure that safety and health requirements are being met at AMERWM facilities and

ATTACHMENT 1 SUPPLEMENT CONTINUED

projects. In some functional areas such as fire protection and nuclear criticality, the AMERD and AMERWM staff may not be technically qualified and they will rely on the Health and Safety Division for technical support. The Health and Safety Division retains the responsibility to review AMERWM facilities or projects to assure they are being operated in compliance.

**Environmental
Compliance**

AMERWM has principal responsibility for ensuring that AMERWM facilities and projects meet all applicable environmental regulations and the terms and conditions of associated Federal Facility Agreements. AMERD and AMERWM cosign the sitewide NPDES and RCRA permits. AMERD or AMERWM sign the DMRs for discharges from their facilities. AMERWM signs all RCRA permit applications and RCRA related correspondence for their facilities or projects. AMERWM maintains and applies for air permits and authorizations for their facilities or projects. AMERD or AMERWM apply for and maintain permits for their respective facilities. AMERWM takes the lead in regulatory negotiations or public involvement related to their facilities. The EPD is responsible for compliance oversight and provides technical support when needed. AMERD or AMERWM are responsible for the NEPA documentation for their facilities or projects.

**Security
Compliance**

AMERWM is responsible for funding security projects and for security oversight for the AMERWM facilities. AMERD is the principal authority for all ORNL facilities and is also responsible for classification issues.

**Quality Assurance
Compliance**

AMERWM is responsible for ensuring the quality of the documentation and procedures relating to AMERWM facilities, projects, or programs.

ATTACHMENT 1 SUPPLEMENT CONTINUED

Routine Reporting	AMERWM is responsible for all routine reporting for AMERWM facilities and functions including: compliance, management, monthly and quarterly reports. AMERD will have the lead role in coordinating reports for ORNL which require information about AMERWM facilities or projects with AMERWM involvement.
Incident Reports	AMERWM will be responsible for the preparation of incident reports for their facilities to comply with DOE Order 5000.3A. AMERD will be involved in those reports that are required due to an emergency response action.
Performance Evaluations	Both AMERD and AMERWM will be responsible for providing input through the PEC process to the Performance Evaluation Division on the waste management facilities at ORNL. AMERWM will be responsible for the input on the environmental restoration and the technology development program.
EM Orders	AMERWM is responsible for the initiation of all Oak Ridge Orders that are required for EM programs. AMERD and all line organizations would concur in those orders.
EM Policies	AMERWM is responsible for the establishment of ORO policies in EM program areas. AMERD will concur in policies initiated by AMERWM.
Contract Administration	AMERWM is responsible for contract administration for their programs and projects. Functions include but are not limited to the following: subcontract approvals, sole source, consultant approvals, salary administration, management/union relations, EEO, and foreign purchases.

	Response To Audits/Appraisals	Planning	Scheduling	Operations	Maintenance	Operational Readiness Review	Construction	Budget	Emergency Management	Health & Safety Compliance	Environmental Compliance/NEPA	Security Compliance	Q A Compliance	Routine Reports	Incident Reports	Performance Evaluations	EM Orders	EM Policies	Contract Administration
AMERD	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
AMERWM	I	I	C	I	I	C	C	C	I	I	I	I	I	I	I	O	PO	P	I
AMCE						I	CD										I		
OP Emergency Preparedness									O.I						I	I	I		
EPD		O				C			O		O				I	C	I	I	
P & B DIV.		O		S	S	S	S									S	I		
P E DIV.																			
S & H DIV.				O	O	C	O		O	O.I					I	I	I		
S & S DIV.									O			O					I		
Q A DIV.						C							O				I		

P. The Principal Of Lead
Plan, Or Significant
Documentation

C. Organization Is In The
Concurrence Chain

O. Provides Technical
Oversight Or Input To The
Process

I. Data Copies To Organization
For Information Review
To The Performance Of
Their Specific Mission

S. Provides Administrative
Support To The Function

AMERD WASTE MANAGEMENT PARTICIPATION MATRIX

* The AMERD and AMERWM Intends To Utilize The Support Organizations As Indicated.

ATTACHMENT 2

000001.02

ATTACHMENT 3**AMERD**

AMERD is responsible for managing the sanitary waste and petroleum and petroleum product ADSs.

The applicable AMERD ADSs from the FY 1991 FYP submission are provided below:

- 310 Subtitle I USTs
- 382 Sanitary and Industrial Waste

AMERWM

Has overall responsibility for assuring funding is provided to maintain waste management activities at ORNL for AMERWM ADSs.

The applicable AMERWM ADSs from the FY 1991 FYP submission are provided below:

- 302 Bethel Valley LLW CAT
- 304 Melton Valley LLW CAT
- 341 Waste Treatment (chargeback)
- 342 Waste Treatment (chargeback + LLLW)
- 343 Waste Treatment (chargeback)
- 346 Waste Disposal (chargeback)
- 347 Waste Disposal (chargeback + SWSA 6 projects)
- 348 Waste Disposal (chargeback)
- 349 Continuity of Operations (waste management plans and project expense activities)
- 350 Continuity of Operations (waste management plans and project expense activities)
- 352 Waste Treatment - Solid
- 353 Waste Characterization and Certification Facility
- 355 Waste Minimization
- 356 Waste Minimization
- 344 Waste Storage (RH-TRU, CH-TRU, + Class III/IV)
- 352 WHPP Planning, Development and Construction
- 353 Continuity - Solid - LIP
- 355 Waste Minimization
- 356 Waste Minimization
- 366 Waste Treatment - Water
- 378 Active LLLW FFA

RDDT&E funded tasks that take place at ORNL or ORAU.

All Environmental Restoration Program tasks that take place at ORNL or ORAU.

Appendix III
GLOSSARY

Appendix III

GLOSSARY

To facilitate communication, understanding, and consistency in terminology among the DOE-OR ER Project participants, this PMP includes a list of acronyms as well as this glossary, both of which are an integral part of the management plan's "dictionary." Most of the definitions in the glossary were taken from DOE Order 4700.1, *Project Management System*, or from applicable EPA guidance documents. Some of the definitions were modified or tailored to forge a common "language" from DOE, RCRA, and CERCLA terminology, and the terminology of the various disciplines involved. As with any "language," it will mature with time and usage.

Activity Data Sheet (ADS). The documentation that supports the OR-1 project planning, budgeting, and control system and relates to the PSWBS at a specified level. The ADSs are basic building blocks for the Five-Year Plans. An assessment ADS and a cleanup ADS define a remediation subproject, whereas an S&M ADS and a D&D ADS define a D&D subproject. Management activities that are not associated with either a specific RA or D&D subproject are specified on separate ADSs.

