LOCKHEED MARTIN

ORNL/ER-375/R1

**ENVIRONMENTAL
RESTORATION
PROGRAM**

**Project Management Plan
for Waste Area Grouping 5
Old Hydrofracture Facility Tanks
Contents Removal
at Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

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FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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**Project Management Plan
for Waste Area Grouping 5
Old Hydrofracture Facility Tanks
Contents Removal
at Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

Date Issued—February 1998

Prepared by
Engineering Division
Oak Ridge National Laboratory
and
CDM Federal Programs Corporation
Oak Ridge, Tennessee
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Environmental Management Activities at the
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

**Project Management Plan
for Waste Area Grouping 5
Old Hydrofracture Facility Tanks Contents Removal
at Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

Approval

C.A. Bednarz, Energy Systems Project Manager

Date

PREFACE

This project management plan was prepared to describe the organizational responsibilities, schedules, and management controls needed to remove the contents from the five inactive, liquid low-level radioactive waste tanks located at the Old Hydrofracture Facility Waste Area Grouping 5 at Oak Ridge National Laboratory. The *Program Management Plan for the Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program*, ORNL/ER-167 (Energy Systems 1994) provided the guidance for preparation of this project management plan. This document was prepared under Work Breakdown Structure 6.1.05.20.02 (Activity Data Sheet 3305, "Inactive Tanks").

 

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ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
CDM Federal	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
EE/CA	engineering evaluation and cost analysis
EM	Environmental Management
EMEF	Environmental Management and Enrichment Facilities
Energy Systems	Lockheed Martin Energy Systems, Inc.
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
HAZWOPER	Hazardous Waste Operations and Emergency Response
ITO	Incentive Task Order
Jacobs	Jacobs Engineering EM Team
LLLW	liquid low-level (radioactive) waste
LMER	Lockheed Martin Energy Research Corp.
NCSA	Nuclear Criticality Safety Approval
NEPA	National Environmental Policy Act
OHF	Old Hydrofracture Facility
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office (DOE)
P&E	Plant and Equipment
PNNL	Pacific Northwest National Laboratory
TDEC	Tennessee Department of Environment and Conservation
TWA	Task Work Agreement
WBS	work breakdown structure
WMRAD	Waste Management and Remedial Action Division

EXECUTIVE SUMMARY

This revision (Rev. 1) updates the schedule and designation of responsibilities for the Old Hydrofracture Facility (OHF) tanks contents removal project. A number of project activities identified in the original plan have been completed and other activities remain in progress. Completed activities include:

- sampling and analysis of tanks contents (January 1997);
- preparation of a tanks contents characterization report (see Keller, Giaquinto, and Meeks 1997);
- evaluation of tank integrity (see Energy Systems 1996b);
- installation of new risers on tanks (1996);
- modification of liquid low-level (radioactive) waste system valve box (1997);
- preparation of an engineering evaluation and cost analysis (see DOE 1996b);
- preparation of an action memorandum (see DOE 1996a);
- final configuration of a sluicing and pumping system (see CDM Federal Programs Corporation 1997); and
- fabrication of the sluicing and pumping system.

Ongoing and planned future activities include:

- cold testing of the sluicing and pumping system;
- readiness assessment;
- equipment relocation and assembly;
- isotopic dilution of fissile radionuclides;
- sluicing and transfer of the tanks contents; and
- preparation of the Removal Action Completion Report.

This revision to the plan updates the schedule and designation of responsibilities for the activities not yet completed. The major changes in the project since publication of the earlier project management plan relate to the designation of responsibilities for project components. The most significant change is that the sluicing and pumping system has been configured by and will be operated by CDM Federal Programs Corporation, whereas Bechtel National, Inc., was designated in the earlier plan as the subcontractor responsible for these activities. In addition, a new technical lead and a new project analyst have been designated within Lockheed Martin Energy Systems, Inc. and Lockheed Martin Energy Research Corp. The schedule for tanks contents removal has been accelerated, with transfer of the final batch of tank slurry now scheduled for March 31, 1998 (instead of November 10, 1998).

