

**Lockheed Martin  
Energy Research Corporation**

**FY 1999  
Environment, Safety,  
Health, Quality, and  
Infrastructure  
Management Plan  
for the  
Oak Ridge National  
Laboratory**

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**LOCKHEED MARTIN ENERGY  
RESEARCH CORPORATION**

**FY 1999**

**ENVIRONMENT, SAFETY, HEALTH, QUALITY,  
AND INFRASTRUCTURE MANAGEMENT PLAN**

**FOR THE**

**OAK RIDGE NATIONAL  
LABORATORY**

**November 1998**

**Prepared by**  
**LOCKHEED MARTIN ENERGY RESEARCH CORPORATION**  
**for the**  
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**under contract DE-AC05-96OR22464**



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## ACRONYMS AND ABBREVIATIONS

ADS	activity data sheet
ALD	Associate Laboratory Director
AML	Assistant Manager for Laboratories (DOE-OR)
ANS	American Nuclear Society
B&R	Budget and Reporting
BNL	Brookhaven National Laboratory
CAP	Compliance Assurance Program
CAS	Condition Assessment Survey
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbon
<i>CFR</i>	<i>Code of Federal Regulations</i>
DLD	Deputy Laboratory Director
DOE	Department of Energy
DOE-ER	Department of Energy-Energy Research
DOE-OS	Department of Energy-Office of Science
EM	Environmental Management
ES&H	environment, safety, and health
ESH&Q	environment, safety, health, and quality
ESHQ&I	environment, safety, health, quality, and infrastructure
ETTP	East Tennessee Technology Park
FTE	full-time equivalent
FWP	Field Work Proposal
FY	fiscal year
GPE	general-purpose equipment
GPP	general plant project
H&S	health and safety
HFIR	High Flux Isotope Reactor
HVAC	heating, ventilating, and air-conditioning
ISMS	Integrated Safety Management System
LCAM	Life Cycle Asset Management
LD	Laboratory Director
LDRD	Laboratory Director's Research and Development (ORNL)
LI	line item
LIDS	Laboratory Issues Database System
LMER	Lockheed Martin Energy Research Corporation
LMES	Lockheed Martin Energy Systems, Inc.
LMTPM	Lockheed Martin Transportation and Packaging Management
LWS	Laboratory Waste Services
M&I	management and integration
MFABs	master fire alarm boxes
NCS	nuclear criticality safety
NCSE	Nuclear Criticality Safety Evaluation
NCSA	Nuclear Criticality Safety Approval

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
ODG	Office of Directives and Guidance
OE	Operating Expense
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office (DOE)
OSHA	Occupational Safety and Health Administration
PAAA	Price-Anderson Amendments Act
PMTS	Program Management Tracking System
R&D	research and development
RAC	Risk Assessment Code
REDC	Radiochemical Engineering Development Center
RPM	Risk-Based Priority Model
S&H	safety and health
SAMS	Space Allocation Management System
SAR	Safety Analysis Report
SARUP	Safety Analysis Reports Update Program
scfm	standard cubic feet per minute
SME	subject matter expert
SNS	Spallation Neutron Source
TSR	Technical Safety Requirements
UL	Underwriters Laboratory
UNICALL	Unified Field Budget Call
URL	Uniform Resource Locator
UST	underground storage tank
WAC	Waste Acceptance Criteria
WM	Waste Management
WSSs	Work Smart Standards
WWW	World Wide Web

## **ORNL ENVIRONMENT, SAFETY, AND HEALTH GOAL STATEMENT**

Oak Ridge National Laboratory (ORNL) is committed to excellence in all activities and to cost-effective operation in compliance with all applicable environment, safety, and health (ES&H) laws and regulations. This commitment is reflected in the Laboratory's mission statement and in the *ORNL R&D Strategic Plan*, which identifies the goal of conducting all operations in a safe and environmentally responsible manner.

The management contract between the Department of Energy (DOE) and Lockheed Martin Energy Research Corporation (LMER) establishes the fundamental ES&H expectations of DOE. The Laboratory has established critical outcomes, objectives, and performance indicators to help achieve the ES&H goals defined in the *DOE Strategic Plan*. Funding of ES&H for full compliance continues to be a challenge to Laboratory management, who will work within the constraints of decreasing budgets and use risk-based prioritization of activities as a basis for planning and budgeting.



