LOCKHEED MARTIN

ORNL/ER-386

**ENVIRONMENTAL
RESTORATION
PROGRAM**

**Annual Report on Surveillance
and Maintenance Activities
at Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

Fiscal Year 1996

RECEIVED

DEC 05 1996

OSTI

MASTER

This document has been approved by the
ORNL Technical Information Office
for release to the public. Date: 11/22/96

ENERGY SYSTEMS

ER
»»»»

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

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

**CDM Federal Programs Corporation and
The S.M. Stoller Corporation**

contributed to the preparation of this document and should not be
considered eligible contractors for its review.

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.**

Energy Systems Environmental Restoration Program

**Annual Report on Surveillance
and Maintenance Activities
at Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

Fiscal Year 1996

Date Issued—November 1996

Prepared by
CDM Federal Programs Corporation
and
The S.M. Stoller Corporation
Oak Ridge, Tennessee
under subcontract 70M-SC914C

Prepared for the
U.S. Department of Energy
Office of Environmental Management
under budget and reporting codes EW 20 and EX 20

Environmental Management Activities at the
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 *Annual Report on Surveillance and Maintenance Activities at Oak Ridge National Laboratory, Oak Ridge, Tennessee: Fiscal Year 1996* (ORNL/ER-386) was prepared to communicate the Surveillance and Maintenance accomplishments of the Environmental Restoration Program during fiscal year 1996. This work was performed under Work Breakdown Structure element 1.4.12.6.1.14.05 (Activity Data Sheet 3314, "S&M Program Integration"). Publication of this document meets the Life Cycle Baseline milestone date of November 30, 1996. This document provides the accomplishments for both the Remedial Action and Decontamination and Decommissioning Surveillance and Maintenance programs.

TABLE OF CONTENTS

PREFACE	ii
FIGURES	iv
ABBREVIATIONS	v
EXECUTIVE SUMMARY	vi
1. INTRODUCTION	1
1.1 THE S&M PROGRAM	2
1.2 S&M PROGRAM OBJECTIVES	2
2. FY 1996 RA S&M PROGRAM ACCOMPLISHMENTS	6
2.1 PROGRAM INTEGRATION	6
2.1.1 Audits, Reviews, and Assessments	6
2.1.2 Plans, Reports, and Coordinating Documents	6
2.1.3 Safety Documentation	6
2.1.4 Columbus Initiatives	6
2.1.5 No Further Investigation Sites	7
2.2 ROUTINE SURVEILLANCE	7
2.3 MAINTENANCE	7
2.3.1 3513 Surface Impoundment	7
2.3.2 Ventilation Systems	8
2.3.3 WAG 5 Seep C and D Treatment	8
2.3.4 Vegetation Control	8
2.3.5 Subsidence Fills	9
2.3.6 Fences and Roads	9
2.3.7 3001 Canal Clean-up	9
2.3.8 Melton Valley	9
2.3.9 Bethel Valley	10
2.4 POST REMEDIATION MONITORING	10
3. FY 1996 D&D S&M PROGRAM ACCOMPLISHMENTS	11
3.1 PROGRAM INTEGRATION	11
3.1.1 Audits, Reviews, and Assessments	11
3.1.2 Plans, Reports, and Coordinating Documents	11
3.1.3 Safety Documentation	11
3.2 FACILITY SURVEILLANCE	12
3.3 ROUTINE MAINTENANCE	12
Appendix A ORNL SURVEILLANCE AND MAINTENANCE PROGRAM FACILITY MANAGEMENT LIST	A-1
Appendix B SUMMARY OF INACTIVE LLW TANK LEVEL TRENDING ACTIVITIES	B-1

FIGURES

1. Oak Ridge National Laboratory	1
2. ORNL S&M sites/facilities located in the main plant area	3
3. ORNL S&M sites/facilities located in Melton Valley	4
4. WAG 5 Seep C	7
5. WAG 5 Seep D	8
6. 3513 Impoundment	8
7. Vegetation Control	8
8. Subsidence Repairs in SWSA 5	9
9. Emergency Waste Basin	10
10. SWSA 6 RCRA Caps	10
11. Buildings 3001, 3005, and 3042	11
12. Building 7500 the HRE Complex	12
13. HRE Storage Pool	13

ACRONYMS

ASA	Auditable Safety Analysis
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
ER	Environmental Restoration
FAB	Facility Authorization Basis
FFA	Federal Facilities Agreement
FY	fiscal year
HRE	Homogeneous Reactor Experiment
ITO	Incentive Task Order
LCD	Limited Conditions Document
LLLW	liquid low-level waste
MOA	memorandum of agreement
OGR	Oak Ridge Graphite Reactor
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Research Reactor
PHS	Preliminary Hazard Screening
PSET	Plant Safety Evaluation Team
RA	remedial action
RCRA	Resource Conservation and Recovery Act
S&M	surveillance and maintenance
SWSA	solid waste storage area
WAG	waste area grouping

EXECUTIVE SUMMARY

In fiscal year (FY) 1995, the sites and facilities from both the Remedial Action (RA) and Decontamination and Decommissioning (D&D) programs were combined to form the Oak Ridge National Laboratory (ORNL) Environmental Restoration (ER) Surveillance and Maintenance (S&M) Program. This combined program includes all ER-owned facilities (i.e., inactive liquid low-level waste storage tanks, impoundments, burial grounds, test sites, leak sites, contaminated soil, inactive reactor buildings, cooling towers, pump houses, evaporators, hot cells, wells and boreholes, and various research and development facilities). The establishment of a unified S&M Program facilitates the management of the applicable areas or facilities following their operating life and until final disposition or site stabilization (whichever is deemed most appropriate based on environmental regulations and/or best management practices). The ORNL ER S&M Program objectives are

- conducting facility assessments as necessary to define and maintain baseline facility conditions;
- implementing a graded and cost-effective surveillance and inspection process for RA and D&D facilities to ensure compliance with applicable requirements and to support timely and appropriate response to facility conditions; and
- conducting routine, preventive and emergency facility maintenance as needed for ER facilities to control the degradation of facilities and mitigate of contaminants and limit future risk or harm to human health and the environment.

Surveillance and Maintenance activities were conducted throughout FY 1996 at the RA facilities. Overall, the RA S&M Program consists of approximately 650 acres that include 14 waste area groupings with approximately 200 sites. These sites include 46 major facilities, several leak and contaminated soil sites, 38 inactive tanks, approximately 50 environmental study areas and approximately 2973 wells and boreholes. Site inspections were conducted at established frequencies on appropriate sites in the RA S&M Program in accordance with the established S&M FY 1996 Incentive Task Order (ITO).

Surveillance and Maintenance activities were conducted throughout FY 1996 at the D&D S&M Program sites in accordance with published S&M ITO. The D&D S&M Program maintains 46 facilities (buildings). It provides overall facility management on over 165,000 ft² of floor space that includes 46 major facilities consisting of four surplus reactors, radiochemical processing facilities, and technology development facilities.

1. INTRODUCTION

The Surplus Facilities Management Program was established at Oak Ridge National Laboratory (ORNL) in 1976 to provide collective management of the surplus sites under ORNL control on the Oak Ridge Reservation (ORR). The program originally contained both civilian- and defense-related facilities. For several years, the administration of the civilian and defense programs were independent of one another. In 1989, the two programs were merged into the current ORNL Decontamination and Decommissioning (D&D) program.

The majority of the ORNL facilities managed by the D&D program and awaiting the decommissioning phase have been inactive for 10 to 25 years. Because of this time lapse and the abandoned status of the sites, structural deterioration has occurred to varying degrees. This degradation has taken the form of metal corrosion, leaking roofs, accumulation of debris, etc., resulting in a general loss of facility operability. Conversion of these facilities to a safe-storage condition is currently underway. Safe storage includes the removal of hazardous and externally contaminated radioactive substances from the facilities. In addition, periodic surveillances are conducted so that corrective measures can be taken for health, safety, or environmental concerns.