Applicable or relevant and appropriate requirements (ARARs). Requirements, including cleanup standards, standards of control, and other substantive environmental protection requirements and criteria for hazardous substances as specified under federal and state law and regulations, that must be met when complying with CERCLA. (Definition is taken from SARA.)

As low as reasonably achievable (ALARA). A radiation protection principle applied to radiation exposures, with costs and benefits taken into account.

Atomic Energy Act (AEA). The act (1947, 1954) that placed production and control of nuclear materials within a civilian agency, originally the Atomic Energy Commission.

Baseline. A quantitative expression of projected costs, schedule, or technical progress to serve as a base or standard for measurement during the performance of an effort; the established plan against which the status of resources and the progress of a project can be measured. The baseline is the life-cycle cost, schedule, and technical definition of the program/project. As such, it is built upon the WBS and its elements, as opposed to the limited (7-year) horizon ADSs.

*The term "project" used in this glossary is synonymous with the term "subproject" used throughout this document and shown as Level 4 or lower on the WBS.

Baseline management. The systematic evaluation, coordination, approval (or disapproval), documentation, implementation, and audit of all approved changes in the baseline of a deliverable end item (product) after formal establishment of its initial baseline.

Below regulatory concern. A definable amount of low-level waste that can be deregulated with minimal risk to the public.

Best available technology or best demonstrated available technology. Treatment technologies that have been shown through actual use to yield the greatest environmental benefits among competing technologies.

Breakage. Activity, engineering, items procured, or construction that is no longer applicable to a project or program. Breakage may be caused by regulatory change, inadequate requirements or criteria, deficient design, latent conditions, abandoned work, or nonconformance.

Budget authority (BA). The maximum funds available (legal control) for obligation, commitment, and expenditure in the current fiscal year. Actual costs plus obligations/commitments at any point in time cannot exceed this authorization level. Funds carried over from prior years may be included in the BA.

Budgeted cost of work performed (BCWP). The budgeted cost for the work actually performed or completed during a given period, calculated consistently with the way work is planned. The BCWP is also known as earned value. The summation of BCWP for all WBS elements provides the quantitative measure of actual performance.

Budgeted cost of work scheduled (BCWS). The detailed assignment of budget to planned increments of work throughout the scheduled period of performance. The summation of work packages, in total, represents the performance measurement baseline. For any period of time, the summation of BCWS for all WBS elements provides the cost performance baseline for comparing actual performance against the plan.

Budget outlay (BO). The maximum costs that can be incurred in the current fiscal year.

Buffer zone. The smallest region beyond the disposal unit that is required as controlled space for monitoring and for taking mitigative measures that may be required.

By-Product Rule. DOE rule-making (*Federal Register*, May 1, 1987) that established DOE policy for applying RCRA and the AEA to DOE waste containing hazardous components and by-product materials.

Change in scope. A change in objectives or work plan that results in a material difference from the terms of an approval to proceed previously granted by higher authority. Under certain conditions, normally stated in the approval instrument, change in resources application may constitute a change in scope. Under contractual agreement, Contracting Officers are the only government personnel authorized to issue a change order or contract modification to a contractor/performer to implement a change in scope.

Characterization. The data collection and documentation effort needed to provide a thorough physical, chemical, and radiological assessment of the contamination at a site in order to develop cleanup or decommissioning techniques.

Closure plan. Documentation prepared to guide the deactivation, stabilization, and surveillance of a waste management unit or facility under RCRA.

Compliance agreements. Legally binding agreements between regulators and regulated entities that set standards and schedules for compliance with environmental statutes. Agreements include consent orders and compliance agreements, FFAs, and FFCAs.

Compliance or external oversight. The DOE-funded efforts that a state will perform to assess DOE programs.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Federal statute (also known as Superfund), enacted in 1980 and reauthorized in 1986, that provides the statutory authority for cleanup of hazardous substances that could endanger public health, welfare, or the environment.

Computerized cost-estimating tool. Either a software package or a computer-based model used for cost estimating.

Conceptual design. The phase that encompasses efforts to

- establish requirements through the use of systems requirements documents;
- develop a project scope that will satisfy project needs;
- ensure project feasibility and attainable performance levels;
- develop reliable cost estimates and realistic schedules to provide a complete description of the project for congressional consideration; and
- develop project criteria and design parameters for all engineering disciplines and identify the following: applicable codes and standards; QA requirements; environmental studies; materials of construction; space allowances; energy conservation features; health and safety safeguards; security requirements; and any other features or requirements necessary to describe the project.

Configuration. The functional and/or physical characteristics of hardware and/or software as set forth in technical documentation and achieved in a product.

Configuration identification. The functional and/or physical characteristics of the contamination, the site, and the design solution as set forth in technical documentation and achieved at completion of a project.

Configuration management. The systematic evaluation, coordination, approval (or disapproval), documentation, implementation, and audit of all changes in the configuration of a product (including documents) after formal establishment of its configuration baseline.

Consent Order and Compliance Agreement. See compliance agreements.

Construction Management. Services that encompass a wide range of professional services relating to the management of a project during the predesign, design, and/or construction phases.

Contingency. An amount budgeted to cover costs that may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties. The amount of the contingency will depend on the status of assessment, design, procurement, and construction and on the complexity and uncertainties of the component parts of the project. Contingency is not to be used to avoid making an accurate assessment of expected cost.

Contracting Officer's Representative (COR). The person at DOE who is assigned responsibility for overall technical and management monitoring of a contract. The COR is empowered in writing by the Contracting Officer. The COR furnishes technical and management direction to the contractor as required for the satisfactory accomplishment of the work. This includes authority to suspend work for environmental, safety, and health noncompliance reasons. The COR evaluates the contractor's performance, reports on the contractor's performance, reports on contract status to DOE program and project management, recommends desired changes in scope of work or delivery schedules, and recommends corrective action when necessary.

Contractor. Any person, organization, department, division, or company having a contract, agreement, or MOU with DOE.

Corrective action. A measure taken to rectify conditions adverse to quality and, where necessary, to preclude repetition of those conditions.

Control Account. The control point (intersection) between the functional organization and the level of the WBS where responsibility and accountability are assigned to a single responsible work group or unit. The Control Account is the primary point at which budget planning and internal cost/schedule control can be maintained.

Cost and schedule baselines. The approved cost and schedule plans that support the technical baseline at the appropriate levels in the WBS. The cost and schedule baselines will be updated simultaneously with the technical baseline at the appropriate reviews.

