DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.
DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.
Project Management Plan for Inactive Tanks 3001-B, 3004-B, 3013, and T-30 at Oak Ridge National Laboratory, Oak Ridge, Tennessee

APPROVALS

D.L. Garrett, Project Manager, Lockheed Martin Energy Systems Engineering

C.A. Bednarz, Project Manager, Lockheed Martin Energy Systems Environmental Restoration

CONCURRENCE:

G. R. Hudson, Project Manager, X-10 Projects Team Project Management Division

L. C. Kelly, Team Leader, X-10 Projects Team Project Management Division

APPROVAL:

L. D. Boggs, Director Project Management Division
## CONTENTS

TABLES .................................................................................. iv  
FIGURES ................................................................................ iv  
ACRONYMS ........................................................................ vii  
PREFACE ................................................................................ ix  
EXECUTIVE SUMMARY ........................................................ xi  
1. INTRODUCTION .................................................................. 1  
   1.1 PURPOSE ........................................................................ 1  
   1.2 SCOPE ........................................................................... 1  
   1.3 JUSTIFICATION ............................................................... 1  
2. OBJECTIVES ....................................................................... 1  
   2.1 MISSION AND GOALS ....................................................... 1  
   2.2 TECHNICAL OBJECTIVES ............................................... 1  
   2.3 SCHEDULE OBJECTIVES .................................................. 2  
   2.4 COST OBJECTIVES ........................................................... 2  
3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES ....... 2  
   3.1 DEPARTMENT OF ENERGY OAK RIDGE OPERATIONS OFFICE .... 4  
   3.2 LOCKHEED MARTIN ENERGY SYSTEMS, INC. ....................... 4  
   3.3 FIXED-PRICE SERVICE SUBCONTRACTOR ......................... 4  
   3.4 MANAGEMENT PLANS ...................................................... 4  
       3.4.1 Configuration Management Plan .................................. 4  
       3.4.2 Waste Management Plan ........................................... 4  
       3.4.3 Records Management Plan ......................................... 5  
4. WORK PLAN AND PERFORMANCE CRITERIA ....................... 5  
5. PROJECT SUMMARY WORK BREAKDOWN STRUCTURE ........... 5  
6. SCHEDULE ....................................................................... 5  
7. COST ESTIMATES .................................................................. 8  
8. COST AND SCHEDULE CHANGE PROCEDURES ..................... 8  
9. PROJECT MANAGEMENT, MEASUREMENT, AND PLANNING AND CONTROL SYSTEMS .................................................................................. 8  
10. INFORMATION AND REPORTING ........................................ 8
11. QUALITY, RISK, SAFETY, AND NEPA DOCUMENTATION ............................................ 9
   11.1 Quality Assurance (QA) ................................................................. 9
   11.2 Risk .......................................................................................... 9
   11.3 Safety ..................................................................................... 10
   11.4 NEPA ..................................................................................... 10

12. REFERENCES ......................................................................................... 10
TABLES

1 Inactive Tanks Program—Tanks 3001-B, 3004-B, 3013, and T-30 project management plan commitments .................................. 9

FIGURES

1 Inactive tank maintenance action project organization. ........................................... 3
2 Project work breakdown structure. ................................................................. 6
3 Project schedule. ........................................................... 7

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.
<table>
<thead>
<tr>
<th>ACRONYMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CERCLA</td>
</tr>
<tr>
<td>DOE</td>
</tr>
<tr>
<td>DOE-ORO</td>
</tr>
<tr>
<td>EPA</td>
</tr>
<tr>
<td>ER</td>
</tr>
<tr>
<td>ES&amp;H</td>
</tr>
<tr>
<td>FFA</td>
</tr>
<tr>
<td>HP</td>
</tr>
<tr>
<td>IH</td>
</tr>
<tr>
<td>LLLW</td>
</tr>
<tr>
<td>NEPA</td>
</tr>
<tr>
<td>ORNL</td>
</tr>
<tr>
<td>QA</td>
</tr>
<tr>
<td>TDEC</td>
</tr>
<tr>
<td>WBS</td>
</tr>
</tbody>
</table>
This project management plan was prepared to describe the organizational responsibilities, schedules, and management controls needed to remove and dispose of three inactive liquid low-level radioactive waste (LLLW) tanks and to fill one inactive LLLW tank with grout at ORNL. The Program Management Plan for the Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program, ORNL/ER-167, provided the guidance for preparation of this plan. This document was prepared under Work Breakdown Structure 6.1.01.21 (Activity Data Sheet 3301, “Inactive Tanks”).
EXECUTIVE SUMMARY

This document identifies the roles and responsibilities of the project team members and identifies the project scope, schedule, and cost reporting activities for a maintenance activity to remove and dispose of three inactive liquid low-level radioactive waste (LLLW) system tanks and to isolate and fill one LLLW tank with grout.