The ORNL Environmental Restoration (ER) Remedial Action (RA) Surveillance and Maintenance (S&M) Program was established to manage historically contaminated inactive sites from the time of their discovery until the initiation of remedial actions. These sites are typically contaminated with radioactive materials and/or hazardous chemicals. Several RA sites are in the S&M program as a result of postremedial agreements contained in site

Federal Facilities Agreement (FFA) and Resource Conservation and Recovery Act (RCRA) permits.

During fiscal year (FY) 1990, the ER Program was formed to conduct remedial investigations and feasibility studies and perform RAs at ORNL (see Fig. 1). In past years, there have been two distinct S&M Programs, one for the RA Program sites and facilities and the other for

Fig. 1. Oak Ridge National Laboratory.

the D&D Program sites and facilities. In FY 1995, the sites and facilities from both programs were combined to form the ORNL ER S&M Program, which includes all ER-owned facilities [e.g., inactive liquid low-level waste (LLLW) storage tanks, impoundments, burial grounds, test sites, leak sites, contaminated soil, inactive reactor buildings, cooling towers, pump houses, evaporators, hot cells, wells and boreholes, and various research and development facilities]. In FY 1996, a new program management process, which used the Incentive Task Order (ITO) approach, was introduced. This ITO process was established to more efficiently manage the S&M Program activities and their associated costs. The accomplishments of the RA S&M Program will

be discussed in Section 2 and the accomplishments of the D&D S&M Program will be discussed in Section 3.

The S&M Program continues to manage and control areas contaminated with radioactive materials and/or hazardous chemicals. Management of the applicable areas or facilities follows their operating life and continues until final disposition or site stabilization (whichever is deemed most appropriate based on environmental regulations and/or best management practices).

1.1 THE S&M PROGRAM

The ORNL ER S&M Program provides the essential S&M functions at applicable sites and facilities in an attempt to ensure that they remain in acceptable condition without undue risks to human health or the environment. (A list of these facilities is contained in Appendix A.) A map of the facilities located in Bethel Valley is shown in Fig. 2, and the facilities located in Melton Valley are shown in Fig. 3. The inventory of sites and facilities managed by the S&M Program includes a variety of former reactors, hot cells, pilot plants, waste management areas, environmental research sites, and areas of contamination from past Research and Development operations. These facilities are all inactive.

1.2 S&M PROGRAM OBJECTIVES

The principal objectives of the ORNL ER S&M Program are as follows:

- conducting facility assessments as necessary to define and maintain baseline facility conditions;
- implementing a graded and cost-effective surveillance and inspection process for RA and D&D facilities to ensure compliance with applicable requirements and to support

timely and appropriate response to facility conditions; and

- conducting routine, preventive, and emergency facility maintenance as needed at ER facilities to control the degradation of facilities and migration of contaminants and to limit future risk or harm to human health and the environment.

These objectives are met through a structured program of routine S&M actions and through the implementation of special maintenance activities when site-surveillance activities indicate such are needed. The scope of activities performed within the ORNL ER S&M Program provides assurance that adequate site control is achieved and maintained until final site decommissioning or closure is accomplished.

The ORNL ER S&M Program is also responsible for all S&M of a facility following final remediation. The ORNL ER S&M Program activities are organized and conducted in the principal areas as described below:

1. S&M Program Integration. S&M program integration includes strategic programmatic planning, documentation, and reporting. It ensures that regulatory compliance— and milestone-related issues are incorporated into the development of technical, schedule, and cost baselines. All S&M programmatic documents are written, edited, revised, published, and distributed through this element. This element is designed to ensure that applicable FFA and S&M milestones are met. It includes preliminary radiological assessments of potentially contaminated sites and data management activities to provide access to historical solid and liquid waste disposal data for the inactive sites. This element also supports project management. Project management includes directing, staffing, coordinating,

Fig. 2. ORNL S&M sites/facilities located in the main plant area.

Fig. 3. ORNL S&M sites/facilities located in Melton Valley.

developing, and planning for each of the ORNL ER S&M Program's S&M activities. It coordinates, integrates, and furnishes the roles and responsibilities of Lockheed Martin Energy Systems, Inc., and other subcontractors. Also, it provides for the assignment of administrative duties that are required for the ORNL ER S&M Program's financial management.

2. Routine S&M. Routine S&M supports all field work and related activities necessary to perform routine S&M of ORNL ER S&M Program sites until final remediation. Routine S&M actions are necessary to ensure that ORNL ER S&M Program sites are routinely maintained in a manner that protects human health, safety, and the environment. For such protective purposes, this element provides five distinct tasks as follows:

- routine site inspections, consisting of facility check sheets and logbooks;
- radiological and industrial hygiene surveillance, and inactive LLLW tank level monitoring;

- S&M of ORNL groundwater monitoring and investigation wells that have been identified as unusable or nonessential;
- nonroutine activities that are required as a result of a finding during routine site inspections; and
- routine maintenance of containment systems and equipment, general facility upkeep, grounds maintenance, and oversight of all field maintenance activities.

3. Post Remediation Monitoring and Maintenance. Post remediation monitoring and maintenance activities are determined by the requirements of the perspective RCRA post-closure permit or Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision.

2. FY 1996 RA S&M PROGRAM ACCOMPLISHMENTS

2.1 PROGRAM INTEGRATION

2.1.1 Audits, Reviews, and Assessments

The facility manager completed a Nuclear Criticality Safety Assessment for Solid Waste Storage Area (SWSA) 5 and SWSA 6. An audit of waste handling activities was performed by the ORNL Waste Certification Group against the *Waste Management/Waste Certification Plan* (ORNL/ER-288) with no findings.

2.1.2 Plans, Reports, and Coordinating Documents

The following documents were completed during FY 1996:

- *Draft Facility Management Plan for the ORNL ER Program* (ORNL/ER-194);
- Submitted to the U.S. Department of Energy (DOE) the Basis for Interim Operation for the Pits, Trenches, and Auger Holes in Waste Area Groupings (WAGs) 4 and 6; and
- *Annual Summary Report on the Surveillance and Maintenance Activities for the Oak Ridge National Laboratory Environmental Restoration Program for Fiscal Year 1995* (ORNL/ER-345).

2.1.3 Safety Documentation

During FY 1995, the ER Program identified those facilities that were believed to require additional Facility Authorization Basis (FAB) documentation. In FY 1996, the ER Program prepared draft or final FAB documentation on every facility for which it was required.

An initial list of 166 Preliminary Hazard Screenings (PHSs) included many facilities that were either part of a larger grouping or did not meet the definition of a "facility" for purposes of safety documentation. Analysis of the regulatory requirements and coordination with the Office of Operational Readiness and Facility Safety reduced this list to a more manageable list of 68 facilities. As the documentation progressed, it was determined that some of the sites had already been addressed in existing documents. Others were placed into groups of similar sites to increase the efficiency of administration. By the end of FY 1996, a total of nine PHSs had been performed on facilities or groups, and memos were written to file for the facilities that did not require further documentation. This action resulted in the elimination of an estimated \$1.5M in projected unneeded safety documentation for 103 former sites and met an ITO fee milestone. Also, inactive LLLW tank T-30 was identified as requiring additional safety documentation.

2.1.4 Columbus Initiatives

Cost saving initiatives were processed through the Environmental Management and Enrichment Facilities organization as Columbus Initiatives. Before negotiation of the task order contract, numerous proposals for Columbus Initiatives were suggested by S&M program personnel and evaluated for submission to the internal review board. Approximately \$2.9M of cost savings were documented and submitted. Of the proposals that were submitted, approximately \$872K in cost savings were approved by DOE. Columbus Initiatives approved in FY 1996 were

- Waste Area Grouping 4 seeps,
- Corehole 8 drain,

- Inactive Facilities Grouping for Safety Documentation, and
- ORNL Inactive Facility S&M Cost Reduction (non-fee bearing).