Cost estimate. A documented statement of costs that are expected to be incurred to complete a project. Cost estimates provide baselines against which cost comparisons are made during the life of a project.

Cost variance (CV). The difference between the BCWP and the actual cost of work performed. CV will be expressed in dollars for labor.

Cost variance at completion. The difference between the budget and estimated budget at completion of a project.

Decommissioning. The process of removing a facility from operation, followed by decontamination, entombment, dismantling, or conversion to another use.

Decontamination. The removal of unwanted material (typically radioactive material) from facilities, soils, or equipment by washing, chemical action, mechanical cleaning, or other techniques.

Depleted uranium. Uranium from which the fissionable isotope ^{235}U has been partially removed.

Detailed methods. Tools that rely on unit cost databases for estimating costs.

Disposal. Waste emplacement that is designed to ensure isolation of waste from the biosphere, with no intention of retrieval for the foreseeable future. Disposal requires deliberate action to regain access to the waste.

DOE orders. Internal requirements that establish DOE policy and procedures for compliance with applicable laws and regulations.

Drinking water standard. Concentration limits for certain elements and pollutants that may occur in drinking water, established by the Safe Drinking Water Act.

Earned Value. The periodic, consistent, and objective measurement of work performed in terms of the budget planned for that work. Earned Value is also known as the BCWP. It is the aggregate value of all completed work and the applicable portion of work in progress.

Engineering specialty integration. The timely and appropriate intermeshing of engineering-related efforts and disciplines such as the following: safety; reliability, availability, and maintainability; human factors; risk management; waste management; testing; logistics; QA; software development; technology development; safeguards and security; and operations and maintenance.

Environmental Restoration (ER). Cleanup and restoration of sites contaminated with hazardous substances during past production or disposal activities.

Facilities. Buildings and other structures; their functional systems and equipment, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communications systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Feasibility Study (FS). An evaluation conducted as part of the CERCLA process to identify alternatives for remediation and to select and describe an RA that satisfies the ARARs for mitigating confirmed environmental contamination. Successful completion of an FS should result in unimpeded subsequent development of an RD for implementation of the selected RAs.

Fixed-price contracts. Contracts that provide for a firm price or, under appropriate circumstances, an adjustable price, for the supplies or services that are being procured. In providing for an adjustable price, the contract may fix a ceiling price, target price (including target cost), or minimum price.

Forecast. DOE's most current performance projection for cost, schedule, and scope.

Government estimates. Estimates used to determine the reasonableness of competitive bids received in connection with formally advertised prime DOE-OR contracts. They serve as the basis for evaluation of (1) fixed-price bids or (2) cost and pricing data in negotiated contracts.

Hazard Ranking System. An EPA scoring system used for a number of environmental decisions, including ranking disposal sites for cleanup.

Hazardous waste. As defined in RCRA, a solid waste or combination of solid wastes that because of its quantity; concentration; or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness or that may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

High-level waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

Inactive waste facility. Facilities formerly used for the treatment, storage, or disposal of wastes. In certain cases, wastes may currently be stored in these facilities.

Independent assessment. An assessment, made outside the normal advocacy chain, of a project's status or condition.

Independent Cost Estimate. A documented cost estimate that has the express purpose of serving as an analytical tool to validate, cross-check, or analyze estimates developed by proponents of a project. An Independent Cost Estimate also serves as a basis for verifying risk assessments.

Installation. A geographic entity comprising land, buildings, and other facilities within the scope of the MSA OR-1 Project. Generally, an installation has, organizationally, all of the required facility management functions (i.e., it is not a satellite of some other installation). Installations currently included in OR-1 are ORNL, the K-25 Site, the Y-12 Plant, PGDP, and PORTS. In addition to the above installations, contaminated areas at ORAU are included.

Instruction. A document that specifies or describes how an activity is to be performed.

Integrating Contractor (IC). The contractor (usually the FMC) that consolidates measured performance from all project contractors into a project performance document. These data are furnished to DOE-OR on a periodic basis (usually monthly) in the form of a summary project management report.

Interagency Agreement. A formal document in which two or more federal agencies agree to cooperate.

Land Disposal Restrictions. Provisions of HSWA that require phased-in treatment of hazardous wastes before disposal.

Life-cycle cost. The sum total of the direct, indirect, recurring, nonrecurring, and other related costs incurred or expected to be incurred in the design, development, production, operation, maintenance, support, and final disposition of a subproject over its anticipated useful life span. Where system or project planning anticipates use of existing sites or facilities, restoration and refurbishment costs are included.

Life-cycle program planning. The total planning necessary to achieve the ER Program objectives. It involves the planning accomplished at DOE-HQ and the field offices to execute and control the program. The total life cycle is represented by the composite of the life cycles of the various remediation projects at the installations and field offices and the management activities that are not applicable to a specific project. Effective planning and control are based on life-cycle events rather than on arbitrary time spans having no natural relationship to completing the program. Life-cycle program planning is modified throughout the life of the program as more knowledge and experience are obtained.

Life-cycle project planning. Planning done within the context of the total life of a project. The life cycle commences with the inclusion of either an RA or D&D subproject in the MSA OR-1 Project and ends when the project no longer requires ER Program resources. Life-cycle project planning involves specifying the detailed activities for the life of the project and not for an arbitrary time span that may be reflected by documents such as the DOE Five-Year Plan or the 3-year budget submittals.

Low-level waste. Radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or by-product material.

Memorandum of Understanding (MOU). A document that sets forth basic policies and procedures governing the relationship between parties on matters of mutual interest and responsibility.

Milestone. An important or critical event and/or activity that must occur in the program/project cycle to achieve the program/project objective(s).

Mission need. A required capability within DOE's overall purpose, including cost and schedule considerations. When the mission analysis, or studies directed by appropriate executive or legislative authority, identify a deficiency in existing capabilities or an opportunity, this will be set forth as justification for system acquisition approvals, planning, programming, and budget formulation.

Mixed waste. Waste that contains both radioactive and hazardous components, as defined by the AEA and RCRA, respectively.

National Emission Standards for Hazardous Air Pollutants. Clean Air Act limits for release of hazardous pollutants for which no ambient air quality standard is applicable.

National Environmental Policy Act (NEPA) of 1969. The act that established the requirement for conducting environmental reviews of federal actions that have the potential for adverse impact on the human environment.

National Pollutant Discharge Elimination System. Section 402 of the Federal Water Pollution Control Act (Clean Water Act) that establishes a permit for discharges to water and provides standards by which such permits may be granted.

National Priorities List (NPL). A formal listing of the nation's worst hazardous waste sites, as established by CERCLA.