Tanks 3001-B, 3004-B, and T-30 are located in concrete vaults and tank 3013 is buried directly in the soil. The maintenance project consists of cutting the existing pipes attached to the tanks; capping the piping to be left in place; removing the tanks and filling the vaults with grout for tanks 3001-B, 3004-B, and T-30; and filling tank 3013 with grout. Because the LLLW line serving tank 3001-B will be needed for discharging the 3001 canal demineralizer back flush and regeneration waste to tank WC-19, tank 3001-B will be replaced with a section of piping.
1. INTRODUCTION

1.1 PURPOSE

This project management plan identifies the major activities involved in the maintenance action to remove and dispose of inactive liquid low-level radioactive waste (LLLW) tanks 3001-B, 3004-B, and T-30 and to grout tank 3013 in place at the Oak Ridge National Laboratory (ORNL). The plan also identifies the organizations that will perform the required management functions.

1.2 SCOPE

The scope of this project is to remove and dispose of three inactive LLLW tanks and grout one inactive LLLW tank in place, isolate any remaining pipes and equipment, fill the remaining vaults with suitable grout, and back fill any excavations with suitable back fill.

1.3 JUSTIFICATION

Removing and disposing of inactive LLLW tanks or filling them with grout will eliminate any future liability for surveillance and maintenance of the tanks and will allow them to be removed from the list of inactive tanks in the Federal Facility Agreement (FFA).

2. OBJECTIVES

2.1 MISSION AND GOALS

The mission of the U.S. Department of Energy (DOE) Environmental Restoration (ER) Program is to either eliminate or reduce to prescribed safe levels the risks to the environment or to human health and safety posed by inactive or surplus DOE-managed sites and facilities that have been contaminated by radioactive, hazardous, or mixed wastes. This mission is to be accomplished in conformance with all federal, state, and local environmental statutes and regulations.

The specific objective of this project is to provide for closure of four inactive LLLW tanks and thus remove them from the list of inactive (Category D) tanks in the FFA.

2.2 TECHNICAL OBJECTIVES

The technical objectives of the inactive tank remediation program are to remove the inactive tanks from their present locations, treat them as required and dispose of them as solid
low-level radioactive waste or to secure them in place by filling them with grout. The project will include the following activities:

- removing tank 3001-B from its vault, restoring the waste discharge line from the 3001 canal demineralizer to tank WC-19, and filling the vault with grout;
- removing tank 3004-B from its vault, cutting and capping all piping connected to the tank, and filling the tank vault and adjacent valve pit with grout;
- cutting and capping all piping connected to tank 3013 and filling the tank with suitable grout; and
- removing tank T-30 from its vault, cutting and capping all piping connected to the tank, and filling the vault with grout.

Tanks and any piping and equipment that is removed either will be transported to Scientific Ecology Group for smelting or will be stored at the appropriate ORNL waste storage facility as solid low-level radioactive waste (see Sect. 3.4.2).

2.3 SCHEDULE OBJECTIVES

The primary schedule objectives for the tank maintenance project are to receive approval complete tank maintenance activities and site restoration activities by mid-September 1995. To ensure adherence to the overall project schedule, more detailed activities and milestones have been established and are listed in Chap 6.

2.4 COST OBJECTIVES

The cost objective for this project is to accomplish removal and disposal or grouting of the tanks at minimum cost while meeting all regulatory requirements.

3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

The ORNL ER Program organization and the roles and responsibilities of the key management positions are described in Chap. 3 of the *Energy Systems Program Management Plan* (Energy Systems 1994).

The responsibilities and duties of participants in this specific project are described in Sects. 3.1 through 3.5 of this document and in Chap. 4 of the *Energy Systems Program Management Plan* (Energy Systems 1994). The organizational structure for implementation of the maintenance project is shown in Fig. 1.
Fig. 1. Inactive tank maintenance action project organization.
3.1 DEPARTMENT OF ENERGY OAK RIDGE OPERATIONS OFFICE

The DOE Oak Ridge Operations Office (DOE-ORO) is ultimately responsible for all activities on the Oak Ridge Reservation. DOE-ORO will provide overall project management, including oversight of all Title I, Title II, and Title III documents and activities and administration of all prime contracts. All participants will be under contract to the DOE-ORO or its contractors. Any coordination with the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) will be DOE’s responsibility.