2.1.5 No Further Investigation Sites

An active program has been under way to achieve No Further Investigation status, under the FFA, for study area sites that are small in area and low in potential hazard. It is an integrated effort, involving personnel from ORNL ER, DOE, and the Tennessee Department of Environment and Conservation. The effort for this was funded in FY 1995, and the actual approval was received in FY 1996. Sites approved this year consist of the following:

- ER20 Tc-95 Uptake studies
- ER19 Tc-95M Contaminated Soil and Plants
- ER07 Cs-45 Tagged Forest
- ER05 Hg-197 Tagged Stream
- ER09 Hg-203 Tagged Stream
- ER13 Zn-65 Tagged Red Oak Saplings
- ER10 H-3 Contaminated Trees
- ER33 C-14 Efflux in Yellow Poplar Stand
- ER32 C-14 Allocation in White Pine Trees
- ER30 C-14 Sucrose Inoculation of Oak and Pine Trees
- ER29 C-14 Maintenance-Respiration Study
- ER28 Co-60 and Mn-54 Animal Study
- ER27 Cs-134 Contaminated Persimmon Tree
- ER31 C-14 Allocation in White Oak Trees

2.2 ROUTINE SURVEILLANCE

In accordance with Site Inspection Procedures, 212 facilities under the RA S&M program were periodically inspected; in addition, all signs and

radiation boundary markers were checked and repaired as needed. Monthly Tank Level Data Reports were compiled and published. Monitoring of the french drain levels at WAG 5 Seeps C and D were performed (see Figs. 4 and 5). Additionally, an annual inspection was performed on 268 monitoring wells. Coordination of S&M inspection activities was improved by establishing a method of providing Field Change Orders to the subcontractor responsible for the routine inspections. This allows rapid response to changes and deletions in inspection requirements.

Fig. 4. WAG 5 Seep C.

2.3 MAINTENANCE

General maintenance activities include subsidence fills, signs, boundary fences, gates, road repairs, and vegetation control; other unscheduled maintenance activities were accomplished as needed.

2.3.1 3513 Surface Impoundment

The south earthen bank of the impoundment had begun to deteriorate, requiring repair and reinforcement to mitigate or eliminate a leak from the impoundment to White Oak Creek (see Fig. 6). Engineering studies were completed, the area was reinforced with crushed rock, sprayed with bentonite, and markers emplaced to track embankment shifting.

Fig. 5. WAG 5 Seep D.

2.3.2 Ventilation Systems

Changed high-efficiency particulate air filters and verified efficiency of the ventilation systems at the Old Hydrofracture Facility Tanks and Pumphouse and at the South Tank Farm.

2.3.3 WAG 5 Seep C and D Treatment

Routine maintenance was performed at Seep D. During the year, a problem was identified with the Zeolite ion exchange resin becoming plugged with iron oxide at Seep C. The resin was changed out, improving the flow. Plans have been formulated to treat the system with a reducing agent to prolong the life of the resin. A design change and relocation of the nitrogen bottle bank that is part of the Seep C treatment

Fig. 6. 3513 Impoundment.

system resulted in a larger number of bottles stored on-site and eliminated the need for wearing anticontamination clothing during bottle changing. This significantly improved efficiency and also permitted a larger number of bottles to be delivered at one time, reducing delivery frequency and overall cost.

2.3.4 Vegetation Control

Vegetation maintenance is continuously required for a variety of purposes, including mowing and trimming grass (see Fig. 7), and removing downed trees and vegetation resulting from abnormal storm events. Other purposes might include upgrading the appearance of a site or

Fig. 7. Vegetation Control.

facility, permitting access for field activities, or enhancing the inspection processes. During FY 1996, vegetation maintenance was routinely performed at numerous areas (approximately 250 acres) that include the White Oak Creek Sediment Retention Embayment, the hydrofracture facilities, and various SWSAs, ponds, tank farms, fence lines, trenches, and pits. A policy of removal of dead and damaged trees from either side of the 229 boundary fences around the WAGs in compliance with 10 CFR-860 was initiated to minimize fence damage and emergency maintenance required from falling trees. The cutting will be completed in FY 1997.

2.3.5 Subsidence Fills

Approximately 24 subsidences of varying sizes were backfilled in the SWSA 4 and SWSA 5 area (see Fig. 8).

Fig. 8. Subsidence Repairs in SWSA 5.

2.3.6 Fences and Roads

Fence and road repairs were performed when necessary to ensure boundary integrity and enhance travel across the complex.

2.3.7 3001 Canal Clean-up

In addition to the routine maintenance activities in FY 1996, the 3001 Canal Clean-up Task was conducted as an RA maintenance activity and is phase one of a two phase action to remediate the canal. A RCRA closure had been conducted in 1992, when sludge contaminated with heavy metals was removed, leaving several containers of radioactive material in place. Activities leading up to the current action included preparation of the following documents:

- Site Safety and Health Plan
- ALARA Plan
- Comprehensive Work Plan
- NEPA evaluation
- Cost estimates
- Schedules

Work was accomplished under time constraints because of the need to limit personnel stress from heat while working in level C protective clothing. Individuals were allowed to work no more than 1.25 hours without relief. Existing cranes in the canal area were certified, under ORNL quality procedures, so that they could be used for lifting during the clean out. Chemical Technology Division personnel performed the work. Altogether, 2268 pounds of solid waste was removed, containing approximately 96 Ci of mixed radioisotopes. This action was completed in August 1996 and is a major milestone toward final stabilization of the canal.

2.3.8 Melton Valley

The following actions were accomplished in FY 1996:

- pumped nearly 4 million gallons of uncontaminated water from the 7821 Emergency Waste Basin (see Fig. 9);
- permanently closed a gap in the three-strand wire fence west of WAG 2 and WAG 8 to prevent uncontrolled access to WAGs 2, 4, 5, and 7;
- repaired four monitoring wells in WAG 8 that were damaged in 1994 during the power line right-of-way clearing. Erected three "Jersey Bouncers" and a chain and lock at the eastern end of Melton Branch Road to close a gap created by power line clearing;
- installed signs around the perimeter of all WAGs in compliance with 10CFR-860; and
- relocated PCM1B monitor and trailer from WAG 5 to the north tank farm to support the Guniting and associated tanks sludge mobilization project and other field work in WAG 1.

Fig. 9. Emergency Waste Basin.

2.3.9 Bethel Valley

Installed contamination barrier for soil contamination area at Building 3042.

Provided Facility Management support to the 3513/3524 Surface Impoundment Engineering Support Studies for installing the laboratory trailer, hooking up the utilities, and obtaining the permit for the trailer fume hood.

2.4 POST REMEDIATION MONITORING

- WAG 5 Seeps C and D—Water samples are taken routinely to verify that efficiency of Sr-90 removal is within limits.
- SWSA 6 RCRA Caps—Under the closure plan, the caps were inspected monthly by S&M program personnel (see Fig. 10).
- 3001 Canal—Water samples are taken to determine levels of Cs-137, Co-60, and Sr-90. This data is used to determine frequency of water demineralizer resin regeneration.

- Corehole 8—The Corehole 8 outfall was a significant contributor of Sr-90 to White Oak Creek. The water is now collected and pumped to the Process Waste Treatment Plant. Monitoring of the collection system includes responding to high water level alarms, sampling the water annually, and performing other associated surveillance and maintenance activities to ensure the reliable functioning of the system.
- Inactive Tank Closures—Four FFA Category D LLLW tanks were remediated by the ER Program and transitioned into the S&M Program. Monitoring includes inspection for subsidence, and surface anomalies, drain closure integrity, and changes in nearby groundwater contaminants.

Fig. 10. SWSA 6 RCRA Caps.

3. FY 1996 D&D S&M PROGRAM ACCOMPLISHMENTS

3.1 PROGRAM INTEGRATION

3.1.1 Audits, Reviews, and Assessments

Supported the 1996 LLLW survey conducted by Waste Management Operations.