On-site. For permitting purposes, the aerial extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

Operable Unit (OU). A discrete portion of a DOE installation consisting of a group of facilities placed together for either remediation or D&D as a single subproject. OUs may represent geographical portions of an installation, or they may represent a specific installation problem such as surface/subsurface groundwater contamination or PCB-contaminated gaskets. Cleanup or D&D of a site may be divided into a number of OUs, depending on the complexity of the problems associated with the site. An OU may represent all or part of discrete locations such as buildings and Solid Waste Management Units. OUs usually contain more than one facility. They may be in close geographic proximity to other OUs and may exhibit similar waste characteristics and types of contamination. Facilities do not have to be contiguous to be included in a specific OU.

Oversight. A program management role exercised by DOE-HQ over ER Program planning, execution, and control by the field offices to ensure that identified sites undergo remediation/D&D and are kept in compliance. Management oversight entails planning, programming, budgeting, and control of the program at the DOE-HQ level. Key characteristics include maintaining awareness of program activities, significant problems, and corrective actions at the field office level; approving key field office program documentation affecting quality; and ensuring that field office management systems are adequate to meet program needs. Management oversight involves functional activities necessary to ensure that approved life-cycle baselines are effectively identified and controlled.

Planning estimate. A cost estimate for general planning and budgeting purposes only. Planning estimates will be used when there is a need for an order-of-magnitude estimate, but sufficient definitive information is lacking that would allow the development of a TEC. Planning estimates are developed for each subproject at the time the work is identified. Because these are developed before conceptual design, they are order-of-magnitude estimates only and have the least amount of accuracy and lowest confidence level. Care should be exercised in these estimates to ensure that the order of magnitude is correct, because a tendency exists to avoid changing this estimate, particularly upward, once it is established.

Preliminary Assessment/Site Investigation (PA/SI). One of the first stages in remediating a site. It is designed to evaluate all known information about the site and to conduct a preliminary investigation of the extent and nature of the contamination at the site. The

purpose is to determine if further action or investigation is appropriate. Data collected during this period are used to build a Hazardous Ranking System score for the site.

Preliminary Design (Title I or Title I Engineering). The continuation of a design effort using the conceptual design and the design criteria as a basis for project development. Title I design determines the requirements and criteria that will govern the definitive design.

Prevention of significant deterioration. Part C of the Clean Air Act that establishes a policy of limiting degradation of air quality based upon classification of areas.

Prime contractor. DOE's major contractors that have contractual agreements directly with DOE. Principally, DOE's management and operations contractors, technical support contractors, construction management contractors, and design (A-E) contractors.

Procedure. A document that specifies or describes roles and responsibilities and provides methods to meet minimum requirements of applicable standards.

Procurement documents. Purchase requisitions, purchase orders, drawings, contracts, contract task orders, specifications, or instructions used to determine requirements for purchase.

Program. An organized set of activities directed toward a common purpose or goal undertaken or proposed in support of an assigned mission area. It is characterized by a strategy for accomplishing a definite objective(s), which identifies the means of accomplishment, particularly in quantitative terms, with respect to manpower, materials, and facilities requirements. Programs are typically made up of technology base activities, projects, and supporting operations.

Program management. Management responsibility and authority for specific programs normally delegated by the cognizant program Secretarial Officer. The DOE-HQ functions of program management include planning and developing the overall program; establishing broad priorities; providing policy and broad program direction; preparing and defending the budget; establishing the technical performance, scope, cost, and schedule requirements for projects; controlling DOE HQ-level milestones; integrating all components of the program; providing public- and private-sector policy liaison; expediting DOE-HQ interface activities and followup actions; and retaining overall accountability for program success. The field function includes implementing these program activities, controlling field-level milestones, and providing major support to the DOE-HQ programming and budgeting processes.

Program Manager. An individual in an organization or activity who is responsible for the management of a specific function or functions, budget formulation, and execution of the approved budget. The Program Manager receives an approved funding program from responsible authority identifying program dollars available to accomplish the assigned function. The Program Manager is responsible not only for the management but also the accomplishment and schedule.

Program objectives. A statement or set of statements defining the purposes and goals to be achieved during performance of a program to fulfill a DOE mission, including the technical capabilities, management, cost, and schedule goals.

Program office. The DOE-HQ organizational element responsible for managing a program.

Program participant. Any organization, contractor, or individual who is responsible for meeting assigned program objectives.

Project. A unique major effort within a program that has firmly scheduled beginning, intermediate, and ending date milestones; prescribed performance requirements; prescribed costs; and close management, planning, and control. The project is the basic building block in relation to a program that is individually planned, approved, and managed. For purposes of this document, a project is the MSA OR-1 Project for remediation/decommissioning efforts under the jurisdiction of DOE-OR.

Project baseline. The established plan against which the status of resources and the progress of a project^{*} can be measured. It is a quantitative expression of projected costs, schedule, and technical progress of a project. It serves as a control point for measurement and control of changes to the project elements. The project baseline serves as a standard for performance measurement during project implementation. It is composed of three separate but related entities: the schedule baseline, the cost baseline, and the technical baseline.

Project baseline change. A modification to approved project baselines including scope of work, technical requirements, design criteria, design configuration, method of accomplishment, procurement requirements, construction contracts, cost, or schedule beyond the limiting guidelines (baselines) established by approved project documentation. In ER projects dominated by environmental regulations, the future changes to be expected in laws, regulations, and DOE orders will impact project requirements significantly.

Project management. A management approach in which authority and responsibility for execution are vested in a single individual to provide focus on the planning, organizing, directing, and controlling of all activities associated with a project. In general terms, project management functions include assisting the program manager in preparing DOE-HQ documents and establishing key milestones and overall schedules. Other activities include developing and maintaining the PMP; managing project resources; establishing and implementing management systems, including performance measurement systems; and approving and implementing changes to project baselines.

Project Manager. An official who is assigned the responsibility for accomplishing a specifically designated unit of work or a group of closely related efforts established to achieve stated or designated objectives, defined tasks, or other units of related effort on a schedule for performing the stated work funded as part of the project. The Project Manager is responsible for planning, controlling, and reporting the project.

Project office. The organization responsible for administering the project management system, maintaining project files and documents, and providing staff support for officials throughout the project life cycle.

^{*}The term subproject found throughout this document is synonymous with the more familiar term "project," and is used to remain consistent with the terminology of the PSWBS at Level 4 or lower.

Quality. All the features and characteristics of an item or service that bear on its ability to satisfy given needs; fitness for intended use, which includes conformance to requirements.

Quality Assurance (QA). All those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily in service. (Reprinted with permission from ASME NQA-1, 1989.)