## EXECUTIVE SUMMARY

The Oak Ridge National Laboratory (ORNL) is a multiprogram science and technology laboratory managed for the U.S. Department of Energy (DOE) by Lockheed Martin Energy Research Corporation (LMER). In support of DOE's missions, ORNL conducts basic and applied research and development (R&D) to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security.

ORNL is committed to systematically carrying out its mission in a manner that achieves excellence, cost-effectiveness, and competitiveness in R&D, while simultaneously protecting its workers, the public, and the environment. Toward this end, ORNL has adopted the Integrated Safety Management System (ISMS) by Contract ([DEAR Clause 970.5204-2](#)) as the overarching philosophy and approach to systematically integrate safety into management tools and work practices.

ORNL systematically and fully integrates safety into management and work practices at all levels so that the mission of ORNL is successfully accomplished while protecting the public, the worker, and the environment. Operations are conducted in compliance with applicable [Work Smart Standards \(WSSs\)](#) and in a manner consistent with the hazards associated with the work. ORNL systematically evaluates work processes through an ongoing self-assessment program designed to ensure that the mission of the Laboratory is carried out in a safe and effective manner.

This *Environment, Safety, Health, Quality, and Infrastructure (ESHQ&I) Management Plan* describes the approach used at ORNL to ensure the health and safety of employees and the public, to protect the environment, to develop and implement a comprehensive integrated planning process consistent with DOE 430.1, "[Life Cycle Asset Management \(LCAM\)](#)," and to comply with requirements set forth in the WSSs agreed upon by LMER and DOE. This plan documents the systems and processes used by ORNL to (1) establish and communicate ESHQ&I expectations and requirements to the ORNL community, (2) identify and secure funding for ESHQ&I activities using risk-based planning and priority setting, (3) conduct R&D activities and operations through integration of ESHQ&I principles in work planning and execution, and (4) assess ESHQ&I performance and provide feedback to promote continuous improvement. The plan was prepared in accordance with guidelines in the *DOE Guidance Manual for the ES&H Planning Process for Fiscal Year (FY) 1999*, and its issuance satisfies the requirement in the [DOE-LMER Management Contract, I.71 DEAR 970.5204-2 Paragraph C](#).

Achieving excellence in ESHQ&I is accomplished through effective interaction between the line organization and the ESHQ&I staff, with employee involvement at all levels. Line management is responsible for fully implementing requirements within their organizations by

(1) developing systems and approaches that result in the effective management of risks and (2) creating a culture that effectively integrates work planning, execution of work activities, and performance assessment and feedback. The ESHQ&I staff supports the line organization by providing specialized technical assistance and guidance, interfacing with DOE and external regulators, and providing program oversight necessary to assure effective integration of ESHQ&I management systems into all research and operations activities.

An ORNL Issues Management System has been developed and implemented to assure that potentially significant issues are recognized. Section 5 of this plan identifies those issues which will be evaluated for inclusion in the Issues Management System. Elements of the Issues Management System include issues identification, documentation and communication, establishment of resolution strategy, monitoring of progress, and verification of resolution.

ORNL has a strong base on which to continue development of the ESHQ&I programs as well as the technical resources vital to program development. Factors that will aid in addressing future challenges include a renewed commitment by ORNL to foster line management accountability for ESHQ&I and to take greater advantage of untapped human resources. The continued effort to involve ORNL employees effectively is a key component of future ESHQ&I program development.

## 1. INTRODUCTION

Oak Ridge National Laboratory (ORNL) is managed by Lockheed Martin Energy Research Corporation (LMER) for the Department of Energy (DOE) under Contract DE-AC05-96OR22464. As part of the Management Contract, ORNL has agreed to submit to DOE an Environment, Safety, Health, Quality, and Infrastructure (ESHQ&I) Management Plan. Issuance of this management plan satisfies the ORNL commitment stipulated in the Management Contract ([Section I.71 DEAR 970.5204-2, Paragraph C](#)).