3.1.2 Plans, Reports, and Coordinating Documents

Key D&D documents completed for the ORNL S&M Program included the following:

- Developed a Memorandum of Agreement (MOA) for Buildings 7500, 3001, and 3005 (see Fig. 11) between divisions that had people using these facilities for offices and change areas and the ER Program. The purpose of this agreement was to share the cost of utilities with the ER Program and obtain agreement to a date when these facilities would be vacated to even further reduce the coordination complexity and S&M cost of these facilities. By the end of FY 1996, many of the people had moved out of Building 3001, and Building 3042 offices had been vacated. Building 3005 is currently used by Instrumentation and Controls and Plant and Equipment divisions for offices and maintenance shops.

Fig. 11. Buildings 3001, 3005, and 3042.

- Completed the Local Emergency Manual for Buildings 3042, 3005, and 3001.
- Replaced the Waste Management Remedial Action Division surveillance procedures with ERPS 403, "Routine Surveillance Activities at the D&D Program Facilities at ORNL."
- undertook privatization of Building 7500, the Homogeneous Reactor Experiment (HRE) (see Fig. 12). To do this a request for expressions of interest in privatization of this facility was published. This was accomplished by producing handouts for "industrial day" and the creation of a World Wide Web page about HRE with links to related site information pages.
- A proposal was prepared and presented to the Plant Safety Evaluation Team (PSET) committee on the revision of the Limited Conditions Document (LCD) for the Oak Ridge Research Reactor.

3.1.3 Safety Documentation

The D&D S&M program completed an aggressive initiative to upgrade the status of safety documentation for its facilities this year. The regulatory environment has been somewhat turbulent recently, with changes and cancellation of several DOE orders that drive safety management. One result of these regulatory changes has been that the Office of Operational Readiness and Facility Safety adopted a policy that all radiological facilities would have an Auditable Safety Analysis (ASA). For efficiency, the lower-tier safety documents that had been prepared for small facilities were eliminated by combining, to the maximum extent feasible, all the ancillary facilities associated with a larger activity. For the

surplus reactors and radiochemical processing facilities, this would include such items as cooling towers, valve pits, heat exchangers, and similar structures. Inactive tanks remained the responsibility of the Inactive Tank program. By the end of FY 1996, draft ASAs had been prepared for the Oak Ridge Research Reactor, the Oak Ridge Graphite Reactor (OGR), the Low-intensity Test Reactor, HRE, and the Metal Recovery Facility. It is anticipated that they will be finalized and approved early in FY 1997.

Aside from the FAB requirements, a question surfaced through the PSET committee related to the start-up of processing activities at Building 3019. The concern was that if an accident were to occur, visitors to the OGR, immediately next door, could be exposed to radioisotopes. After meeting with the PSET Committee, it was decided that the OGR Local Emergency Manual would address the problem adequately, with appropriate revisions and training for the Local Emergency Squad personnel. The manual was revised, with particular attention to actions necessary to protect visitors. The document was coordinated with the PSET Committee and the Laboratory Emergency Preparedness Department, and the final draft was approved. Training was prepared and conducted for the Local Emergency Squad members, emphasizing their role in controlling and protecting visitors who may be present during a drill or emergency.

3.2 FACILITY SURVEILLANCE

Facility surveillance was conducted on a daily basis in accordance with Procedure ERPS-403. Any findings from these surveillances were processed on a priority basis as resources permitted.

3.3 ROUTINE MAINTENANCE

Facility Maintenance activities performed throughout FY 1996 included the following activities:

- submitted required Waste Pick-up Request for all waste generated during normal facility operations;
- investigated the feasibility of metering the utilities to Building 7500 in support of the privatization of that building;
- updated and issued the Limiting Conditions Document for Building 3042;
- sealed cracks in the 3002 canal;
- reviewed the in-leakage of water into the north sump pit at HRE;
- inspected ladders at Building 7500 and 3001 for safety concerns;

Fig. 12. Building 7500 the HRE Complex.

- initiated the removal of two Constant Air Monitors and one monitron, which are no longer required as a result of the Building 3042 LCD revision;

Section 3: FY 1996 D&D S&M Program Accomplishments

- pumped the HRE hot storage pool (see Fig. 13);
- relamped the 3018 stack using the Plant and Equipment Division, instead of a subcontractor, and achieved cost savings of \$100,000;
- installed a ventilation flow meter in the OGR, which eliminated the need for a fan upgrade (this action resulted in a cost avoidance of \$65,000);
- deactivated cooling towers for Building 3042 to reduce cost;
- fixed contamination areas by painting magenta and gray in buildings 3001 and 3002;
- relamped D&D buildings as needed;
- installed access control gates in 3042 to control access to authorized personnel only;

Fig. 13. HRE Storage pool.

- performed a filter efficiency test on exit ducts at buildings 3002, 3005, and 3042;
- labelled drains; and
- deactivated utilities as they became unnecessary.