The OHF sluicing and pumping project is proceeding as a non-time-critical removal action under the Comprehensive Environmental Response, Compensation, and Liability Act. The purpose of the project is to remove the contents from five inactive underground storage tanks, designated T-1, T-2, T-3, T-4, and T-9. The tanks contain an estimated 52,700 gal of liquid and sludge, together comprising a radioactive inventory of approximately 30,000 Ci.

This plan was prepared under the guidance of the *Program Management Plan for the Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program* (Energy Systems 1994).

1. INTRODUCTION

The purpose of this revision (Rev. 1) is to update the schedule and designation of responsibilities for the Old Hydrofracture Facility (OHF) tanks contents removal project.

1.1 SCOPE

On January 1, 1992, the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA) Region IV, and the Tennessee Department of Environment and Conservation (TDEC) signed a Federal Facility Agreement (FFA) concerning the Oak Ridge Reservation. The FFA requires that inactive liquid low-level (radioactive) waste (LLLW) tanks at Oak Ridge National Laboratory (ORNL) be remediated in accordance with requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The scope of this project is to transfer inventory from the five inactive LLLW tanks at the OHF into the active LLLW system. The project includes several activities, some of which have been completed and some of which are ongoing. Completed project activities include the following:

- sampling and analysis of tanks contents (January 1997);
- preparation of a tanks contents characterization report (see Keller, Giaquinto, and Meeks 1997);
- evaluation of tank integrity (see Energy Systems 1996b);
- installation of new risers on tanks (1996);
- modification of LLLW system valve box (1997);
- preparation of an engineering evaluation and cost analysis (EE/CA) (see DOE 1996b);
- preparation of an action memorandum (see DOE 1996a);
- final configuration of a sluicing and pumping system (see CDM Federal 1997); and
- fabrication of the sluicing and pumping system.

Ongoing and planned future activities include:

- cold testing of the sluicing and pumping system;
- readiness assessment;
- equipment relocation and assembly;
- isotopic dilution of fissile radionuclides;
- sluicing and transfer of the tanks contents; and
- preparation of the Removal Action Completion Report.

1.2 JUSTIFICATION

The OHF LLLW tanks contain approximately 52,700 gal of low-level radioactive waste consisting of both supernate and sludge. The primary human health risks are the presence of approximately 30,000 Ci of radioactive material in the tanks, the fact that the single-wall tanks are constructed of carbon steel and buried without active corrosion protection (the tanks were buried in the early 1960s and the cathodic protection system was found to be inoperative in the early 1990s),

and the existence of an expedient pathway to public receptors via the under-tank drain system that discharges into Melton Branch and White Oak Creek.

A substantial future off-site risk is posed to human health and the environment by the contents of these five tanks. According to the Action Memorandum (DOE 1996a), the risk from each tank exceeded the EPA target risk range of 1×10^{-6} to 1×10^{-4} . Removing and disposing of the contents from the inactive OHF LLLW tanks will reduce the consequences of a potential uncontrolled release from the tanks and, therefore, reduce this future off-site risk potential.

2. OBJECTIVES

2.1 MISSION AND GOALS

The mission of the DOE Environmental Management (EM) Program is to either eliminate or reduce to prescribed safe levels the risks to the environment and 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 goal of the OHF Tanks Contents Removal project team is to sluice, to the extent practicable, the current inventory (both liquid and sludge) in the inactive OHF tanks and transfer the inventory to the Melton Valley Storage Tanks for ultimate treatment and disposal. Transfer will be accomplished by using a sluicing and pumping system configured and fabricated by CDM Federal Programs Corporation (CDM Federal). The sluicer spray nozzle to be used with the system has been configured and fabricated by Waterjet Technology, Incorporated, under contract to the Pacific Northwest National Laboratory (PNNL). A high pressure pump provided by PNNL may also be used with the system if required to dislodge hardened sludge. The sluiced tank contents will be transferred to the active LLLW system via a new above-ground pipeline that will tie into an existing pipeline at the existing valve box located northwest of the OHF site. Work activities will be performed in compliance with all applicable DOE Orders; Lockheed Martin Energy Systems, Inc. (Energy Systems) procedures; and environmental, safety, and health regulations.