Quality Control (QC). All those actions necessary to control and verify the features and characteristics of a material, process, product, or service to specified requirements. QC is the regulatory process through which we measure actual quality performance, compare it with standards, and act on the difference.

Record of Decision (ROD). A decision document for an EPA- or state-led project that (1) documents decision making, (2) shows decision making consistency with CERCLA and the National Oil and Hazardous Substance Pollution Contingency Plan, and (3) supplements the FS, if necessary. The ROD is equivalent to the Compliance Agreement in a project led by a federal agency.

Regulated substance. Any chemical, compound, or material for which manufacture, generation, transportation, alteration, or disposition is regulated under any of the federal or state statutes.

Release site. As defined by Sect. 101(22) of CERCLA, as amended, a release is any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of [a hazardous substance] into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substances, pollutants, or contaminants), but not any release that results in exposure to persons solely within a work place, with respect to a claim that such persons may assert against the employer of such persons; emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine; release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under Sect. 170 of such Act or, for those purposes of Sect. 104 of CERCLA, as amended, or any other response action, any release of source, by-product, or special nuclear material from any processing site designated under Sect. 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978; and the normal application of fertilizer. A release site is a location at which a hazardous waste release has occurred or has the potential to occur (or is suspected to have occurred). It is usually associated with an area where hazardous substances have been treated, stored, and/or disposed of. A release site is the lowest element of an installation to be remediated.

Remedial Action (RA). A subactivity (CERCLA term) in a remedial response involving actual implementation, following RD, of the selected source control and/or off-site remedial effort.

Remedial Investigation (RI). The CERCLA process of determining the extent of hazardous substance contamination and, as appropriate, conducting treatability investigations. The RI is often done in conjunction with the FS.

RCRA Facility Assessment (RFA). The initial RCRA process to determine whether corrective action for a RCRA past practice unit is warranted or to define what additional data must be gathered to make this determination; analogous to a CERCLA PA/SI.

RCRA Facility Investigation (RFI). The RCRA process to determine the extent of hazardous waste contamination; analogous to the CERCLA RI.

RCRA Part B Permit. The detailed second part of a RCRA permit that describes managed wastes, quantities, and facilities.

Regulated substance. Any chemical, compound, or material the manufacture, generation, transportation, alteration, or disposition of which is regulated under any of the federal or state statutes.

Risk. The combined effect of the probability and consequences of failure of an item expressed in qualitative or quantitative terms.

Risk/health assessment. Assessment of the potential for unwanted negative consequences or events. Public health risk assessment is a quantitative or qualitative evaluation of data from sources, such as toxicology and epidemiology, to predict the effects of public exposure to environmental factors that pose a potential hazard to the health and well-being of the public. Environmental and/or health effects resulting from exposure to a chemical or physical agent (pollutant) are combined with toxicity assessment results to provide an overall estimate of risk to the public. The process includes identifying the threat's source, determining the threat's potential extent or magnitude, and resolving the probability that the defined undesirable situation will ensue from the exposure. A *risk estimate* is a description of the probability that organisms exposed to a specific dose of chemical will develop an adverse response (e.g., cancer).

Root cause. The base condition, state, or definition of an item, system, or program element that brings about, or has a probability of bringing about, an effect that was not planned or desired.

Safe Drinking Water Act. The act that established the maximum contaminant levels applicable to groundwater monitoring programs.

Sanitary waste. Wastes, such as garbage, that are generated by normal housekeeping activities and that are not hazardous or radioactive.

Schedule variance (SV). The difference between the BCWP and the BCWS. The SV represents the difference between the budget value of work actually performed (accomplished) and that scheduled to be accomplished.

Shallow land burial. Disposal of wastes in shallow trenches; commonly used for low-level radioactive wastes.

Site Inspection. An inspection conducted to acquire the necessary data to confirm the existence of environmental contamination at identified potential sites and to assess the associated potential risks to human health, welfare, and the environment. The data collected

at each site must be sufficient to support the decision for either continuing with a RI/FS or for removing the site from further investigation through a decision document.

Software. The programs, procedures, rules, and any associated documentation pertaining to the operation of a computer system.

Sole-source aquifer. As defined by the Safe Drinking Water Act, an aquifer that is the only source or potential source of drinking water in an area.

Solid Waste Management Unit (SWMU). Any unit at a facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste. SWMUs include, but are not limited to, container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, injection wells, recycling operations, miscellaneous units, and releases from such units.

Storage. Retaining and monitoring waste in a retrievable manner pending final disposition.

Subcontract. Any agreement or arrangement between a contractor and any person (in which the parties do not stand in the relationship of an employer and an employee) under which any portion of the contractor's obligation under any one or more contracts is performed, undertaken, or assumed.

Superfund. The fund set up by CERCLA for cleanup of abandoned hazardous waste sites; a colloquial term used to describe CERCLA.

Superfund Amendments and Reauthorization Act (SARA). The 1987 act amending and reauthorizing CERCLA.

Surplus facility. Any facility or site (including equipment) that has no identified programmatic use.

Surveillance. The act of monitoring or observing to verify whether an item or activity conforms to specified requirements. (Reprinted with permission from ASME NQA-1, 1989.)

System. A collection of interdependent equipment and procedures assembled and integrated to perform a well-defined purpose. It is an assembly of procedures, processes, methods, routines, or techniques united by some form of regulated interaction to form an organized whole.

Systems engineering. A disciplined approach to technical management of a project/program in which three interrelated and interdependent activities are implemented concurrently. These three activities are the systems engineering process, technical planning and control, and engineering specialty integration.

Systems engineering process. A sequence of activities and decisions that transforms an identified mission need into system performance parameters and a preferred system configuration.

Systems Requirements Document. A clear and concise documentation of the requirements needed to achieve the mission of a project. It provides a technical reference base for a project and thus establishes and preserves the functional and performance requirements, special constraints, uncertainties, interfaces, special analyses, human factors issues, maintenance issues, and critical systems involved in ensuring mission success. The Systems Requirement Document serves as the basis for development of the conceptual design.

Technical baseline. A configuration identification document or a set of such documents formally designated and approved at a specific time. (The time need not be the same for each document in the set.) Technical baselines, plus approved changes to those baselines, constitute the current configuration identification.

Technical planning and control. Those technical management activities required to implement a project. It includes such items as WBS approach, documentation control, data management, change control, definition of technical responsibilities, planning and scheduling approach, technical reviews, and corrective action implementation.