Appendix A
ORNL Surveillance and Maintenance Program Facility Management List

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
0800		Cs-137 Contaminated Field	Area	RA
0807	13.02	Cs-137 Erosion/Runoff Study Area	Area	RA
0814		Trailer	Bldg.	RA
0816	13.01	Experimental Study Area (Cs-137 Plots)	Area	RA
0830		White Oak Creek Embayment Sediment Control Facility	Area	RA
0853		White Oak Creek and Tributaries	Area	
0857		Goat Building	Bldg.	RA
1001	03.01	SWSA 3 Burial Grounds	Area	RA
1554	03.03	Contractors' Landfill (West of SWSA 3)	Area	RA
1562	03.02	Scrap Metal Area	Area	RA
2624	01.46	SWSA 1 Burial Grounds	Area	RA
3001	01A.01A	Oak Ridge Graphite Reactor	Bldg.	RA
3001	01.79	Storage Canal	Area	RA
3001/ 3019	01.08	Graphite Reactor Storage Canal Contaminated Soil	Area	RA
3001-3003	01A.01E	Underground Exhaust Ducts Soil Contamination	Area	RA
3001B	01.73	Inactive LLLW Collection Tank 3001B	Tank	RA
3002	01A.01C	OGR Filter House & Canal	Bldg.	D/D
3003	01A.01B	OGR Fan House	Bldg.	D/D
3003A	01.74	Drain Tank South of 3003	Tank	RA
3004B	01.75	Inactive LLLW Collection Tank 3004B	Tank	RA
3005	01A.02A	Low-Intensity Test Reactor	Bldg.	D/D
3013	01.76	Inactive LLLW Collection Tank 3013	Tank	RA
3018	01A.01D	OGR Stack	Bldg.	D/D
3023	01.23A	Inactive LLLW Collection/Storage Tank W-1	Tank	RA
3023	01.25A	Inactive LLLW Collection/Storage Tank W-13	Tank	RA
3023	01.25B	Inactive LLLW Collection/Storage Tank W-14	Tank	RA
3023	01.25C	Inactive LLLW Collection/Storage Tank W-15	Tank	RA
3023	01.28	Inactive LLLW Collection/Storage Tank W-1A	Tank	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
3023	01.23B	Inactive LLLW Collection/Storage Tank W-2	Tank	RA
3023	01.24A	Inactive LLLW Collection/Storage Tank W-3	Tank	RA
3023	01.24B	Inactive LLLW Collection/Storage Tank W-4	Tank	RA
3028	01A.09	Strontium-90 Power Generators	Area	IDF
3037	01.29	Inactive LLLW Collection/Storage Tank WC-1	Tank	RA
3042	01A.03	Oak Ridge Research Reactor	Bldg.	D/D
3042	01A.03	ORR Experimental Facilities (Basement)	Bldg.	D/D
3075	01.19	Decommissioned LITR Ponds	Area	RA
3077	01A.02B	Air Cooler - Low Intensity Test Reactor	Bldg.	D/D
3083	01A.03	Neutron Flight Tube Building	Bldg.	D/D
3085	01A.03	Pumphouse for ORR	Bldg.	D/D
3085A	01A.03	20,000 Gallon Water Tank	Tank	D/D
3085B	01A.03	20,000 Gallon Water Tank	Tank	D/D
3086	01A.03	Cooling Tower for ORR (#1)	Bldg.	D/D
3087	01A.16	ORR Trane Water-to-Air Heat Exchangers	Bldg.	D/D
3089	01A.03	Cooling Tower for ORR (#2)	Bldg.	D/D
3102	01A.03	Heat Exchanger for ORR (#2)	Bldg.	D/D
3103	01A.03	Cooling Tower for ORR (#3)	Bldg.	D/D
3107	01A.03	Neutron Flight Tube Building	Bldg.	D/D
3109	01A.03	Off-Gas Filters for ORR	Bldg.	D/D
3110	01.22	Filter House/Isotope Area Ductwork	Bldg.	RA
3116		Nitrogen Cylinder Storage Bldg.	Bldg.	RA
3126	01A.03	Charcoal Filter (NOG) for ORR	Bldg.	D/D
3139	01A.03	Cell Ventilation Filter for ORR	Bldg.	D/D
3503	01.01	Mercury Contaminated Soil	Area	RA
3505	01A.07	Metal Recovery Facility	Bldg.	D/D
3505	01.63	Transfer Canal and Dissolver Pit	Bldg.	RA
3507	01.26F	Inactive LLLW Collection/Storage Tank W-10	Tank	RA
3507	01.27	Inactive LLLW Collection/Storage Tank W-11	Tank	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
3507	01.26A	Inactive LLLW Collection/Storage Tank W-5	Tank	RA
3507	01.26B	Inactive LLLW Collection/Storage Tank W-6	Tank	RA
3507	01.26C	Inactive LLLW Collection/Storage Tank W-7	Tank	RA
3507	01.26D	Inactive LLLW Collection/Storage Tank W-8	Tank	RA
3507	01.26E	Inactive LLLW Collection/Storage Tank W-9	Tank	RA
3507 Area	01.21	FPDL LLLW Transfer Line to STF	Area	RA
3512	01.11	Decommissioned Waste Holding Basin	Area	RA
3513	01.12	Waste Holding Basin	Pond	RA
3515	01A.06	Fission Product Pilot Plant	Bldg.	D/D
3517	01.20	Fission Product Development Laboratory	Bldg.	IDF
3517	01A.05	FPDL Inactive Cells & Service Tunnel	Bldg.	D/D
3535		Filter Enclosure in South Tank Farm	Bldg.	RA
3592	01.02	Mercury Contaminated Soil	Area	RA
4003	01.47	SWSA 2 Burial Grounds	Area	RA
4501	01.03	Mercury Contaminated Soil	Area	RA
4507	01A.12	High Radiation Level Chemical Development Lab	Bldg.	D/D
4507 South	01.78	Inactive LLLW Collection Tank T-30	Tank	RA
4508	01.04	Mercury Contaminated Soil	Area	RA
4556		High-Level Chemical Development Lab Filter Pit	Bldg.	
7002A		Abandoned Underground Waste Oil Storage Tank	Tank	
7002W	17.02A	Waste Oil Storage Tank	Tank	
7500	09A.01B	Homogenous Reactor Experiment	Bldg.	D/D
7502	09.05	Radioactive Waste Evaporator (Bldg. 7500)	Bldg.	D/D
7554	09A.01A	Cooling Tower (for Building 7500)	Bldg.	D/D
7556	09.01	Homogeneous Reactor Experiment (HRE) Pond	Area	RA
7557	09A.01C	Charcoal Absorber Pit (for Building 7500)	Bldg.	D/D
7558	09.06	Waste Evaporator Loading Pit (for Bldg. 7500)	Bldg.	D/D
7559	09A.01D	Charcoal Absorber Valve Pit (for Bldg. 7500)	Bldg.	D/D

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
7560	09.02A	LLLW Collection and Storage Tank 7560	Tank	RA
7561	09A.01F	Waste Valve Pit 7561 (Decon Pit)	Bldg.	RA
7562	09.02B	LLLW Collection and Storage Tank 7562	Tank	RA
7563		Circulator Pump Pit (for Bldg. 7500)	Bldg.	D/D
7569C	19.07	Soil Injection of Radioactive Gas	Area	RA
7613	18.05	Waste Retention Basin	Area	RA
7615	18.02	Paint Solvents Storage Tank	Tank	
7658	12.01	Closed Contractors' Landfill	Area	RA
7659B	19.06	Reactive Chemicals Disposal Area	Area	RA
7711	16.02	Process Waste Basin	Area	RA
7759	16.01	Cesium-137 "Forest" Research Area	Area	RA
7800	04.03	SWSA 4 Burial Grounds	Area	RA
7802	05.07	SWSA 5 South (Trenches, Undefined Area, Dump, Auger Holes)	Area	RA
7802A		Seep Area C Collection and Treatment Unit (WAG 5)	Area	RA
7802B		Seep Area D Collection and Treatment Unit (WAG 2)	Area	RA
7802C		Deep Monitoring Well #1	Well	RA
7802D		Deep Monitoring Well #2	Well	RA
7805	07.05	Chemical Waste Pit #1	Area	RA
7806	07.06A	Chemical Waste Pit #2	Area	RA
7807	07.06B	Chemical Waste Pit #3	Area	RA
7808	07.06C	Chemical Waste Pit #4	Area	RA
7809	07.07	Chemical Waste Trench #5	Area	RA
7810	07.08	Chemical Waste Trench #6	Area	RA
7811	04.02	Pilot Pits 1, 2 (7811)	Area	RA
7818	07.09	Chemical Waste Trench #7	Area	RA
7819	07.10A	Shielded Transfer Tank (7819 Shed) (ST1)	Tank	D/D
7819	07.10B	Shielded Transfer Tank (7819 Shed) (ST2)	Tank	D/D
7819	07.10C	Shielded Transfer Tank (7819 Shed) (ST3)	Tank	D/D