2.2 TECHNICAL OBJECTIVES

The technical objectives of the OHF tanks contents removal project are to remove the contents from the OHF tanks and transfer the contents to the active LLLW system. The project consists of the following major tasks:

- establish clear and concise data quality objectives for all sampling and analyses needed to satisfy the active LLLW system waste acceptance criteria and engineering design considerations (completed);
- sample and analyze the contents of the OHF tanks (completed);
- prepare an EE/CA and an action memorandum (completed);

- perform preliminary engineering work and prepare the system configuration (completed);
- fabricate piping and ancillary equipment and systems to transfer the OHF tanks contents to the active LLLW system (completed);
- cold test the sluicing and pumping system (in progress);
- perform a readiness assessment (future);
- disassemble, relocate, and assemble equipment at the OHF site (future);
- isotopically dilute fissile radionuclides in tanks (future);
- sluice and transfer tank contents (future); and
- prepare Removal Action Completion Report (future).

2.3 SCHEDULE

The proposed schedule for completion of the remaining project activities is as follows:

- cold testing of the sluicing and pumping system by 1/23/98;
- readiness assessment by 2/3/98;
- equipment relocation and assembly by 2/17/98;
- isotopic dilution of fissile radionuclides by 2/17/98;
- sluicing and transfer of the tank contents by 3/31/98; and
- preparation of the Removal Action Completion Report by 9/15/98.

To ensure adherence to the overall project schedule, more detailed activities and milestones have been established. The project summary schedule is shown in Sect. 6 and important project control milestones are listed in Sect. 7.

2.4 COST OBJECTIVE

The proposed cost objective for this project is to accomplish tanks contents removal at minimum cost while meeting all regulatory requirements. Cost and schedule performance will be evaluated against the incentive fee schedule established in the Energy Systems contract, X-04, with CDM Federal.

3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

The Energy Systems Environmental Management and Enrichment Facilities (EMEF) Program organization and roles and responsibilities of the key management positions are described in Sect. 3 of the Energy Systems program management plan (Energy Systems 1994).

The responsibilities and duties of the major participants in this specific project are described in Sects. 3.1 and 3.2 of this document and in Sect. 4 of the Energy Systems program management plan (Energy Systems 1994). The organizational structure for implementation of the OHF tanks contents removal project is shown in Fig. 1.

The project will be managed by the Energy Systems EMEF organization on behalf of DOE-Oak Ridge Operations Office (DOE-ORO). Support activities will be provided to Energy Systems from Lockheed Martin Energy Research Corp. (LMER) personnel and from Energy Systems subcontractors, including MK-Ferguson of Oak Ridge Company. The Jacobs Engineering EM Team (Jacobs) has prepared the decision documents for the project. The following sections identify specific individuals, describe more fully the responsibilities of these individuals and the various organizations involved, and provide information on reporting requirements. Figure 2 summarizes project responsibilities.

3.1 U.S. DEPARTMENT OF ENERGY-OAK RIDGE OPERATIONS OFFICE

DOE-ORO is ultimately responsible for all activities on the Oak Ridge Reservation. DOE-ORO will provide overall project management and administration of all prime contracts. All participants will be under contract to DOE-ORO or its contractors. Coordination with EPA and TDEC is DOE's responsibility.

3.2 LOCKHEED MARTIN ENERGY SYSTEMS, INC.

Energy Systems is the current management and operating prime contractor to DOE-ORO for environmental management at ORNL under an existing cost-plus-award-fee prime contract. Energy Systems will have overall responsibility for project management and integration; systems configurations; provision of environmental, safety, and health support services and plans for the fieldwork (e.g., waste management plan); and provision of project and subcontractor management services. Bechtel Jacobs Company will become the management and integration contractor to DOE-ORO for environmental management and will become responsible for these functions on April 1, 1998.

The Energy Systems project manager is **Clay Bednarz**, who will have overall responsibility for ensuring that the project's scope is accomplished within the specified budget and schedule. He will have the primary responsibility for interfacing with DOE and the regulatory community. Within the Energy Systems organization, the following individuals will report to Mr. Bednarz for this project and will be responsible for accomplishing the described activities.