Total estimated cost (TEC). The cost of a program/project, including the costs of land and land rights; engineering, design, and inspection costs; direct and indirect construction costs; and initial equipment necessary to place the plant or installation in operation, whether funded out of operating or plant and capital equipment appropriations.

Total program/project cost. All generic research and development costs, operating costs associated with testing and evaluation, and plant and capital equipment costs specifically associated with a project/program. It is the sum of the total life-cycle estimated cost plus all other costs identifiable to the project/program.

Toxic Substances Control Act (TSCA). The act that requires the identification and control of toxic chemicals that pose a hazard to human health and the environment.

Traceability. The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification. (Reprinted with permission from ASME NQA-1, 1989.)

Treatment. Any activity that alters the chemical or physical nature of a waste to reduce its toxicity or prepare it for disposal.

Treatment, storage, and disposal. Term used to indicate coverage by RCRA of facilities managing hazardous waste.

Transuranic waste. Waste that is contaminated with alpha-emitting transuranic nuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g of waste.

Underground storage tank. Any underground tank or associated piping containing hazardous materials as defined by HSWA.

Validation. The process of evaluating project planning, development, baselines, and proposed funding prior to inclusion of the new project or system acquisition in the DOE budget or seeking increased funding for a prior project or system. It requires a review of

project planning and conceptual development documentation, as well as discussion with the program or field element and principal contributing contractors, to determine the source basis, procedures, and validity of proposed requirements, scope, cost, schedule, funding, and so forth. Findings and recommendations resulting from the validation process will be provided for use in the annual budget formulation.

Waste Area Grouping (WAG). A grouping of facilities and/or release sites with area-wide groundwater contamination that is not readily traceable to individual facilities or sites. Generally, a WAG would be limited to a geographically contiguous and hydrologically defined area.

Waste minimization. Activities undertaken to reduce the quantities and toxicities of waste generated.

SOURCES OF DEFINITIONS

American Society of Mechanical Engineers, *Quality Assurance Program Requirements for Nuclear Facilities*, ASME NQA-1-1989 edition, New York, September 15, 1989.

National Oil and Hazardous Substance Pollution Contingency Plan, Proposed Rule, Section 40, Code of Federal Regulations, Part 300; 53 FR 51394-51520.

Department of Energy, *Project Management System*, DOE Order 4700.1, Washington, D.C., March 6, 1987.

Department of Energy, *Implementation Plan, Quality Assurance Requirements*, DOE/HWP-38, Martin Marietta Energy Systems, Inc., Hazardous Waste Remedial Actions Program, Oak Ridge, Tenn., November 1987.

Department of Energy, *Environmental Restoration and Waste Management Five-Year Plan*, Washington D.C., August 1989.

Department of Energy, *Quality Assurance*, DOE Order 5700-B, Washington, D.C., November 22, 1989.

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Appendix IV
DOE-OR ERD WORK AUTHORIZATION

UNITED STATES DEPARTMENT OF ENERGY OAK RIDGE OPERATIONS OFFICE P. O. BOX 2001 OAK RIDGE, TENNESSEE 37831	Directive No.	
	Modification No.	
	Date	
	Plant	
	Location	
1. Title		
2. To:		
3. Work Authorized for USDOE by Name _____ Title _____		
4a. Previous Directive Action Date _____		4b. Request for Directive Action Date _____
4c. Preliminary Proposal Date _____		4d. Action Memorandum Date _____
4e. Other References		
<p>Preliminary Proposal Approved</p> <p>☐ As Submitted ☐ With Exception as Noted on Reverse ☐ For Design Only</p> <p>Date _____</p>		
5a. Current Start Date Design: Complete:	4a. Current Completion Date Design: Complete:	4b. Difference in Months
7. Authorized Cost By Participants		
A. Participant _____		
B. Type of Contract _____		
C. Contract No. _____		
D. Con. Admin. _____		
E. Authorized Costs		
Total		
(1) Engineering	\$ _____	\$ _____
(2) Constr. Cost	\$ _____	\$ _____
(3) Std. Equip.	\$ _____	\$ _____
(4) Contingencies	\$ _____	\$ _____
(5) Total Auth.	\$ _____	\$ _____
8. Summary of Funding Requirements		
Classification	Item Number	Item Name
A.		Amount
B.		\$ _____
C.		\$ _____
D. Charge This Action (If Applicable) \$		E. Total Authorized \$
F. Remarks		

Appendix V
BASELINE SCHEDULE

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 1

WBS Number	WBS Title	Fiscal Years						
		93	94	95	96	97	98	99
1.4.12.1	Y-12 Plant							
1.4.12.1.01	Chestnut Ridge	Assessment						
					Cleanup			
1.4.12.1.02	Bear Creek Valley	Assessment						
					Cleanup			
1.4.12.1.03	Upper East Fork Poplar Creek	Assessment						
		Cleanup						
1.4.12.1.04	CAPCA Phase I	Cleanup						
1.4.12.1.05	CAPCA Phase II	Cleanup						
1.4.12.1.06	RA Surveillance & Maintenance	S&M						
1.4.12.1.2.01	Y-12 Plant Facilities D&D	Assessment			Assessment			
		Cleanup						
1.4.12.1.3.01	Program Management Support	Program Support						
1.4.12.1.4.01	Surveillance & Maintenance	S&M						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 1

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.2	Program Management Integration							
1.4.12.2.1.01	DOE Direct	Field Office Program Support						
1.4.12.2.1.02	Agreement in Principal	AIP						
1.4.12.2.1.03	Contract Management Support	Program Support						
1.4.12.2.1.04	Technical Integration	Program Technical Support						
1.4.12.2.2.01	Waste Management	Planning						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 1

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.3	Oak Ridge Reservation							
1.4.12.3.1.01	White Oak Creek Embayment	Completed						
1.4.12.3.1.02	Watts Bar Reservoir	Long Term Monitoring						
1.4.12.3.1.03	Non-FFA Projects	Assessment						
		Remediation						
1.4.12.3.1.04	East Fork Poplar Creek	Assessment						
				Cleanup				

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 3

WBS Number	WBS Title	Fiscal Years						
		93	94	95	96	97	98	99
1.4.12.4	K-25 Plant							
1.4.12.4.1.01	Main Plant	Assessment						
		Cleanup						
1.4.12.4.1.02	Process Area	Assessment						
		Assessment						
1.4.12.4.1.03	External Area	Assessment						
1.4.12.4.1.04	Pond Waste Management	Cleanup						
1.4.12.4.1.05	Groundwater Protection	Groundwater Monitoring						
1.4.12.4.1.06	S&M	Routine Surveillance & Maintenance						
1.4.12.4.2.01	K-25 Facilities D&D							
	Baseline S&M	S&M						
	Surplus Material Management	Cleanup						
	UF6 Cylinders	Maintenance						
	Asbestos Abatement	Characterization & Cleanup						
	PCB Electrical Equipment Removal	Equipment Disposal						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 2 of 3

