MARTIN MARIETTA

ORNL/ER-230/R1

ENVIRONMENTAL RESTORATION PROGRAM

Project Management Plan for the Isotopes Facilities Deactivation Project at Oak Ridge National Laboratory

ENERGY SYSTEMS

ER

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

UCN-17560 (6 7-91)

ORNL/ER-230/R1

Energy Systems Environmental Restoration Program
ORNL Environmental Restoration Program

Project Management Plan for the Isotopes Facilities Deactivation Project at Oak Ridge National Laboratory

Date Issued—April 1995

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

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831-6285
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U. S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

PREFACE

This project management plan for the Isotopes Facilities Deactivation Project was prepared to comply with the intent of DOE Order 4700.1, "Project Management System." This work was performed under Work Breakdown Structure 1.6.6.2.10.2 (Activity Data Sheet 6504-IS, "ORNL Isotopes Facilities"). This management plan documents the objectives, defines organization relationships and responsibilities, and outlines the management control system to be used in the management of the project.

CONTENTS

FIGURES

TABLES

ABBREVIATIONS

ALARA	as low as reasonably achievable
CTD	Chemical Technology Division
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
EM&UE	Environmental Management and Uranium Enrichment Operations
EM-40	DOE Headquarters Office of Decontamination and Decommissioning
EM-60	EM&UE Office of Facility Transition and Management
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ES&H	environment, safety, and health
F&M	finance and materials
HQ	headquarters
IFDP	Isotopes Facilities Deactivation Project
IFSP	Isotopes Facilities Shutdown Program
ITR	Independent Technical Review
MCS	management control system
NEPA	National Environmental Policy Act of 1969
ORNL	Oak Ridge National Laboratory
ORO	DOE Oak Ridge Operations Office
QA	quality assurance
S&M	surveillance and maintenance
WBS	work breakdown structure

EXECUTIVE SUMMARY

The purpose of the Isotopes Facilities Deactivation Project (IFDP) is to place former isotopes production facilities at the Oak Ridge National Laboratory in a safe, stable, and environmentally sound condition suitable for an extended period of minimum surveillance and maintenance (S&M) and as quickly and economically as possible. Implementation and completion of the deactivation project will further reduce the already small risks to the environment and to public safety and health. Furthermore, the project should result in significant S&M cost savings in the future. The IFDP management plan has been prepared to document the project objectives, define organizational relationships and responsibilities, and outline the management control systems to be employed in the management of the project. The project has adopted a strategy to deactivate the simple facilities first, to reduce the scope of the project, and to gain experience before addressing more difficult facilities. A decision support system is being developed to identify those activities that best promote the project mission and result in largest cost savings. The *Work Plan for the Isotopes Facilities Deactivation Project at Oak Ridge National Laboratory* (Energy Systems 1994) defines the project schedule, the cost estimate, and the technical approach for the project.

1. INTRODUCTION

1.1 PURPOSE

This management plan documents the objectives, defines organizational relationships and responsibilities, and outlines the management control systems to be used in the management of the Isotopes Facilities Deactivation Project (IFDP). This plan has been developed by the Environmental Restoration (ER) Program of Martin Marietta Energy Systems, Inc. (Energy Systems) for the U.S. Department of Energy (DOE) Oak Ridge Operations Office (ORO).

This document complies with the intent of DOE Order 4700.1, "Project Management System." DOE concurrence of this document indicates agreement with its role in the management of the IFDP and acceptance of the management control systems.

1.2 SCOPE

Nineteen facilities are currently in the IFDP and are listed in Table 1. To complete its mission, the IFDP must execute those activities required to deactivate and place each facility in shutdown condition. A deactivated shutdown facility is one in which (1) hazardous materials and waste and transferable radioactive contamination have been removed from accessible areas, (2) containment structures are in sound physical condition, (3) energy sources in the facility have been deenergized to the extent practical, (4) use and occupancy of the building have been terminated, and (5) the facility is structurally sound and weather tight. The IFDP will identify all activities required to achieve these conditions in IFDP facilities and will manage the execution according to this plan. Existing building-specific procedures will be utilized and modified as required to conform to ER policy.

Table 1. Scheduled shutdown facilities

Krypton-85 Enrichment Facility	Building 3026-C
Metal Segmenting Facility	Building 3026-D
Alpha Powder Facility	Building 3028
Source Development Laboratory	Building 3029
Radioisotope Production Laboratory—C	Building 3030
Radioisotope Production Laboratory—D	Building 3031
Radioisotope Production Laboratory—H	Building 3118
Radioactive Gas Processing Facility	Building 3033
Radioactive Production Laboratory Annex	Building 3033-A
Alpha Handling Facility	Building 3038-AHF
Radioisotope Packaging and Shipping Facility	Building 3038-M
Isotope Materials Laboratory	Building 3038-E
Isotope Technology Building	Building 3047
Fission Product Development Laboratory	Building 3517
Tritium Target Preparation Facility	Building 7025
Radioisotopes Production Laboratory—E	Building 3032
Radioisotopes Area Services	Building 3034
Storage Cubicle	Building 3093
Storage Pad	Building 3099