- **Don Garrett, LMER**, is the project engineer and will be responsible for coordinating engineering tasks for the project and will serve as liaison between LMER and Energy Systems organizations. He will coordinate health physics and health and safety support for all field activities, all regulatory compliance issues, Davis-Bacon documentation, Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements, and development of applicable or relevant and appropriate requirements (ARARs) for the remedial action. Mr. Garrett will enlist subcontractor support for these activities, including CDM Federal.

Fig. 1. Project team organization.

Fig. 2. Personnel responsibilities for the OHF Tanks Contents Removal project team.

- **Greg Boris, Energy Systems**, is the technical lead for the project and will coordinate the cold test mock-up activities, nuclear criticality evaluations, development of the 50% and 100% system configurations, and sampling and analytical laboratory work. He will also coordinate technical baseline control (prime responsibility of CDM Federal) and provide interface for the Technical Demonstration and Site Technology Demonstration Program. Mr. Boris will coordinate all work performed by ORNL Plant and Equipment and by CDM Federal.
- **Brian Frederick, Jacobs/Solutions to Environmental Problems, Inc.**, is responsible for preparation of all decision documents for the project, including the EE/CA and the Action Memorandum, and for an evaluation of the tanks structural integrity.
- **Ken Larison, Energy Systems**, is the project analyst and will maintain the budget and reporting requirements for the project. He is also the project scheduler and will maintain and update the schedule for the project and all scheduled activities within the project. He is responsible for baseline maintenance and work funds authorization.
- **Lynn Whitehead, Energy Systems**, is the facility manager for the OHF and has site landlord responsibilities for all activities conducted on-site. These responsibilities include lockout/tagout control; surveillance and maintenance activities; Price-Anderson Amendments Act duties; and serving as an interface for Nuclear Criticality Safety Assessments, Unreviewed Safety Questions Determination, the readiness assessment, and site access control.
- **Charles Callis, CDM Federal**, is the CDM Federal project manager and is responsible for configuring and fabricating the sluicing/pumping system, conducting the cold test, and conducting the sluicing/pumping operations. Work instructions will be developed from the cold test for use during the actual sluicing. This will ensure that the readiness assessment requirements for a category 3 nuclear facility are met. Mr. Callis is also responsible for preparation of project documentation and value engineering.
- **Steve Ruddell, LMER**, will coordinate all Waste Management and Remedial Action Division (WMRAD) activities on behalf of the project. These activities will include conduct of all sampling of the tanks, waste certification and disposal of all remedial action-derived waste, waste evaluation criteria review, and all facility integrity tests.

3.3 MANAGEMENT PLANS

3.3.1 Configuration Management Plan

A project-specific configuration management plan has been issued, *Configuration Management Plan for the Old Hydrofracture Tank Contents Removal Project Sluicing and Pumping System at Oak Ridge National Laboratory, Oak Ridge, Tennessee* (Energy Systems 1997a).

3.3.2 Project Plans and Documents

Energy Systems and CDM Federal have prepared a number of plans and documents to guide the project. The major plans and documents are listed in Table 1.

Table 1. Major project plans and documentation

Documentation	Designation	Date issued
<i>ORNL Old Hydrofracture Facility Tanks Contents Removal Action Project Plan</i>	ITO-FY97-049/R0	June 30, 1997
<i>Draft Project Management Plan for Waste Area Grouping 5, Old Hydrofracture Facility Tanks Contents Removal at Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/ER-375/R1	January 1998
<i>Oak Ridge National Laboratory Old Hydrofracture Facility Tanks Contents Removal Project 100% Configuration</i>	N/A	May 20, 1997
<i>Cold Test Plan for the Old Hydrofracture Facility Tank Contents Removal Project, Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/ER-423	November 1997
<i>Configuration Management Plan for the Old Hydrofracture Facility Tank Contents Removal Project Shuicing and Pumping System at Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/ER/MS-11	December 1997
<i>Project Waste Management Plan for the Old Hydrofracture Tanks Contents Removal Project Cold Test</i>	971203	December 1997
<i>Safety Analysis Report for the Old Hydrofracture Facility Tanks Contents Removal Action Project at Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/SAR/7852-ER/ER-R0	October 1997
<i>Draft Quality Assurance Project Plan for Old Hydrofracture Facility Tanks Content Removal at Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	005-225/0002-0796	July 1996
<i>Draft Work Plan for Denaturing Waste in the Old Hydrofracture Tanks</i>	Not yet assigned	October 1997
<i>Draft Old Hydrofracture Facility Tanks Contents Removal Action Operations Plan at the Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/ER-433	January 1998
<i>Site-Specific Health and Safety Plan for the Old Hydrofracture Facility Tanks Contents Removal Project at Oak Ridge National Laboratory, Oak Ridge, Tennessee</i>	ORNL/ER-427	December 1997
<i>Project Waste Management Plan for Contents Removal of the Old Hydrofracture Facility Tanks</i>	971212	December 1997
<i>Draft Readiness Determination Plan for the Old Hydrofracture Facility Tanks Contents Removal Project</i>	Not yet assigned	November 1997