WBS Number		WBS Title	Fiscal Years						
			93	94	95	96	97	98	99
1.4.12.4		K-25 Plant							
1.4.12.4.2.01		K-25 Facilities D&D (Continued)							
		PCB Gasket Troughing & Removal	Characterization/Removal/Disposal						
		Program Management	Program Support						
		Rad Contamination Control	Characterization & Personnel Protection						
		Residual Uranium Removal	Removal						
		Cooling Towers Removal	Characterization & Removal						
		D&D Pilot Project	Characterization & Removal						
		Electrical Compliance	Maintenance						
		Building Shell/Roof Repairs			Maintenance/Replacement				
		Centrifuge S&M	Surveillance & Maintenance						
		Centrifuge D&D	Removal & Disposal						
		Program Integration & Planning	Planning						
		Special Projects/Tech Development	Technical Development						
		Support Facilities						Analytical Support	

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 3 of 3

WBS Number	WBS Title	Fiscal Years						
		93	94	95	96	97	98	99
1.4.12.4	K-25 Plant							
1.4.12.4.3.01	Program Management Support	Program Support						
1.4.12.4.4.01	Surveillance and Maintenance	No Activity for 7 Year Window						
1.4.12.4.5.01	Landlord Capital Equipment	Procurement						
1.4.12.4.5.02	Landlord Capital Construction	Construction						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Forecast Baseline

1 of 1

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.5	Oak Ridge Associated Universities (ORAU)							
1.4.12.5.1.01	ORAU Remedial Action INV	Assessment						
		Remediation						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 2

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.6	Oak Ridge National Laboratory							
1.4.12.6.1.01	WAG 1	Assessment						
				Cleanup				
1.4.12.6.1.02	WAG 2	Assessment						
			Cleanup					
1.4.12.6.1.03	WAG 3	Assessment						
			Cleanup					
1.4.12.6.1.04	WAG 4	Assessment						
			Cleanup					
1.4.12.6.1.05	WAG 5	Assessment Phase I					Cleanup	
1.4.12.6.1.06	WAG 6	Assessment						
		Cleanup						
1.4.12.6.1.07	WAG 7	Assessment						
1.4.12.6.1.08	WAG 8				Assessment			

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 2 of 2

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.6	Oak Ridge National Laboratory							
1.4.12.6.1.09	WAG 9				Assessment			
1.4.12.6.1.10	WAG 10	Assessment				Cleanup		
1.4.12.6.1.11	WAG 11	Assessment						
		Cleanup						
1.4.12.6.1.12	WAG 13	Assessment						
		Cleanup						
1.4.12.6.1.13	Low Level Waste Tank Systems	LLW						
1.4.12.6.1.14	RA S&M	RA Surveillance & Maintenance						
1.4.12.6.2.01	Facilities D&D	D&D						
1.4.12.6.3.01	Program Management Support	Program Support						
1.4.12.6.4.01	S&M	No Activity for 7 Year Window						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 2

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.7	Paducah Gaseous Diffusion Plant							
1.4.12.7.1.01	Support Facilities	Under Construction						
1.4.12.7.1.02	Offsite Groundwater Contamination	Assessment						
		Cleanup						
1.4.12.7.1.03	WAGs 5, 11	Assessment						
1.4.12.7.1.04	WAGs 1, 7	Assessment						
1.4.12.7.1.05	WAG 13	Assessment						
1.4.12.7.1.06	WAGs 8, 9	Assessment						
1.4.12.7.1.07	WAGs 12, 15	Assessment						
1.4.12.7.1.08	WAGs 10, 16	Assessment						
1.4.12.7.1.09	WAG 17	Assessment						
1.4.12.7.1.10	WAG 18	Assessment						
1.4.12.7.1.11	Groundwater Program	Assessment						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 2 of 2

WBS Number	WBS Title	Fiscal Year						
		93	94	95	96	97	98	99
1.4.12.7	Paducah Gaseous Diffusion Plant							
1.4.12.7.1.12	Underground Storage Tanks	Remediation						
1.4.12.7.1.13	WAGs 2, 3, & 14	Assessment						
1.4.12.7.1.14	RA Surveillance and Maintenance	No Activity for 7 Year Window						
1.4.12.7.2.01	Facility D&D	D&D						
1.4.12.7.3.01	Program Management Support	Program Support						
1.4.12.7.4.01	Surveillance and Maintenance	No Activity for 7 Year Window						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 1 of 2

WBS Number	WBS Title	Fiscal Years						
		93	94	95	96	97	98	99
1.4.12.8	Portsmouth							
1.4.12.8.1.01	Quadrant I	Assessment	Cleanup					
1.4.12.8.1.02	Quadrant II	Assessment	Cleanup					
1.4.12.8.1.03	Quadrant III	Assessment	Cleanup					
1.4.12.8.1.04	Quadrant IV	Assessment		Cleanup				
1.4.12.8.1.05	Closures	Cleanup						
1.4.12.8.1.06	Groundwater Protection Program	GW Monitoring						
1.4.12.8.1.07	Underground/Above Ground Storage Tanks	Cleanup						
1.4.12.8.1.08	Other Consent Decree/Order Tasks	Cleanup						
1.4.12.8.1.09	RCRA Closures	Cleanup						

MSA Resource Requirements Plan Part 1. MSA Total Funding Request

Performance Baseline 2 of 2

WBS Number	WBS Title	Fiscal Years						
		93	94	95	96	97	98	99
1.4.12.8	Portsmouth							
1.4.12.8.1.10	RA Surveillance and Maintenance	No Activity for 7 Year Window						
1.4.12.8.2.01	GCEP Termination	Cleanup						
1.4.12.8.2.02	Surplus Facilities Demolition	Cleanup						
1.4.12.8.3.01	Program Management Support	Program Management Support						
1.4.12.8.4.01	Surveillance & Maintenance	Cleanup						

Annex A
QUALITY ASSURANCE PLAN

Annex A

QUALITY ASSURANCE

The DOE-OR ER QA Program is driven from a hierarchy of DOE QA requirements documents developed by multiple DOE-HQ Program Secretarial Officers (i.e., NE-1 and EM-1). Several upper-tier DOE QA requirements documents which serve as the basis for developing the DOE-OR ER QA Program Plan have not been finalized and issued. For example, the Quality Assurance Program Description (QAPD) addressed in Revision 1 of the EM-40 Management Plan has not been finalized and issued. The QAPD describes the EM-40 QA Program and delineates the organizational structure and program responsibilities. DOE Field Offices and contractors are obligated to have QA Programs that implement the applicable EM-40 QA requirements. The development of the DOE-OR ER QA Program Plan is pending DOE-HQ issuance of all applicable upper-tier QA requirements. As an interim measure to developing the DOE-OR ER QA Program Plan, the Energy Systems *Environmental Restoration Quality Program Plan*, ES/ER/TM-4/R2, will be utilized.