1.3 PROJECT BACKGROUND

In 1989, DOE instructed the Oak Ridge National Laboratory (ORNL) to prepare various isotopes production facilities for safe shutdown. In response, ORNL identified candidate facilities for shutdown and established the Isotopes Facilities Shutdown Program (IFSP). A program plan (Gibson, Patton, and Sears 1990) and management plan (Hill, Eversole, and Kibbe 1992) were prepared and approved by DOE (Reafsnyder 1990). The objective of the program was to evaluate and execute all required tasks in the isotopes facilities required to place them in a radiologically and industrially safe condition and to minimize the required surveillance and maintenance (S&M) of the facilities. The program was managed by the Office of Nuclear Energy and executed by the Chemical Technology Division (CTD) of ORNL. Implementation of the program began in FY 1991 and was to be concluded at the end of FY 1994. All facilities were to be transitioned into the Decontamination and Decommissioning (D&D) Program upon completion of the IFSP. The program was executed as planned until mid-FY 1992 when a shortfall with anticipated FY 1993 funding was identified. DOE instructed the IFSP to reduce activities to levels necessary for minimal S&M of the facilities. The program entered FY 1993 with no new appropriations but was subsequently funded by the DOE Office of Environmental Management and Uranium Enrichment Operations (EM&UE). It was determined in FY 1993 that the EM&UE Office of Facility Transition and Management (EM-60) would manage the program. Before acceptance of the IFSP, EM-60 commissioned an Independent Technical Review (ITR) of the program. The scope of the ITR was to assess the IFSP and to make recommendations that might enhance facility safety, accelerate the deactivation of these facilities, and minimize deactivation costs.

The review was initiated in September 1993 and concluded with the issuance of a final report in January 1994. As a result of recommendations in the ITR report, DOE transferred local program oversight from the DOE ORNL site office to the Office of the Assistant Manager for EM&UE. The program was retitled the IFDP, and implementation responsibility was transferred from CTD to the ER Program at ORNL. The first action of the IFDP is to develop and implement a management plan and develop a path forward for the project. This document describes the management system for the project.

2. PROJECT OBJECTIVES

2.1 MISSION

The mission of the IFDP is to deactivate former ORNL isotopes production facilities. Specifically, the IFDP will

- place facilities into a safe, stable, inactive condition with the lowest practical S&M costs while maintaining safety envelopes adequate to ensure the safety and health of the workers, the public, and the environment;
- establish a baseline S&M program consistent with surplus and postdeactivation facility liabilities;
- ensure facility acceptance into the DOE Headquarters (HQ) Office of D&D (EM-40) D&D Program; and
- minimize waste generation.

2.2 TECHNICAL OBJECTIVES

The objective of the shutdown project is to place 19 formerly utilized isotopes facilities at ORNL (Table 1) in a radiologically and industrially safe condition for routine, long-term S&M before eventual decommissioning. These facilities will be placed in a condition to meet the acceptance criteria for ER specified by the DOE Policy Memorandum for Acceptance of Facilities for ER Program, issued March 15, 1991, by L. P. Duffy (Duffy 1991). The project objectives are to

- establish a safe and environmentally secure configuration of these facilities and ensure that this condition can be retained for a 10-year horizon;
- establish an S&M program to maintain the secure configuration at minimum cost;
- implement cost-effective, innovative approaches to ensure that the required safety envelope is defined and maintained during deactivation;
- achieve compliance with environment, safety, and health (ES&H) codes and standards during deactivation;
- create a project organization capable of managing the deactivation of other ORNL facilities as they become surplus;
- apply lessons learned from commercial deactivation technology; and
- establish the IFDP as a model for deactivation of hot cell facilities throughout the DOE complex.

2.3 COST AND SCHEDULE

Detailed cost, schedule, and funding baselines are being established for the project in accordance with the *Program Management Plan for the Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program* (Gilbert/Commonwealth 1994). These are contained in the IFDP work plan.

Through the use of these systems, the following will be accomplished:

- use and maintain internal cost and schedule performance measurement information that provides responsible managers with timely, objective performance data;

- track actual project progress against baseline budget estimates and schedule milestones on a monthly basis (Cost and schedule status will be monitored using earned value techniques to determine work progress. Reports that describe the project cost and schedule status and that identify undesirable variances will be reviewed by management. Appropriate corrective action will be initiated to rectify cost and schedule variances as they are identified.);

- monitor cost and schedule trends to promptly identify potential favorable or unfavorable trends for management review and action;

- provide a project tracking system report that integrates all elements of the project for submittal monthly; and

- provide a variance analysis by work breakdown structure (WBS) element, highlighting situations that exceed the established reporting thresholds (The analysis will be for incremental and cumulative data and will include a statement of the problem and the action taken or recommended for correction.).

With these systems, analyses and trends are developed to (1) analyze significant deviations from planned work, (2) develop any necessary work-around plans so that unfavorable deviations can be minimized, (3) develop revised estimates at completion when the deviations cannot be minimized, and (4) provide the data necessary for the ORNL ER Program and DOE reports.

2.4 PROJECT STRATEGY

The IFDP is developing a strategy to support the implementation of the technical objectives. A decision support system will provide a basis for prioritization of activities and implementation of those activities that best promote the project mission and objectives. The strategy will be described in the work plan.

2.5 ACTIVITIES AND PERFORMANCE MEASURES

Specific activities and associated performance measures are developed as a part of the project work plan. These activities and performance measures provide a qualitative basis to evaluate the movement toward objectives.