3.2 LOCKHEED MARTIN ENERGY SYSTEMS, INC.

Lockheed Martin Energy Systems (Energy Systems) is the Facilities Manager at ORNL under an existing cost-plus-award-fee prime contract. Energy Systems will perform or oversee all Title I and Title II engineering design work and will have overall responsibility for Title III activities; provide environmental, safety, and health (ES&H) support services throughout field work (e.g., contaminated waste disposal); and provide project and subcontractor management services. Energy Systems will act as the Integrating Contractor with the responsibility for assisting DOE-ORO in the coordination of contractor activities and the compilation of planning, performance, and reporting information generated by contractor participants.

3.3 FIXED-PRICE SERVICE SUBCONTRACTOR

The fixed-price service subcontractor will provide all personnel, facilities, labor, materials, tools, equipment, and services needed to perform the scope of work described in the statement of work (Energy Systems 1995a) and the service contract specification, and any addenda if applicable, for Inactive Tanks 3001-B, 3004-B, 3013, and T-30 (Energy Systems 1995b).

3.4 MANAGEMENT PLANS

3.4.1 Configuration Management Plan

No safety class items or safety systems are involved in this project. Upon completion of the field work, the system configuration will be documented on as-built drawings in accordance with Martin Marietta Energy Systems Engineering Procedure EP-C-35 and the tanks will be removed from the FFA Appendix F listing of Category D tanks. A separate project-specific configuration management plan will not be prepared.


3.4.2 Waste Management Plan

A waste management plan, ORNL/ER-304, has been prepared by Energy Systems to address the management of wastes produced during the implementation of the tank maintenance activities. The waste management plan is consistent with ORNL/ER-288/R1.
3.4.3 Records Management Plan

*Project Records Plan for Inactive Tanks Remediation Program, X1995-0010,* has been prepared by Energy Systems and will be followed by each participant.

4. WORK PLAN AND PERFORMANCE CRITERIA

The service contractor will remove or grout the tanks in accordance with the statement of work for Inactive Tanks Program Tanks 3001-B, 3004-B, 3013, T-30 (Energy Systems 1995a).

Performance criteria are contained in the service contract specification for Inactive Tanks 3001-B, 3004-B, 3013, and T-30 (Energy Systems 1995b).

5. PROJECT SUMMARY WORK BREAKDOWN STRUCTURE

The project summary work breakdown structure (WBS) is shown in Fig. 2.

All project participants will manage and schedule work, collect costs, and report at the project summary WBS level 6 or lower.

6. SCHEDULE

The project schedule is shown in Fig. 3.
Fig. 2. Project work breakdown structure.
<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBTAIN DAVIS/BACON RULING REQUEST FOR MAINTENANCE ACTION</td>
<td>ROSS</td>
</tr>
<tr>
<td>NEPA DOCUMENTATION</td>
<td>HAMILTON</td>
</tr>
<tr>
<td>PROJECT DOCUMENTATION - RA H &amp; S PLAN</td>
<td>SOUZA</td>
</tr>
<tr>
<td>HOISTING RIGGING PLAN - PREP/REV [ORNL-ER-316]</td>
<td>PROVOST/BAXTER</td>
</tr>
<tr>
<td>MAINTENANCE ACTION WORK PLAN (INCL QA REQUIREMENT) + (BEST MGT PRACTICES PLAN)</td>
<td>ROSS</td>
</tr>
<tr>
<td>READINESS ASSESSMENT PLAN [ORNL-ER-318]</td>
<td>ROSS/AST</td>
</tr>
<tr>
<td>CONDUCT OF OPS PLAN</td>
<td>ROSS/DUKES</td>
</tr>
<tr>
<td>WASTE MGT PLAN</td>
<td>WHITHEAD/HAWK</td>
</tr>
<tr>
<td>SAFETY ASSESSMENT REPORT</td>
<td></td>
</tr>
<tr>
<td>PROJ MGT PLAN [ORNL/ER 312]</td>
<td></td>
</tr>
<tr>
<td>TRAINING</td>
<td></td>
</tr>
<tr>
<td>SOW / CONSTRUCTION SPECIFICATION / SIGN</td>
<td></td>
</tr>
<tr>
<td>READINESS SCREENING MEETING</td>
<td></td>
</tr>
<tr>
<td>CONSTRUCTION KICK-OFF MEETING</td>
<td></td>
</tr>
<tr>
<td>MOBILIZATION - TANK REMOVAL</td>
<td>ROSS/GRANUS</td>
</tr>
<tr>
<td>TANK 3004-B</td>
<td></td>
</tr>
<tr>
<td>TANK 3001-B</td>
<td></td>
</tr>
<tr>
<td>TANK T-30</td>
<td></td>
</tr>
<tr>
<td>TANK 3013 (RECYC)</td>
<td></td>
</tr>
<tr>
<td>WASTE MANAGEMENT ACTIVITIES</td>
<td>LARSEN</td>
</tr>
<tr>
<td>WASTE ACCEPTANCE CRITERIA DOCUMENT</td>
<td>LARSEN</td>
</tr>
<tr>
<td>TRANSPORT TANK TO SEG</td>
<td>ER</td>
</tr>
<tr>
<td>CLOSURE LETTER (FINAL DOCUMENTATION)</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 3. Project schedule.
7. COST ESTIMATES