3.3.3 Project Records

Project records will be handled in accordance with procedure ERWM/ER-P1110, Rev. 1, *Identification, Distribution, and Maintenance of Environmental Restoration Records* (Energy Systems 1995).

4. WORK PLAN AND PERFORMANCE CRITERIA

Sluicing and pumping system components will be cold tested at the ORNL Robotics and Process Systems complex, following the *Cold Test Plan for the Old Hydrofracture Facility Tank Contents Removal Project, Oak Ridge National Laboratory, Oak Ridge, Tennessee* (Energy Systems 1997d). The components will then be disassembled, moved to the OHF site, and reassembled. Fissile components of the tanks contents will be isotopically diluted in accordance with the *Draft Denaturing Plan* (Energy Systems 1997h). A readiness assessment will be conducted, following the *Readiness Determination Plan* (Energy Systems 1997i). Sluicing and pumping of the OHF tanks will then proceed in accordance with the *Draft Old Hydrofracture Facility Tanks Contents Removal Action Operations Plan at the Oak Ridge National Laboratory, Oak Ridge, Tennessee* (Energy Systems 1998a).

5. PROJECT SUMMARY WORK BREAKDOWN STRUCTURE

The project summary work breakdown structure (WBS) is shown in Fig. 3. 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 displayed in Fig. 4.

7. MILESTONE SCHEDULE

Project control milestones are listed in Table 2.

Fig. 3. Summary work breakdown structure.

LMES

Report: NGBAR2-3
PROJECT: A330520OHF TANK SLUDGES REMOVAL
SUMMARY FORECAST SCHEDULE

Page: 1

Report Date: 6JAN98
Time: 16:16:42

TIME NOW: 01DEC97

WBS	DESCRIPTION	START	FINISH	DUR	FY96				FY97				FY98				
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
06.20.01.11	OHF TANK SLUDGES REMOVAL	11AUG95	08SEP98														Time now
06.20.01.11.01.10	SUPPORTING DOCUMENTATION - CHARACTERIZATION	11AUG95	22DEC95														
06.20.01.11.01.15	CHARACTERIZATION	02OCT95	30OCT96														
06.20.01.11.01.17	SYSTEM REQUIREMENT DOCUMENTS/TIS	16OCT95	17JUN96														
06.20.01.11.01.25	ENGINEERING EVALUATION/COST ANALYSIS	16OCT95	10JUL96														
06.20.01.11.01.30	ACTION MEMO	10JUN96	12SEP96														
06.20.01.11.02.03	PROJECT MANAGEMENT - TNA	11AUG95	23MAY97														
06.20.01.11.02.04	PROJECT MANAGEMENT - ITO #1	10MAR97	08SEP98														
06.20.01.11.03.01	PROPOSAL PREPARATION - ITO #1	01OCT96	02JUL97														
06.20.01.11.05.05	SUPPORT FACILITY READINESS ASSESSMENT	15JUL96	21NOV96														
06.20.01.11.05.10	SUPPORT FACILITY DESIGN	20MAY96	23SEP96														
06.20.01.11.05.20	SUPPORT FACILITY PROCUREMENT & CONSTRUCTION	24MAY96	23MAY97														

Legend:

- In progress
 - Planned
 - Critical

- Milestone

FILTER: T and substr (C4, 1, 3) *NFC

SORT: C2+DTOS (ESDATE) +DTOS (EFDATE) +10

LPP: 50

Fig. 4. Project schedule.