3. PROJECT ORGANIZATION AND RESPONSIBILITIES

3.1 INTRODUCTION

The IFDP is one element of the Oak Ridge Facility Transition and Management Program and is matrixed into the Energy Systems Facility Transition and Management Program manager. The project is part of the ORNL site ER Program, which is responsible for the implementation of deactivation activities. The project organization chart is shown in Fig. 1. A description of the roles and responsibilities of the key management positions follows.

3.2 ENERGY SYSTEMS FACILITIES TRANSITION MANAGER

The Energy Systems facilities transition manager serving under the ER D&D Program Directory is the primary interface for all EM-60 projects. S(he) develops budget planning and activity data sheet documents required by DOE-ORO and DOE-HQ. S(he) also coordinates these programmatic functions and responses to DOE requests for information with the Energy Systems ER Program teams who carry out the work and interface with subcontractors on the ER site.

3.3 ORNL ENVIRONMENTAL RESTORATION PROGRAM MANAGER

The ORNL ER Program manager provides leadership, management, and programmatic direction for the ER Program at ORNL. The program manager, under the direction of the Energy Systems facility transition manager, establishes appropriate program goals, objectives, and project direction via site strategic planning with division management, DOE, regulators, and the public. The ORNL ER Program manager may represent the program in interactions within Energy Systems, DOE-ORO, the regulatory agencies (in association with DOE), other cooperating agencies (e.g., Tennessee Valley Authority, U.S. Geological Survey), and the general public.

3.4 PROJECT MANAGER

The IFDP manager is responsible for the development, implementation, and completion of all DOE Environmental Restoration and Waste Management deactivation activities required for acceptance of designated ORNL isotopes facilities into the EM-40 D&D Program. The project manager's responsibilities include defining the scope of the project, estimating project costs, developing project schedules, reviewing contractor and subcontractor proposals, maintaining project budget and schedule, preparing progress reports, integrating the work of all DOE prime contractors, and preparing of the project baseline. The project manager also is responsible for ensuring the adequacy of all procedures used in performing IFDP activities.

The IFDP is matrixed to the Energy Systems facility transition manager to coordinate activities, report to DOE, share lessons learned, and provide consistency among transition activities across all DOE sites managed by Energy Systems.

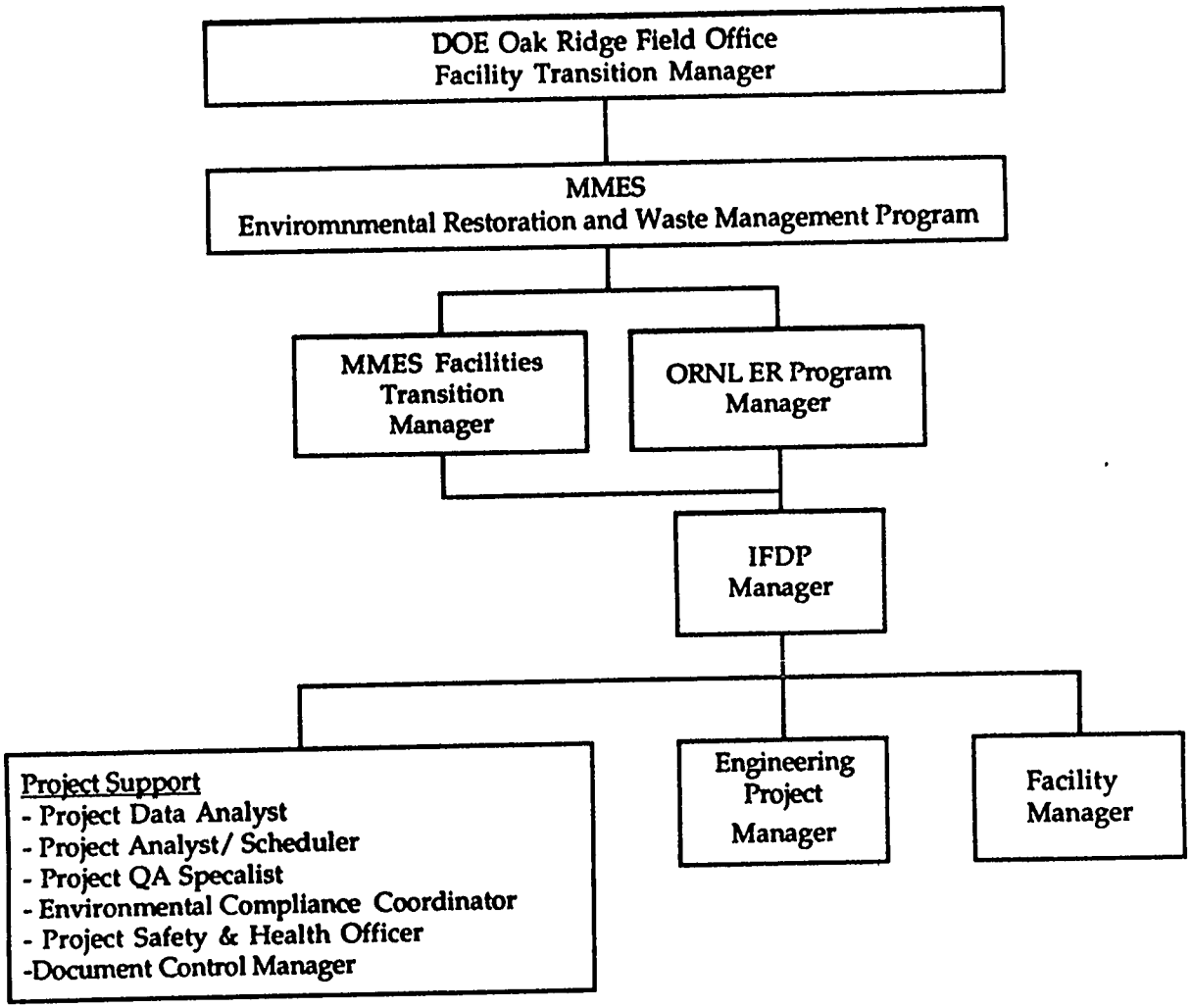

Fig. 1. IFDP Organization Chart.