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
7819	07.10D	Shielded Transfer Tank (7819 Shed) (ST4)	Tank	D/D
7819	07.10E	Shielded Transfer Tank (7819 Shed) (ST5)	Tank	D/D
7819	07.01	Interim Decontamination Building	Bldg.	OR
7821	06.02	Emergency Waste Basin	Pond	RA
7822	06.01	SWSA #6 RCRA Caps	Area	RA
7822	06.01	SWSA 6	Area	RA
7822-A	06.03	SWSA 6 - Explosive Detonation Trench	Area	RA
7822F		Tumulus I	Area	RA
7822G		Tumulus II	Area	RA
7835	05.06	Process Waste Sludge Basin	Area	RA
7841	07.12	Equipment Storage Area	Area	RA
7846		White Oak Lake and Embayment	Area	
7852	05.03	Old Hydrofracture Facility Site Surface Facilities	Bldg.	D/D
7852A	05.02	OHF Pond/Pits	Pond	RA
HF-S1	10.01	Hydrofracture Experimental Site #1	Area	RA
HF-S1A	07.03	Hydrofracture Experimental Site #1 Soil Contamination	Area	RA
HF-S2	10.02	Hydrofracture Experimental Site #2	Area	RA
HF-S2A	08.02	Hydrofracture Experimental Site #2 Soil Contamination	Area	RA
HF-S3		Hydrofracture Experimental Site #3	Area	RA
HF-S4		Hydrofracture Experimental Site #4	Area	RA
WAG 8		Waste Area Grouping 8	Area	RA
WAG 2		Waste Area Grouping 2	Area	RA
WAG 9		Waste Area Grouping 9	Area	RA
XDO751	11.01	White Wing Scrap Yard	Area	RA
XF1226	20.01	Municipal Sewage Sludge Application Site	Area	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
	99.01	Abandoned Burn Pit	Area	RA
	08.17	Abandoned Sanitary Waste Pipeline & Septic Tank N of 7917	Area	RA
	08.15	Aircraft Reactor Experiment Surface Impoundment	Area	RA
	08A.01G	ARE Contaminated Tool Storage	Area	RA
	07.11	Building 7819 Septic Tank	Area	OR
	16.03	Buried Scrap Metal Area	Area	RA
	ER.31	C-14 Allocation in White Oak Trees	Area	RA
	ER.32	C-14 Allocation in White Pine Trees	Area	RA
	ER.34	C-14 Allocation in Woody Biomass Plantation Species	Area	RA
	ER.33	C-14 Efflux in Yellow Poplar Stand	Area	RA
	ER.29	C-14 Maintenance-Respiration Study	Area	RA
	ER.30	C-14 Sucrose Inoculation of Oak and Pine Trees	Area	RA
	ER.07	Ca-45 Tagged Forest	Area	RA
	ER.02	Ca-45 Tagged Soil and Vegetation	Area	RA
	ER.01	Ca-45 Tagged Trees	Area	RA
	ER.28	Co-60 and Mn-54 Animal Study	Area	RA
		Cobalt 60 Storage Garden	Area	
	01.06	Contaminated Surfaces & Soil from 1959 Explosion, Building 3019 Cell	Area	RA
	01.07	Contamination at Base of 3019 Stack	Area	RA
	08.13	Contractor Spoils Area - Melton Valley, W-SW of 7900	Area	RA
	01.81	Corehole 8	Area	RA
	ER.22	Cr-51 Contaminated Grass Plots	Area	RA
	ER.17	Cs-134 Contaminated Grasses	Area	RA
	ER.18	Cs-134 Contaminated Lichens and Mosses	Area	RA
	ER.12	Cs-134 Contaminated Oak Trees	Area	RA
	ER.27	Cs-134 Contaminated Persimmon Tree	Area	RA
	ER.14	Cs-134 Contaminated Pine and Oak Seedlings	Area	RA
	ER.16	Cs-134 Contaminated Soybean and Sorghum	Area	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
	ER.06	Cs-134 Tagged Tree	Area	RA
	ER.04	Cs-137 Bagged Leaves Study	Area	RA
	99.04	Cs-137 Contaminated Forest Floor	Area	RA
	99.05	Cs-137 Contaminated Forest Understory	Area	RA
	99.06	Cs-137 Contaminated Meadow	Area	RA
	99.03	Cs-137, Co-60 Contaminated Forest Area (Chestnut Ridge)	Area	RA
	ER.08	Cs-137, Fe-59 Contaminated Animal Pens (NcNew Hollow)	Area	RA
		Decontamination Area	Area	RA
	05.07B	Drainage 1, 2 in WAG 5	Area	RA
	05.07C	Drainage 3 next to WAG 5	Area	RA
	19.08	Explosive and Shock-Sensitive Waste Detonation Area	Area	
	01.20	Filter Pit (Fission Product Development Lab)	Bldg.	RA
	01.58	Former Waste Pile Area (South of NRWTP)	Area	RA
	00.33	FPPP Contaminated Soil	Area	RA
		Freels Bend	Area	
	00.53	Groundwater	Area	RA
	10.04A	Grout Sheets	Area	RA
	ER.10	H-3 Contaminated Trees	Area	RA
	08.14	HFIR Cooling Tower Surface Impoundment	Area	
	ER.05	Hg-197 Tagged Stream	Area	RA
	ER.09	Hg-203 Tagged Stream	Area	RA
	07.02	Homogeneous Reactor Experiment (HRE) Fuel Wells	Area	RA
	09A.01E	HRE Decontamination Pad	Area	RA
	01.71	Inactive LLLW Collection Tank H-209	Tank	RA
	01.56A	Inactive LLLW Collection Tank W-19	Tank	RA
	01.56B	Inactive LLLW Collection Tank W-20	Tank	RA
	01.31A	Inactive LLLW Collection/Storage Tank TH-1	Tank	RA
	01.31B	Inactive LLLW Collection/Storage Tank TH-2	Tank	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
	01.31C	Inactive LLLW Collection/Storage Tank TH-3	Tank	RA
	01.32	Inactive LLLW Collection/Storage Tank TH-4	Tank	RA
	01.30A	Inactive LLLW Collection/Storage Tank WC-15	Tank	RA
	01.30B	Inactive LLLW Collection/Storage Tank WC-17	Tank	RA
	05.05A	Inactive OHF Waste Storage Tank T1	Tank	RA
	05.05B	Inactive OHF Waste Storage Tank T2	Tank	RA
	05.05C	Inactive OHF Waste Storage Tank T3	Tank	RA
	05.05D	Inactive OHF Waste Storage Tank T4	Tank	RA
	05.05E	Inactive OHF Waste Storage Tank T9	Tank	RA
		Inactive Wells (Bethel Valley)	Well	RA
		Inactive Wells (Melton Valley)	Well	RA
		Lamberts Quarry	Area	
	07.04E	Leak in Line Between Pit 3 and Trench 6	Area	RA
	07.04D	Leak in Transfer Line from Decon Facility and Pit 1	Area	RA
	07.04F	Leak in Valve Pit North of Trench 7	Area	RA
	07.04B	Leak Site 1 Pit 6 SE	Area	RA
	07.04C	Leak Site 2 End of Trench 7 Access Road	Area	RA
	07.04A	LLLW Leak Site at Gauging Station NW of Bldg. 7852	Area	RA
	05.05F	LLLW Line from Valve Box to OHF	Area	RA
	01.05K	LLLW Lines & Leak Sites - Between WC-1 & W-5	Area	RA
	08.03C	LLLW Lines & Leak Sites - 7500 Area	Area	RA
	08.03F	LLLW Lines & Leak Sites - 7920 Ditch Line	Area	RA
	01.05S	LLLW Lines & Leak Sites - Abandoned Line Central Ave Area	Area	RA
	01.05F	LLLW Lines & Leak Sites - Between W-5 & WC-19	Area	RA
	08.03E	LLLW Lines & Leak Sites - Bldg. 7920 & MV Pumping Station Area	Area	RA
	01.05W	LLLW Lines & Leak Sites - Building 3503, Ground Contamination	Area	RA
	01.05M	LLLW Lines & Leak Sites - Building 3028	Area	RA
	01.05I	LLLW Lines & Leak Sites - Building 3092 Area	Area	RA
	01.05U	LLLW Lines & Leak Sites - Building 3518, West	Area	RA

Appendix A

ORNL ER Surveillance and Maintenance Program Facility Management List

<i>Facility Number</i>	<i>FFA</i>	<i>Facility Name</i>	<i>Fac. Type</i>	<i>Program</i>
	10.03A	OHF Grout Sheets	Area	
	10.03	Old Hydrofracture Injection Well	Well	RA
	05.14	Old Landfill (NE Edge of SWSA 5 South)	Area	RA
		ORNL Area-wide Groundwater Program (Active Wells)	Area	RA
		ORNL WAG 10 - Remedial Investigation OU#3 - Hydrofracture Wells and Boreholes	Area	RA
		Post 24	Bldg.	RA
	05.07A	PWSB Pipeline from PWSB to Process Waste Treatment Plant	Area	RA
	ER.15	Rb-86 Contaminated Plants	Area	RA
	00.44	Soil at HRE Decontamination Pad/Shed	Area	RA
		Steam Cleaning Area	Area	RA
	01.10	Storage Pad Between Bldgs 3053 and 3504	Area	
		SWSA 4 Deer Fences	Area	RA
		SWSA 5 Deer Fences	Area	RA
	00.54	SWSA 6 TVA Easement	Area	RA
	ER.20	Tc-95 Uptake Studies	Area	RA
	ER.21	Tc-95m and I-131 Contaminated Pasture	Area	RA
	ER.19	Tc-95m Contaminated Soil and Plants	Area	RA
	ER.23	Tc-99 & Np-237 Contaminated Soil Lysimeters-Plutonium Floodplain	Area	RA
	99.10	Thorium Storage Silos	Area	RA
	09.04	Trash Area East of HRE Parking Lot	Area	RA
	00.50	WAG 1 Groundwater	Area	RA
	00.52	WAG 10 Groundwater	Area	RA
		WAG 4 Sr-90 Seeps	Area	RA
	00.61	West End Dump Site	Area	
	00.51	WOC Floodplain Soils & Sediments	Area	RA
	ER.13	Zn-65 Tagged Red Oak Seedlings	Area	RA