Annex B
COMMUNITY RELATIONS PLAN

Annex B
COMMUNITY RELATIONS PLAN

The CRP supports ER OR-1 activities conducted by the DOE and its FMC, Energy Systems, in Oak Ridge, Tennessee. The plan identifies the environmental concerns of individual citizens, government officials, and groups located in the City of Oak Ridge and throughout Roane and Anderson counties. It outlines a variety of strategies designed to reduce these concerns and increase the level of public support and involvement in OR-1 activities by gathering information about the community, informing the public of planned and ongoing actions, determining whether information needs are met, giving citizens the opportunity to comment on and provide input to technical response decisions, and focusing on and resolving conflicts. Similar CRPs are under development for the Paducah, Kentucky, and Portsmouth, Ohio, sites.

The details of the Community Relations Plan are contained in the *Community Relations Plan for the Environmental Restoration Program at the Oak Ridge Reservation, Oak Ridge, Tennessee*, document DOE/ORO 928, latest revision (Annex ref. 1).

Annex C
BASELINE MANAGEMENT AND CONTROL

Annex C

BASELINE MANAGEMENT AND CONTROL

The ERD BCCB Charter (Annex ref. 4) and the DOE Prime Contractors' Baseline Change Control Procedure (Annex ref. 5) have been developed by DOE-OR in conjunction with Energy Systems for ensuring that the cost, schedule, and technical requirements are clearly defined, controlled, and managed in accordance with accepted baseline management practices. The procedure describes the baseline management and control process and how it is to be applied to OR-1 activities accomplished by DOE-OR. The details associated with configuration management as adapted by DOE-OR are contained in the Configuration Management Plan (TBD).

Annex D
SYSTEMS ENGINEERING MANAGEMENT PLAN

Annex D
SYSTEMS ENGINEERING MANAGEMENT PLAN

The OR-1 Systems Engineering Management Plan has been developed by DOE-OR for implementing and managing the systems engineering approach for OR-1 activities at its ORR FFA NPL sites and at the Paducah and Portsmouth gaseous diffusion plants. The plan describes the systems engineering process and how it is to be integrated into all Project activities accomplished by DOE-OR. The details of the System Engineering Management Plan are contained in the OR-1 System Engineering Management Plan, DOE/OR-1011, latest revision (Annex ref. 2).

Annex D
SYSTEMS ENGINEERING MANAGEMENT PLAN

The OR-1 Systems Engineering Management Plan has been developed by DOE-OR for implementing and managing the systems engineering approach for OR-1 activities at its ORR FFA NPL sites and at the Paducah and Portsmouth gaseous diffusion plants. The plan describes the systems engineering process and how it is to be integrated into all Project activities accomplished by DOE-OR. The details of the System Engineering Management Plan are contained in the OR-1 System Engineering Management Plan, DOE/OR-1011, latest revision (Annex ref. 2).

Annex E
WASTE MANAGEMENT PLAN

Annex E
WASTE MANAGEMENT PLAN

The ER Program Waste Management Plan has been prepared to address the management of wastes that will be generated as a result of RA and D&D activities to be carried out under the direction of the DOE-OR. The details of the Waste Management Plan are contained in the ER Program Waste Management Plan, DOE/OR-976, latest revision (Annex ref. 3).

Annex F
NEPA

Annex F

NEPA

One of the technical objectives of the ER Program is to prepare documents in support of NEPA of 1969. This objective assumes that the NEPA process of evaluating alternatives would take place early in the project planning stage and that the NEPA process would be integrated with the CERCLA process, as stated in DOE Orders 5400.4 and 5440.1D.

As an MSA, the OR-1 Project must be approved by the acquisition board at DOE-HQ. Pursuant to Appendix D of the DOE NEPA Implementing Procedures, Final Rule, 57 FR 15122, Subpart D, Appendix D, an EIS is listed and the appropriate level of NEPA documentation for any MSA (57 FR 15158). The proposal for this project would include (1) identifying the sites or facilities within the jurisdiction of DOE-OR for possible remediation or D&D; (2) providing for preclosure and postclosure S&M for all surplus facilities and sites; (3) performing health, safety, and environmental assessments of the sites and facilities to determine the nature and extent of contamination; (4) preparing documentation to support the NEPA ROD for each remediation and D&D subproject; (5) remediating and decommissioning the sites and facilities in accordance with the required NEPA ROD; and (6) verifying successful completion of remediation and D&D tasks. Therefore, this MSA project would be supported appropriately with an EIS for the OR-1 Project and separate NEPA documentation for individual RA decisions.

A Notice of Intent to prepare an EIS is currently being finalized. Once the Notice of Intent is published, an Implementation Plan for the EIS would be written.

Annex G
ANNEX REFERENCES

Annex G
ANNEX REFERENCES

1. PEER Consultants, *Community Relations Plan for the Environmental Restoration Program at the Oak Ridge Reservation*, published by Martin Marietta Energy Systems, Inc., for the DOE Oak Ridge Field Office, Oak Ridge, Tenn., March 1991.

2. Department of Energy, *Environmental Restoration Program Systems Engineering Management Plan*, DOE/OR-1011, prepared for the DOE Oak Ridge Field Office, Office of Assistant Manager for Environmental Restoration and Waste Management, by Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn., Document Issued for Approval, January 24, 1992.

3. Department of Energy, *Environmental Restoration Program Waste Management Plan*, DOE/OR-976, prepared for the DOE Oak Ridge Field Office, Office of Assistant Manager for Environmental Restoration and Waste Management, by Martin Marietta Energy Systems, Inc., and Science Applications International Corporation, Oak Ridge, Tenn., May 1992.

4. Department of Energy Oak Ridge Field Office, *Environmental Restoration Division Baseline Change Control Board (Level 2) Charter, Policy and Procedures Manual, Part II*, April 1, 1992.

5. Department of Energy Oak Ridge Field Office, *Environmental Restoration Division, DOE Prime Contractors' External Program Baseline Change Control*, ER/C-P1710, March 20, 1992.

DATE

FILMED

7/18/94

END