3.5 PROJECT DATA ANALYST

The project data manager provides overall data management oversight and coordination of project data acquisition, performs data custodian activities, and interacts as necessary with other data management groups. These data management organizations include the Reservation Data Systems Group of Environmental Sciences Division, Computing and Telecommunications Systems, Instrumentation and Controls Division, and Information Management Services. The project data manager will utilize the services of one or more of these groups, as needed, to perform the following duties: (1) ensuring that data collection follows U.S. Environmental Protection Agency (EPA) protocols, (2) documenting where and when data are collected, (3) ensuring that data remain in a readily accessible format, and (4) conveying information to other groups about the timing and location of sampling activities so that one group's data collection activities are not disturbed by another group's sampling activities.

3.6 PROJECT ANALYST/SCHEDULER

The project analyst/scheduler is also responsible for developing formal logic networks and schedules used to plan and monitor the project status.

The project analyst/scheduler develops baseline reporting parameters; compiles, analyzes, monitors, and reports project manpower, schedule, cost, and status information; and assists the team with planning and project status reporting in accordance with Energy Systems and DOE requirements.

3.7 QUALITY ASSURANCE SPECIALIST

The quality assurance (QA) specialist assists the project team in making QA assessments and plans. Furthermore, the QA specialist monitors the documentation of all assessments and the implementation of actions and plans. S(he) participates in quality failure investigation and reporting and assists in scheduling QA audits and in implementing corrective action in response to recommendations. The project QA specialist is selected in conjunction with the ER Program QA specialist and consults with the ER Program QA specialist for guidance on all issues concerning QA.

3.8 ENVIRONMENTAL COMPLIANCE COORDINATOR

The environmental compliance coordinator works with the project manager and serves as a regulatory specialist to ensure that project-level ER activities are being done in full compliance with the applicable state and federal regulations. In executing his/her duties, the environmental compliance coordinator will utilize the services of the ORNL Office of Environmental Compliance.

3.9 HEALTH AND SAFETY OFFICER

Assessments are required for health and safety based upon known conditions at the site. Following advice from the ER Program health and safety coordinator, the ORNL ER Program manager appoints the project health and safety officer who is responsible for ensuring that all activities are conducted in accordance with applicable health and

safety standards. S(he) ensures that the necessary permits, safety equipment, and procedures are in place before work begins. S(he) provides the appropriate review and approval for permits and procedures for experimental activities, operations, and maintenance to ensure that the hazards involved have been addressed. Also, the health and safety officer is responsible for implementing the as low as reasonably achievable (ALARA) program, ensuring that project personnel properly wear radiation dosimeters and other personal protective equipment, and ensuring that personnel are trained in general radiation protection procedures.

3.10 DOCUMENT CONTROL MANAGER

The document control manager is responsible for the development, implementation, oversight, and control of publication activities. The document control manager ensures baseline document control and integration into applicable Energy Systems, DOE, state, and EPA documentation systems.

3.11 ENGINEERING PROJECT MANAGER

The engineering project manager is responsible for overseeing the design and construction activities. Specifically, the engineering project manager ensures that the full scope of design and construction activities is completed on schedule and within budgeted funds and is responsible for communications with all project team members for achieving timely decisions involving scope, cost, schedule, change proposals, and document flow of the design and construction activities.

The engineering project manager is also responsible for coordinating Energy Systems cost and estimating personnel prepare cost estimates and develop cost and obligation authority schedules. Throughout a project, the cost and estimating personnel may also compare cost estimates for value analysis and develop estimates associated with project, schedule, and scope changes. They also provide support for procurement, architect-engineer estimate reviews, bid check reviews, project reviews, and special studies.

3.12 FACILITY MANAGER

The ER Program is responsible for all aspects of facility management of the buildings associated with the IFDP and all decisions and interfaces associated with the management of these buildings will be made by the ER Program. Under direction from the ER Program, CTD will provide the necessary staff to manage and perform activities required for essential S&M of facilities. CTD will provide the primary interface with other ORNL organizations supporting essential S&M in the IFDP facilities. The CTD work direction authority is limited to performance of essential S&M. Any activity not required for essential S&M must be approved the ER Program.

The facility manager is responsible for all operations within the assigned shutdown isotopes facilities. The facility manager's responsibilities include performance of all required S&M activities, maintenance of all facility documentation, occurrence reporting, and training of facilities personnel.

The facility manager oversees all action resulting in waste generation and approves documentation for all project-generated wastes that enter, leave, or are generated at the facility. S(he) ensures that project personnel transport, store, and dispose of hazardous waste, radiological waste, and nonhazardous waste in accordance with all applicable federal, state, and local regulations and with project waste management plans. Also, the waste management coordinator will notify the Energy Systems project manager whenever hazardous materials or wastes are to be moved.