Appendix A ORNL ER Surveillance and Maintenance Program Facility Management List

Facility Number	FFA	Facility Name	Fac. Type	Program
	01.05P	LLLW Lines & Leak Sites - Building 3525 to a Sump	Area	RA
	01.05T	LLLW Lines & Leak Sites - Building 4508, North	Area	RA
	01.05N	LLLW Lines & Leak Sites - East of Building 2531	Area	RA
	01.05B	LLLW Lines & Leak Sites - East of Building 3020	Area	RA
	08.03A	LLLW Lines & Leak Sites - Lagoon Rd & Melton Valley Dr.	Area	RA
	08.03B	LLLW Lines & Leak Sites - Melton Valley Drive & SWSA 5 Access	Area	RA
	08.03G	LLLW Lines & Leak Sites - Melton Valley Transfer Line	Area	RA
	01.05D	LLLW Lines & Leak Sites - North of Building 3019	Area	RA
	01.05V	LLLW Lines & Leak Sites - Northwest of SWSA-1	Area	RA
	01.05L	LLLW Lines & Leak Sites - ORR Water Line	Area	RA
	01.05R	LLLW Lines & Leak Sites - Sewer Near Building 3500	Area	RA
	01.05A	LLLW Lines & Leak Sites - South of Building 3020	Area	RA
	01.05E	LLLW Lines & Leak Sites - SW Corner of Building 3019	Area	RA
	01.05J	LLLW Lines & Leak Sites - Undemeath Building 3026	Area	RA
	01.05G	LLLW Lines & Leak Sites - Undemeath Building 3047	Area	RA
	01.05O	LLLW Lines & Leak Sites - Undemeath Building 3515	Area	RA
	01.05Q	LLLW Lines & Leak Sites - Undemeath Building 3550	Area	RA
	01.05C	LLLW Lines & Leak Sites - West of Building 3082	Area	RA
	08.03D	LLLW Lines & Leak Sites - West of Melton Valley Pumping Station	Area	RA
	01.05H	LLLW Lines & Leak Sites, General Isotopes Area	Area	RA
	05.01B	LLLW Lines and Leak Sites - OHF Contaminated Soil	Area	RA
	05.01A	LLLW Lines and Leak Sites - OHF, Release of Grout	Area	RA
	04.01	LLW Line North of Lagoon Road	Area	RA
		Monitoring Stations 1 & 3	Area	RA
	ER.03	Na-22 Contaminated Soil	Area	RA
	10.04	New Hydrofracture Injection Well	Well	RA
	01.09	Oak Ridge Research Reactor Decay Tank Rupture Site	Area	RA

Appendix B

**SUMMARY OF INACTIVE LLLW TANK LEVEL TRENDING
ACTIVITIES**

1. INTRODUCTION

Oak Ridge National Laboratory (ORNL) currently has a total of 58 inactive liquid low-level waste (LLLW) storage tanks as defined in the Federal Facility Agreement (FFA) Appendix F list. These tanks are defined in Section IX (A)(d) of the FFA as Category D tanks because they are "existing tank systems that are removed from service." Twenty-one of the inactive tanks belong to and are managed by the Waste Management (WM) Program. The other thirty-seven tanks are owned and managed by the Environmental Restoration (ER) Program.

When the tanks were taken out of service, many tanks still had an inventory of liquids and/or sludges. ER established a surveillance and maintenance (S&M) program to monitor the tank and its contents to protect human health and the environment.

2. INACTIVE LLLW TANK LEVEL TREND ANALYSIS

The following section contains tank level data for FY 1996. As required by the FFA, inactive LLLW tanks that are receiving non-programmatic inputs of liquid are monitored to maintain liquid level management. A monthly report is generated that tracks the liquid level trends of the tanks. The level trend analysis does not indicate that any of the 37 inactive LLLW tanks are outleaking.

2.1 GUNITE STORAGE TANK W-5; SOUTH TANK FARM SITE, 3507, NORTH ROW

Tank W-5 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The liquid level has remained unchanged throughout FY 1995. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the Waste Operations Control Center (WOCC) which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.2 GUNITE STORAGE TANK W-6; SOUTH TANK FARM SITE, 3507, SOUTH ROW

Tank W-6 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This inleakage may be due to perched groundwater in the immediate vicinity of the tanks causing inleakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.3 GUNITE STORAGE TANK W-7; SOUTH TANK FARM SITE, 3507, SOUTH ROW

Tank W-7 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level remained unchanged throughout FY 1995. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.4 GUNITE STORAGE TANK W-8; SOUTH TANK FARM SITE, 3507, SOUTH ROW

Tank W-8 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This inleakage may be due to perched groundwater in the immediate vicinity of the tanks

causing inleakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.5 GUNITE STORAGE TANK W-9; SOUTH TANK FARM SITE, 3507, NORTH ROW

Tank W-9 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This inleakage may be due to perched groundwater in the immediate vicinity of the tanks causing inleakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.6 GUNITE STORAGE TANK W-10; SOUTH TANK FARM SITE, 3507, SOUTH ROW

Tank W-10 is a 170,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This inleakage may be due to perched groundwater in the immediate vicinity of the tanks causing inleakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.7 TANK W-11; SOUTH EAST OF SOUTH TANK FARM

Tank W-11 is a 15000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This inleakage may be due to perched groundwater in the immediate vicinity of the tanks causing inleakage thru tank penetrations such as pipelines or tank access ports. The liquid level is monitored daily with a staff gauge and this information is recorded on a database.

2.8 OLD HYDROFRACTURE TANK

Tank T-1 is a 15,000 gallon carbon steel tank. The liquid level is monitored daily with a Foxboro Model 13A DP transmitter. The liquid level has remained unchanged throughout FY 1996. The liquid level monitor was turned off January and February during sampling activities, and again from August through September during a campaign to install additional risers on the OHF tanks. These risers will be used to remove the contents in FY 1997 or 1998.

2.9 OLD HYDROFRACTURE TANK

Tank T-2 is a 15,000 gallon carbon steel tank. The liquid level is monitored daily with a Foxboro Model 13A DP transmitter. The liquid level has remained unchanged throughout FY 1996. The liquid level monitor was turned off January and February during sampling activities, and again from August through September during a campaign to install additional risers on the OHF tanks. These risers will be used to remove the contents in FY 1997 or 1998.

2.10 OLD HYDROFRACTURE TANK T-3

Tank T-3 is a 25,000 gallon carbon steel tank. The liquid level is monitored daily with a Foxboro Model 13A DP transmitter. The liquid level has remained unchanged throughout FY 1996. The liquid level monitor was turned off January and February during sampling activities, and again from August through September during a campaign to install additional risers on the OHF tanks. These risers will be used to remove the contents in FY 1997 or 1998.

2.11 OLD HYDROFRACTURE TANK T-4

Tank T-4 is a 25,000 gallon carbon steel tank. The liquid level is monitored daily with a Foxboro Model 13A DP transmitter. The liquid level has remained unchanged throughout FY 1996. The liquid level monitor was turned off January and February during sampling activities, and again from August through September during a campaign to install additional risers on the OHF tanks. These risers will be used to remove the contents in FY 1997 or 1998.