The baseline cost estimate will be regularly 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 in accordance with DOE-ORO change control policy. All changes in the estimated cost will be documented to provide continuity between estimates, and the reasons for all changes since the previous approved estimate will be given.

8. COST AND SCHEDULE CHANGE PROCEDURES

Cost and schedule change procedures will be consistent with ER Program requirements and the project change order process.

9. PROJECT MANAGEMENT, MEASUREMENT, AND PLANNING AND CONTROL SYSTEMS

Integrated DOE and Energy Systems cost accounting and engineering manpower systems will be used to manage the cost, manpower, scheduling, and technical performance of this project.

10. INFORMATION AND REPORTING

Typical data to be received by the Energy Systems engineering project engineer from other contractors and integrated into the actual cost and schedule performance data include the following:

- cost performance report;
- status reports containing funding information to track budget authorizations and budget outlays, commitments, and accrued costs; and
- progress, accomplishments, problems, impacts, and corrective actions.

The Energy Systems engineering project manager will prepare the project monthly report and issue it for consolidation with ER Program reports. Commitments made throughout this document are summarized in Table 1.

Early warning of events that might cause significant impact on project scope, budget, or schedule must be reported as required in Secretary of Energy Notice 27.
Table 1. Inactive Tanks Program—Tanks 3001-B, 3004-B, 3013, and T-30 project management plan commitments

<table>
<thead>
<tr>
<th>Commitment</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly cost and status reports</td>
<td>All participants</td>
</tr>
<tr>
<td>Monthly status reports to DOE</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Project performance measurements</td>
<td>All participants</td>
</tr>
<tr>
<td>Quality Assurance Evaluation</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Risk Assessment</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Project waste management plan</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Project records plan</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Preliminary estimate</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Detailed estimate</td>
<td>Energy Systems</td>
</tr>
<tr>
<td>Baseline cost estimate review</td>
<td>All participants</td>
</tr>
</tbody>
</table>

The service contractor will prepare and submit a monthly report as described in Chap. 7 of the statement of work (Energy Systems 1995a).

11. QUALITY, RISK, SAFETY, AND NEPA DOCUMENTATION

11.1 Quality Assurance (QA)

Quality Assurance Evaluation No. QAE-X-95-ENGR-251 designates this project as Q-CATEGORY III. Standard Engineering procedures, guidelines, and practices will be sufficient to control the engineering and construction-quality-related activities of the project. The Subcontractor Industrial Hygiene (IH) personnel will monitor the construction activities and will advise the Construction Engineer if any additional personnel/environmental protection practices are required. Energy Systems Health and Safety personnel will provide oversight and technical assistance. The IH, HP, and QA requirements for the service contractor are defined in the service contract specification (Energy Systems 1995b).

11.2 Risk

The risk assessment on the four tanks shows that the risks to human health and the environment are below the EPA target range and do not exceed a $10^{-6}$ risk level.
11.3 Safety

The safety assessment (Energy System 1995c) categorizes the four tanks as Industrial Facilities in accordance with appropriate guidelines.

11.4 NEPA

Categorical exclusion CX-X10-442 (3042X), Removal from Service and/or Permanent Closure of Liquid Low-Level Radioactive Waste Tank Systems at ORNL, provides the required NEPA documentation for this project.

12. REFERENCES


DISTRIBUTION

1. P. W. Allen
2. H. L. Boston
3. K. L. Deroos
4. C. H. Dukes
5. J. R. Frantz
6. D. L. Garret
7. G. R. Larson
8-10. D. Matteo
11-12. P. T. Owen
13. R. G. Ross, Jr.
14. A. W. Saulsbury
15. C. B. Scott
16. P. A. Schrandt
17. W. T. Thompson
18. D. A. White
19. R. C. Williams
20. P. S. Wood
21. M. A. Woody
22. ORNL Patent Section
23. Central Research Library
24-26. Central ER Document Management Center
27-29. ORNL ER Document Management Center
30. ORNL Laboratory Records
31. Office of Assistant Manager for Energy Research and Development, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, Tennessee 37831-8600