4. PROJECT WORK PLAN

The intent of this project is to implement actions required to deactivate former isotopes production facilities and place them in a safe shutdown condition. The final condition of the facilities will allow for minimal S&M until D&D is initiated. All activities will be conducted to ensure the protection of human health and safety.

The detailed work plan for the IFDP identifies all tasks to be completed to achieve the project's objective and contain the schedule, milestones, and cost estimate. The following is in the work plan:

1. general and facility-specific end-point criteria based upon the draft EM-40 facility acceptance criteria;

2. baseline facility condition;

3. baseline S&M activities in each facility;

4. facility-specific list of candidate deactivation activities;

5. evaluation of each candidate activity against deactivation criteria, which will include the following points:

    - Is this activity consistent with the IFDP mission?
    - Does this activity mitigate an immediate ES&H vulnerability?
    - Is this action required by the EM-40 criteria?
    - Will this activity reduce the future liability of the facility?
    - Will this activity result in lower S&M costs?

6. cost estimates for each activity as discussed in Sect. 7;

7. priorities for activities upon reducing ES&H vulnerabilities and reducing the baseline S&M cost; and

8. project schedule and milestones as discussed in Sect. 6.

The cost estimate, schedule, and work description will then be documented in a work plan and issued for DOE review. The work description will include development of all required procedures.

5. WORK BREAKDOWN STRUCTURE

The WBS defines the hierarchy between elements of the IFDP and reflects the lowest level of work package necessary to complete the program. The WBS is illustrated in Fig. 2. The WBS work package will be used to

1. identify the scope of all work activities;
2. plan and schedule work;
3. prepare resource budgets to support work;
4. develop spending profiles;
5. contract for work; and
6. collect technical, schedule, and cost performance data.

Coordinated use of the WBS is required of all participants in the IFDP and will be the vehicle by which complete integration of the technical, schedule, and cost baseline will be maintained. The configuration management process employs the WBS system to establish and control the technical schedule and cost baseline.

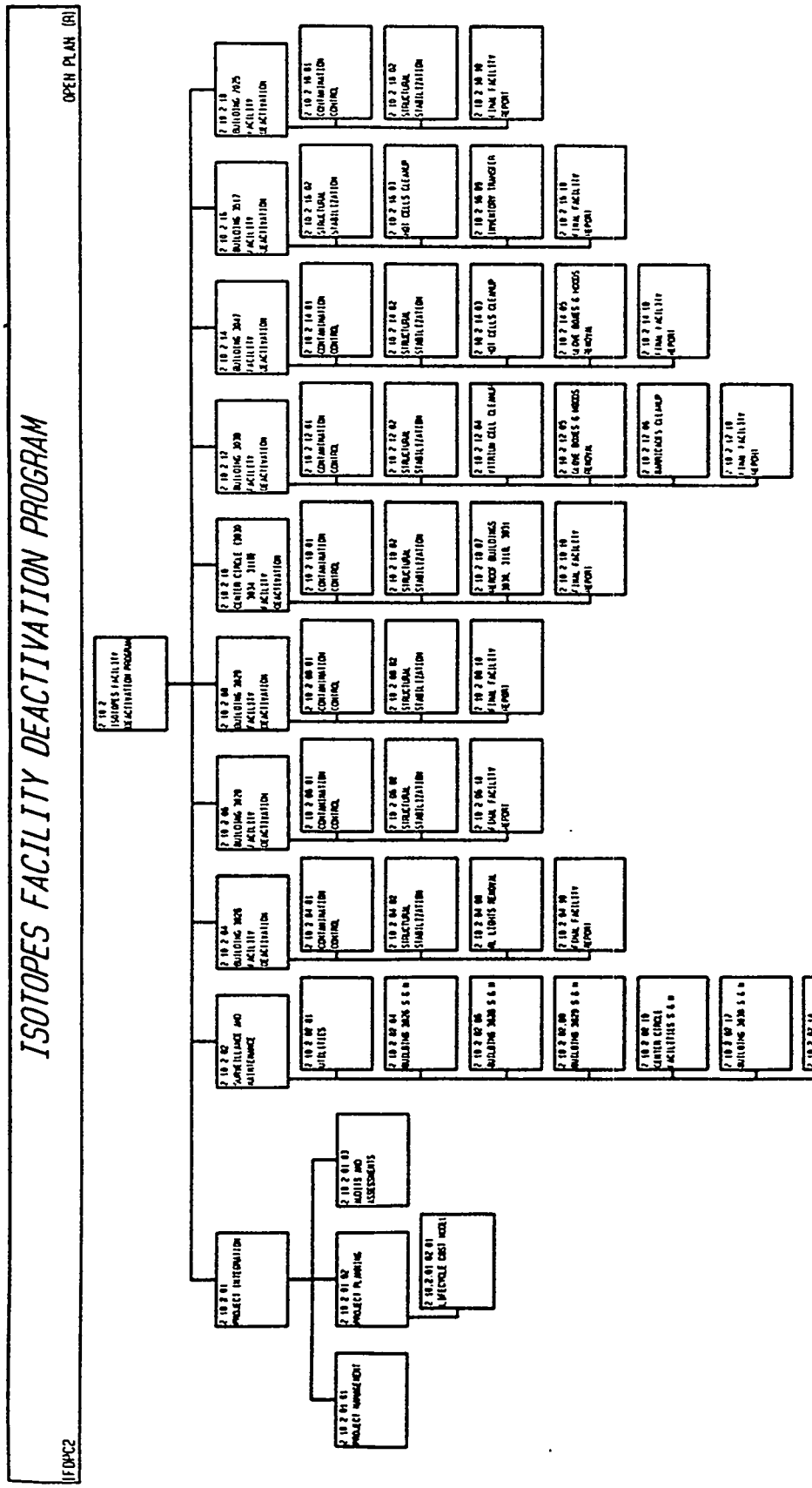

Fig. 2. IFDP Work Breakdown Structure

6. PROJECT SCHEDULE

As part of development of the work plan, activities schedules incorporating controlled milestones are being developed for the IFDP. This schedule information will constitute the schedule baseline and will be documented in the master project schedule and in controlled milestones.