2.12 OLD HYDROFRACTURE TANK T-9

Tank T-9 is a 13,000 gallon carbon steel tank. The liquid level is monitored daily with a Foxboro Model 13A DP transmitter. The liquid level has remained unchanged throughout FY 1996. The liquid level monitor was turned off January and February during sampling activities, and again from August through September during a campaign to install additional risers on the OHF tanks. These risers will be used to remove the contents in FY 1997 or 1998.

2.13 THORIUM TANK TH-1; SOUTH OF BUILDING 3503

Tank TH-1 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

2.14 THORIUM TANK TH-2; SOUTH OF BUILDING 3503

Tank TH-2 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

2.15 THORIUM TANK TH-3; SOUTH OF BUILDING 3503

Tank TH-3 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

2.16 THORIUM TANK TH-4; SOUTH OF BUILDING 3500

Tank TH-4 is a 14,000 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This leakage may be due to perched groundwater in the immediate vicinity of the tanks causing leakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.17 TANK W-1; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-1 is a 4800 gallon capacity tank constructed of gunite and reinforced steel. The liquid level is slowly increasing. The tank liquid level has increased in FY 1996. This leakage may be due to perched groundwater in the immediate vicinity of the tanks causing leakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.18 TANK W-2; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-2 is a 4800 gallon capacity tank constructed of gunite and reinforced steel. The liquid level is slowly increasing. The tank liquid level has increased in FY 1996. This leakage may be due to perched groundwater in the immediate vicinity of the tanks causing leakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level.

2.19 TANK W-3; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-3 is a 42,500 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This leakage may be due to perched groundwater in the immediate vicinity of the tanks causing leakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level. Approximately 16,161 gallons of supernate was transferred to the active LLLW system in September, 1996, to maintain a safe liquid level.

2.20 TANK W-4; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-4 is a 42,500 gallon capacity tank constructed of gunite and reinforced steel. The tank liquid level has increased in FY 1996. This leakage may be due to perched groundwater in the immediate vicinity of the tanks causing leakage thru tank penetrations such as pipelines or tank access ports. The liquid level instrumentation is a Robertshaw Inven-Tel-185 conductivity probe which is connected to the WOCC which is manned 24 hours/day. This allows 24-hour surveillance of the liquid level. Approximately 23,839 gallons of supernate was transferred to the active LLLW system in September, 1996, to maintain a safe liquid level.

2.21 TANK W-13; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-13 is a 2000 gallon capacity tank constructed of stainless steel. The tank remains empty. No permanent level instrumentation is mounted to the tank.

2.22 TANK W-14; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-14 is a 2000 gallon capacity tank constructed of stainless steel. The tank remains empty. No permanent level instrumentation is mounted to the tank.

2.23 TANK W-15; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-15 is a 2000 gallon capacity tank constructed of stainless steel. The tank remains empty. No permanent level instrumentation is mounted to the tank.

2.24 TANK W-1A; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023

Tank W-1A is a 4000 gallon capacity tank constructed of stainless steel. The tank liquid level is monitored daily with a Foxboro 823 pneumatic gauge. This tank receives significant amounts of inleakage, with a total of 15 transfers made during FY 1996.

2.25 TANK WC-1; BETWEEN BLDG. 3038 AND 3037, NORTH OF CENTRAL AVENUE

Tank WC-1 is a 2150 gallon capacity tank constructed of stainless steel. The liquid level has remained unchanged throughout FY 1996. No permanent liquid level instrumentation is mounted to the tank.

2.26 TANK WC-15; SOUTH OF BUILDING 3587, CORNER OF WHITE OAK AVE. AND FIFTH ST.

Tank WC-15 is a 1000 gallon capacity tank constructed of stainless steel. The tank liquid level is monitored daily with a Robertshaw Inven-Tel 185 model conductivity probe. This tank is known to have a hole in the bottom. Since the tank is at the interface of the groundwater table, the liquid level fluctuates as the groundwater table rises and falls.

2.27 TANK WC-17; SOUTH OF BUILDING 3587, CORNER OF WHITE OAK AVE. AND FIFTH ST.

Tank WC-17 is a 1000 gallon capacity tank constructed of stainless steel. The tank liquid level is monitored daily with a Robertshaw Inven-Tel 185 model conductivity probe. This tank is known to have a hole in the bottom. Since the tank is at the interface of the groundwater table, the liquid level fluctuates as the groundwater table rises and falls.

2.28 TANK 7560; EAST OF BUILDING 7500, MELTON VALLEY

Tank 7560 is a 1000 gallon capacity tank constructed of stainless steel. The tank has remained empty throughout FY 1996.

2.29 TANK 7562; EAST OF BUILDING 7500, MELTON VALLEY

Tank 7562 is a 12,000 gallon capacity tank constructed of stainless steel. The tank is empty, and the pipelined are isolated.

2.30 TANK T-30; SOUTH OF BUILDING 4507, UNDERGROUND IN CONCRETE PIT

Tank T-30 is a 825 gallon capacity tank constructed of stainless steel. In August 1996, the tank and vault were filled with a low permeable grout. There is no requirement for liquid level measurement for this tank.

2.31 TANK W-19; SOUTH OF SOUTH TANK FARM, NORTH OF BUILDING 3517

Tank W-19 is a 2250 gallon capacity tank constructed of stainless steel. The tank has remained empty. There is no liquid level instrumentation mounted on this tank.

2.32 TANK W-20; SOUTH OF SOUTH TANKS FARM; NORTH OF BUILDING 3517

Tank W-20 is a 2250 gallon capacity tank constructed of stainless steel. The tank has remained empty. There is no liquid level instrumentation mounted on this tank.

2.33 TANK 3001-B; SOUTH OF BUILDING 3001

Tank 3001-B was removed in 1995. There is no need to monitor the liquid level.

2.34 TANK 3003-A; SOUTH OF BUILDING 3003

Tank 3003-A is a 16,000 gallon tank constructed of concrete. The liquid level has remained unchanged. There is no liquid level instrumentation connected to this tank.

2.35 TANK 3004-B; EAST OF BUILDING 3008; UNDERGROUND, UNDERNEATH LANDSCAPE ROCKS ON PUBLIC ACCESS WALK TO GRAPHITE REACTOR

Tank 3004-B was removed in 1995. There is no need to monitor the liquid level.

2.36 TANK 3013; EAST OF BUILDING 3017, SOUTH OF BUILDING 3013

Tank 3013 is a 400 gallon capacity tank constructed of stainless steel. The tank was isolated and filled with a low permeable grout in 1995. There is no need to monitor the liquid level.

2.37 TANK 7503-A; NORTHWEST OF BUILDING 7503, MELTON VALLEY

Tank 7503-A is a 11,000 gallon capacity tank constructed of stainless steel. The tank has remained empty. There is no liquid level instrumentation connected to this tank.

2.38 TANK H-209; SOUTHWEST OF BUILDING 3517, NEXT TO WHITE OAK AVE.

Tank H-209 is a 2500 gallon capacity tank constructed of carbon steel. In 1996, the tank was isolated and filled with a low permeable grout. There is no need to monitor the liquid level.

DISTRIBUTION

1. L. V. Asplund
2. T. W. Burwinkle
3. R. L. Chadwick
4. T. J. Cofer
5. M. D. Easten
- 6-8. S. A. Herron
9. S. L. Laman
10. J. R. Lyons II
11. D. M. Matteo
12. S. D. Nolan
13. P. T. Owen
14. P. A. Schrandt
15. A. Smith
16. M. L. Whitehead
17. K. L. Wilson
18. H. D. Wooten
19. Central Research Library
20. ER Document Management Center—RC
21. M. Goldberg, CDM Federal Programs Corporation, 800 Oak Ridge Turnpike, Suite 500, Oak Ridge, TN 37830
22. W. Rideout, The S.M. Stoller Corporation, 1060 Commerce Park Drive, Oak Ridge, TN 37830