OHF TANK SLUDGES REMOVAL SUMMARY FORECAST SCHEDULE

WBS	DESCRIPTION	START	FINISH	DUR	FY96				FY97				FY98				TIME FOR CLOSURE
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
06.20.01.11.10.10	SUPPORTING DOCUMENTATION - SUPPORT FACILITY	20MAY96	19JUL96														Time now
06.20.01.11.15.10	MOCK-UP CONFIGURATION / PROCUREMENT / TEST PLANS	10MAR97	12JAN98														
06.20.01.11.15.20	MOCK-UP ASSEMBLY / COLD TEST / REPORT	10MAR97	20JAN98														
06.20.01.11.45.02	REMOVAL ACTION SUPPORTING DOCUMENTATION	15JAN97	16JAN98														
06.20.01.11.45.05	REMOVAL ACTION READINESS ASSESSMENT	23AUG97	02FEB98														
06.20.01.11.45.10	EQUIP RELOCATION & ASSEMBLY	09JAN97	17FEB98														
06.20.01.11.45.15	DENATURE FISSILE RADIOISOTOPES	11FEB98	17FEB98														
06.20.01.11.45.20	SLUICING / TRANSFER	30DEC97	03APR98														
06.20.01.11.45.30	REMOVAL ACTION COMPLETION REPORT	25MAR98	08SEP98														

Legend:
-In progress
-Planned
-Critical
-Milestone

Fig. 4 (continued)

Table 2. Remaining milestones for the OHF tanks contents removal project

Milestone	Date
Cold test the sluicing and pumping system	01/23/98
Complete readiness assessment	02/03/98
Complete equipment relocation and assembly	02/17/98
Complete isotopic dilution of fissile radioisotopes	02/17/98
Complete sluicing and transfer of the tank contents	03/31/98
Prepare Removal Action Completion Report	09/15/98

8. COST ESTIMATES

A cost estimate of approximately \$8.4M was derived by using Automated Estimating System Standard Value Files ERAUG95A.VAL, August 1995 (Decision Documentation and Support Facility Activities), and OER1577X.VAL, September 15, 1997 (Removal Action Phase). Estimates are made on the basis of assumptions by the project team members who are familiar with the size, history, and character of the facilities and the most probable cleanup approaches.

9. COST AND SCHEDULE CHANGE PROCEDURES

The baseline cost estimate will be regularly reviewed and updated, as required, to ensure that the estimate reflects the latest authorized scope, schedule, and method of accomplishment in accordance with DOE-ORO change control policy.

Cost and schedule change procedures will be consistent with both DOE Management Control Systems and Energy Systems EMEF requirements. All changes in the estimated cost and schedule will be documented to provide continuity between estimates and schedules.

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

Integrated DOE and Energy Systems cost accounting and the Management Control Information System will be used to manage, evaluate, and provide reports concerning the cost, schedule, and technical performance of this project.

11. INFORMATION AND REPORTING

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

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

The Energy Systems project manager and project analyst will prepare the project monthly status report and issue the report for consolidation with EMEF reports.

12. QUALITY, RISK, SAFETY, AND NEPA DOCUMENTATION

A quality assurance plan was developed for the project at the time the tank risers were installed (Fall 1996). See *Quality Assurance Project Plan for Old Hydrofracture Facility Tanks Content Removal at Oak Ridge National Laboratory, Oak Ridge, Tennessee* (Energy Systems 1996a). That plan is currently under revision and will be issued before sluicing and pumping activities begin at the OHF site. In addition, a safety analysis report (Energy Systems 1997c), a nuclear criticality safety approval (NCSA 56), and a risk assessment (see Sect. 3.4 of the *Engineering Evaluation/Cost Analysis for the Old Hydrofracture Facility Tanks at the Oak Ridge National Laboratory, Oak Ridge, Tennessee*, DOE 1996b) have been completed. National Environmental Policy Act (NEPA) requirements will be addressed as part of the CERCLA process, under which the OHF tanks contents removal project is proceeding as a non-time-critical removal action (DOE 1996a and DOE 1996b).

13. REFERENCES

- CDM Federal (CDM Federal Programs Corporation) 1997. *Oak Ridge National Laboratory Old Hydrofracture Facility Tanks Contents Removal Project 100% Configuration*. May 20.
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