The Energy Systems ER Program is responsible for the preparation and the management of these schedules and milestones in accordance with the management control system (MCS) (Sect. 8.). The master schedule is to be supported by lower-level schedules. The schedules constitute the schedule baseline utilized by Energy Systems for schedule performance, measurement, and control. The DOE-ORO facility transition manager is provided with copies of all schedules necessary for evaluating project status.

The schedule and schedule control process include the following items.

- Schedules will be constructed to reflect tasks required to complete a single WBS element. Also, in accordance with WBS, lower-level schedules are directly integrated and traceable to higher-level schedules.

- An integrated network capable of producing a critical path logic for the entire project will be implemented for analysis and reporting.

- Schedule objectives discussed in Sect. 2.3 of this plan will be incorporated into major milestones. These milestones provide points for control and reporting within the master project schedule and lower-level schedules. Changes in schedule dates for these major milestones must be approved in accordance with the project change control in Sect. 10.

- On a monthly basis, the ER Program will track actual progress against the master project schedule. Schedule status is reported by each project team member, and the status is reviewed by DOE-ORO and Energy Systems project management. Appropriate corrective actions are initiated to rectify schedule variances as they are identified.

- The DOE-ORO project office will conduct periodic analysis of project schedules to ensure the accuracy of the monthly data.

The master project schedule discussed in this section will be the working schedule used to plan, determine status, and report on the project. This document will integrate all facets of the project.

7. PROJECT COSTS

7.1 COST BASELINE

The cost baseline for the project will be a time-phased cost estimate to complete the deactivation activities and turn the facilities over to the D&D Program. The following are being used to develop the cost estimate:

- define the project's technical and end-point criteria,
- identify and schedule the individual work elements required to meet the requirements,
- organize the work elements systematically in a WBS, and
- estimate the resources needed to complete the work elements in the WBS using a uniform set of estimating assumptions.

The project cost estimate is referred to as a baseline because it is integrated with the technical and schedule baselines and is subject to formal change control.

The cost baseline will be contained in the IFDP work plan. The work plan details the scope of work to be performed each fiscal year and defines the baseline cost estimate for the year. Annual review of the work plan accommodates changes resulting from revised programmatic requirements, budget constraints, or unplanned conditions or changes. Scope of work information for the work plan will be extracted from this report.

7.2 BASIS FOR COST ESTIMATE

The IFDP cost estimate is being based upon existing work rules and historical productivity and, therefore, represents conditions expected during the deactivation activities. The level of confidence in the estimate is similar to that expected at the end of the conceptual design phase of a major project, if the work is performed and controlled as described in this report.

The following are key planning assumptions used to prepare the cost estimate.

- D&D activities will not be performed for at least 10 years beyond the completion of deactivation activities.

- All of the deactivation activities are covered by existing ORNL National Environmental Policy Act (NEPA) documentation. Any additional NEPA documentation will be completed in parallel with other project activities with additional resources.

- Waste tanks WC-10 and WC-2 will be available to support deactivation activities.

- Trained and qualified personnel are available to perform deactivation activities.

- Work inefficiencies are expected for radiation work involving respirators or supplied air.

- Operational readiness reviews will be conducted by the project staff or by an appointed review committee. No other operational readiness reviews will be required.

- Technical planning bases for the project will be implemented as described. Appropriate project contingency will be provided and identified.

- Budget will be provided as planned in the funding profile.

7.3 COST ESTIMATE METHOD

The cost estimate was prepared by Energy Systems Engineering Division with support from ORNL organizations. The estimating methodologies and practices conform to the Energy Systems *Project Estimating and Scheduling (PES) Standard Operating Manual* (Energy Systems 1991), the *Estimating and Cost Control Manual for Construction Projects* (DOE-ORO 1991), and the *Cost Estimating Hand Book for Environmental Restoration* (U.S. DOE EM&UE Cost Assessment Team 1990). The estimate is an activity-based cost estimate.

The resource data used to prepare the cost estimate are derived from current cost data and staffing requirements for existing work elements that continue for the duration of the project and from technical work descriptions and schedules prepared for each deactivation activity.

The estimate for each work element was reviewed by knowledgeable plant staff for uniformity and reasonableness before acceptance into the cost estimate.

The resources were priced using labor rates developed from the existing financial system. The indirect costs, including steam and water use assessments, organization overheads, material procurement, and general and administrative burdens, were similarly developed.

Comparisons of the deactivation resource mix with the existing resource mix were made, and the changes were reconciled with work content differences. Where necessary, cost allowances were made based upon historical usage rates, including materials and MK-Ferguson construction forces.

8. PROJECT MANAGEMENT CONTROL SYSTEM

The MCS implemented in the IFDP uses the Energy Systems ER MCS documented in the *Program Management Plan for the Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program* (Gilbert/Commonwealth 1994). The IFDP MCS provides a uniform approach to be used throughout the project. The primary goal of this management system is to ensure planning and execution of this project in a manner that is technically sound, timely, and cost-effective. All planning is identified and correlated to the project summary WBS.

The system focuses on establishing and controlling baselines at the overall project level and at the principal functional organization level. The summary project level baselines are managed by DOE-ORO.

Energy Systems and subcontractors have developed the contract WBS to identify and manage the associated technical, cost, schedule, and funding documentation. This information constitutes the detailed technical cost and schedule baselines.

In addition, the system is designed to have an upward flow of integrated, summarized information from Energy Systems to DOE-ORO and then to DOE-HQ, ensuring timely management decision making by the project team. This is accomplished as follows:

- provide a WBS that is integrated with the function organization structure and defines the project in a disciplined manner from the total project level to the detailed, manageable packages of work for which a technical scope of effort and associated schedule and budget are established and responsibility for performance of work is assigned;

- ensure that the MCS for the project is interfaced and capable of organizing, planning, scheduling, budgeting, accounting, and reporting work in a timely, consistent manner;

- obtain technical, schedule, cost, and funding information in the format and level of detail necessary to meet management and reporting needs;

- integrate the submitted data to derive the project status and progress against planned accomplishments;

- evaluate and analyze the information to identify key problems that require management decisions and corrective actions;

- correlate the project funding profile with planned commitments, expenditures, and work accomplished to date;

- process the information for exception reporting; and

- prepare and control changes that impact established work scope, budgets, and schedules.

9. INFORMATION AND REPORTING

9.1 OVERVIEW

Project performance will be reported to DOE through a graded system of weekly highlights and monthly cost and schedule status summaries. Weekly highlights and monthly reports will be issued for the life of the project. A final report will be issued at the end of the project.

9.2 WEEKLY HIGHLIGHTS AND PROJECT MEETING

A weekly IFDP staff meeting will be conducted to discuss all programmatic activities, concerns, and accomplishments. Discussion and subsequent reporting items include critical program constraints, budgets, schedules, safety, QA, other support groups, procedures, training, staffing, inventory movement, action items, and weekly activity highlights as submitted by the facility supervisors.

The IFDP weekly highlights condense progress and significant concerns into a bulleted list for timely reporting to DOE. Monthly cost summaries with analyses of variances will be available at the second weekly staff meeting of each month.

9.3 SUMMARY COST CHARTS

The financial reporting system is designed to provide the project manager with the data necessary to control and manage program costs. All costs within the ORNL complex are collected in the Finance and Materials (F&M) Accounting System. IFDP costs will be retrieved electronically from the F&M system and put into the cost and scheduling tracking system, where comparative analysis may be made against planned costs. Cost reports will be presented in the WBS format.

Summary cost reports showing actual costs relative to a planned budget will be developed for each WBS and reported monthly. These summaries will appear in the weekly meeting minutes as soon as the data are available from F&M (i.e., normally by the second week). Variances will be controlled as explained in Sect. 2.3.

9.4 DETAILED ACTIVITY PROGRESS REPORT

In addition to the weekly reporting discussed in Sect. 9.2, monthly detailed schedule status reports will be generated to assist the project manager. These reports are primarily intended to be a working tool for use by all project participants and will include information in the following areas:

1. major accomplishments;
2. developments affecting baseline estimates, schedules, and scope;
3. cost performance;
4. schedule status on milestones;
5. significant problems and solutions; and
6. significant comments.

These reports will be issued to IFDP participants and to DOE through the project tracking system by the 10th working day of each month.

10. CHANGE CONTROL

10.1 BASELINE CHANGE CONTROL

Scope, schedule, and cost baselines will be developed and used as a basis for performance measurements on this project. Proposed changes to either of these baselines will be reviewed by and disposed of using a baseline change control board consisting of management.

10.2 CONFIGURATION MANAGEMENT

Configuration Management will be used on this project to help ensure that vital structures, systems, and components for the project conform to their respective requirements (including interfaces) and documents. The primary objective of Configuration Management is to support safe, reliable, and appropriate operations on project work. Protecting the environment and ensuring mission success is closely related to this Configuration Management. Changes to configuration items (safety class items, vital monitors, etc,) will be reviewed by and disposed of by qualified technical reviewers, in the rare event that a proposed change to a configuration item adversely affects DOE-controlled cost, schedule, and scope baselines, project team members may choose to submit a Baseline Change Proposal (or choose to explain a variance). In most cases, a change to a configuration item will not impact the DOE-controlled baseline and will not need a Baseline Change Proposal.

10.3 CONTROLLED PROJECT DOCUMENTATION

The IFDP manager is responsible for designating controlled documents for the project. To comply with the configuration control objectives, each controlled document will be assigned a document number with a publication date. Every issuance shall be permanently maintained in the central project files. A Document Change Form with revision number will accompany proposed revisions with a detailed explanation of requested changes. A summary sheet with all controlled documents will be maintained by the IFDP Office. The objectives of the controlled program documentation activity are to control the content and quality of each document and to ensure proper distribution. No attempt will be made to control distribution (i.e., numbered copies) before retrieving or destroying prior issuances.

11. SUPPORTING PLANS

In addition to the IFDP work plan (Sect. 4.), six other supporting plans have been identified and will be prepared.

11.1 FACILITY SURVEILLANCE AND MAINTENANCE PLAN

A plan identifying all existing S&M activities currently performed in all facilities will be prepared. The plan will identify each S&M activity, the organization responsible for performing the activity, the basis for the activity, required frequency, and the approximate cost. This will be used to identify which deactivation activities will decrease baseline S&M cost and provide a firm basis for the estimated annual costs for facilities after completion of the IFDP.

11.2 HEALTH AND SAFETY PLAN

A health and safety plan will be prepared to (1) ensure that all activities are conducted in accordance with applicable health and safety standards; (2) ensure that the necessary permits and safety equipment/procedures are in place before commencement of work activities; (3) provide the appropriate review and approval for permits and procedures for experimental activities, operations, and maintenance to ensure the hazards have been addressed; and (4) provide implementation of an ALARA program and ensure that project personnel wear proper dosimeters, wear appropriate personnel protective clothing, and are properly trained.

11.3 QUALITY ASSURANCE PLAN

A QA plan will be developed to ensure compliance with DOE Order 5700.6C, "Quality Assurance," to provide a system that verifies implementation of this plan through monitoring surveillance and coordinating all internal audits. The QA plan will specify the organizational structure, functional responsibilities, level of authority, and lines of communication for activities affecting quality. The QA plan will provide oversight of project training requirements.

11.4 WASTE MANAGEMENT PLAN

A waste management plan is being developed and will include projections of types and volumes of hazardous waste to be generated by the deactivation of IFDP facilities. The plan will describe the handling, treatment, and disposal of project waste. Techniques for waste minimization also will be addressed. The plan will be reviewed and updated periodically.

11.5 READINESS REVIEW PLAN

A readiness review plan will be developed by the project manager before implementation of major work activities, such as start of design and start of construction.

Readiness review will be conducted in accordance with the ER Procedure "Conducting Project Readiness Reviews," ER/C-P1610.

11.6 RECORDS MANAGEMENT PLAN

The IFDP will develop a records management plan that will identify the records associated with project activities, responsibility for interim management and location, and final disposition.

12. REFERENCES

DOE Oak Ridge Field Office. 1992. *Estimating and Cost Control Manual for Construction Projects*, Oak Ridge, Tennessee.

U.S. DOE EM&UE Cost Assessment Team. 1990. *Cost Estimating Hand Book for Environmental Restoration*, Oak Ridge, Tennessee.

Duffy, L. P. 1991. Memorandum, "Policy for Acceptance of Facilities for Environmental Restoration," Oak Ridge, Tennessee.

Gibson, S. M., Patton, B. D., and Sears, M. B. 1990. *ORNL Isotopes Facilities Shutdown Program Plan*, ORNL/TM-11689, Oak Ridge, Tennessee.

Gilbert/Commonwealth. 1994. *Program Management Plan for the Martin Marietta Energy Systems, Inc.*, Oak Ridge National Laboratory Site Environmental Program, Oak Ridge, Tennessee.

Hill, L.G., Eversole, R. E., and Kibbe, R. K. 1992. *Oak Ridge National Laboratory Isotopes Facilities Shutdown Program Management Plan*, ORNL/TM-11825, Oak Ridge, Tennessee.

Energy Systems (Martin Marietta Energy Systems, Inc.) 1991. *Project Estimating and Scheduling (PES) Standard Operating Manual*, Oak Ridge, Tennessee.

Energy Systems (Martin Marietta Energy Systems, Inc.) 1994. *Work Plan for the Isotopes Facilities Deactivation Project at Oak Ridge National Laboratory*, Oak Ridge, Tennessee.

J. A. Reafsnyder to A. W. Trivelpiece. 1990. Letter, "Oak Ridge National Laboratory (ORNL) Isotope Facility Shutdown Plan," Oak Ridge, Tennessee.

DISTRIBUTION

1. J. W. Autrey
2. C. A. Bednarz
3. J. B. Berry
4. T. Bonine
5. H. L. Boston
6. W. D. Brickeen
7. T. W. Burwinkle
8. C. Clark, Jr.
9. K. Constant
10. A. G. Croff
11. R. E. Eversole
12. S. B. Garland
13. K. W. Haff
14. J. H. Hooyman
15. L. L. Kaiser
16. E. A. Krispin
17. A. J. Kuhaida
18. R. C. Mason
19. L. E. McNeese
20. T. J. Newsom

21–22. P. T. Owen

23. L. D. Owens
24. R. S. Owens
25. B. D. Patton
26. P. A. Pehlman
27. H. X. Phillips
28. D. W. Ramsey
29. P. D. Ramsey
30. S. M. Robinson
31. P. A. Schrandt
32. B. H. Singletary
33. S. D. VanHoesen
34. A. B. Walker
35. M. L. Whitehead
36. A. C. Williamson
37. P. S. Wood
38. ORNL ER Doc. Manage. Center
39. Central ER Doc. Mange. Center
40. Laboratory Records Dept.
41. ORNL Patent Section
42. Central Research Library

43. Office of Assistant Manager for Energy Research and Development, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8600

44–45. Office of Scientific and Technical Informaiton, P.O. Box 62, Oak Ridge, TN 37831

46. V. F. Boston, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541

47. C. S. Gist, DOE Oak Ridge Operation Office, P.O. Box 2001, Oak Ridge, TN 37831-8541