This plan documents the systems and processes used by ORNL to (1) establish and communicate ESHQ&I expectations and requirements to the ORNL population, (2) identify and secure funding for ESHQ&I activities using risk-based planning and priority setting, (3) conduct research and development (R&D) activities through integration of ESHQ&I principles into work planning and execution, and (4) assess ESHQ&I performance and provide meaningful feedback to promote performance improvement. Implementation of the systems and processes described in this document provides the basis by which ORNL ensures the health and safety (H&S) of employees and the public, protects the environment, plans for infrastructure resources, and complies with the WSSs agreed to by DOE and ORNL.

## 2. ESHQ&I MISSION AND PROGRAM APPROACH

The ESHQ&I mission of ORNL is to conduct R&D and operations in a manner that protects the environment, staff, and public, while allowing ORNL to continue to carry out world-class research in a cost-effective, competitive manner.

The mission of infrastructure planning, conducted through the Office of Capital Asset Management, is to develop and implement a comprehensive/integrated planning process consistent with DOE 430.1, "[Life Cycle Asset Management \(LCAM\)](#)." The long-term goal is to support DOE critical missions and provide a quality working environment of infrastructure support facilities and systems.

ORNL is committed to the advancement of science and technology while addressing important national and global energy and environmental issues. As DOE's largest multi-program, nonweapons laboratory, ORNL employs approximately 4400 staff members and annually hosts about 3100 guest researchers from universities and industry. The mission of ORNL is to conduct basic and applied R&D to advance the nation's energy resources, environmental quality, scientific knowledge, educational foundations, and national economic competitiveness. This mission is accomplished with a commitment to excellence in all activities and to cost-effective operation in compliance with applicable ES&H laws and regulations. The diversity of R&D and its support activities creates challenges as well as opportunities for ORNL in the effort to apply ES&H goals and objectives in a manner that supports ORNL's mission and adds value to operational performance.

### **3. INTEGRATED SAFETY MANAGEMENT SYSTEM**

#### **3.1 PURPOSE AND POLICY**

ORNL is committed to systematically carrying out its mission in a manner that achieves excellence, cost-effectiveness, and competitiveness in R&D, while simultaneously protecting its workers, the public, and the environment. Toward this end, ORNL has adopted the Integrated Safety Management System (ISMS) by Contract ([DEAR Clause 970.5204-2](#)) as the overarching philosophy and approach to systematically integrate safety into management tools and work practices.

It is the policy of ORNL to systematically and fully integrate safety into management and work practices at all levels so that the mission of ORNL is successfully accomplished while protecting the public, the worker, and the environment. Operations will be conducted in compliance with applicable WSSs and in a manner consistent with the hazards associated with the work. ORNL will systematically evaluate work processes through an ongoing self-assessment program designed to ensure that the mission of the Laboratory is carried out in a safe and effective manner.

In addition, the policy is to objectively and fully communicate environmental protection and safety and health information to ORNL staff, to subcontractor personnel, to DOE, to applicable stakeholders, and to the public.

#### **3.2 SCOPE**

The work conducted at ORNL varies widely in terms of complexity, hazard types and levels, and risk. To provide the tailored approach necessary for effective implementation in the workplace, each line organization determines the need for organization-specific ISMS plans to customize the ISMS principles and core functions to its operations. For complex or special-hazard situations, the line organization determines the need for ISMS plans tailored to specific mission programs or specific facilities.

The ORNL ISMS responsibility applies to all work activities directed by ORNL management and performed by ORNL employees and by guests and visitors at ORNL, as well as the inclusion of provisions into appropriate subcontracts for on-site activities.

Specific ORNL ISMS Plans are available on the World Wide Web (WWW) at:  
URL (<http://oecdwsrv.oecd.ornl.gov/isms/ismshome.cfm>)

This plan defines present and future plans for ORNL environment, safety, health, and quality (ESH&Q) activities. In addition, it serves as a reference for activity data sheets and funding documents which describe ESH&Q activities, schedules, and funded or requested resources.

#### **3.3 ISMS CORE FUNCTIONS AND SYSTEMS**

ISMS integrates safety considerations, along with R&D performance and infrastructure maintenance and improvement, into the management and execution of work at all levels so that the ORNL mission is accomplished while protecting the public, the workers, and the environment. Hence, both managers and workers give proper consideration to safety aspects at all stages of the work process: planning, performing, assessing the results, and defining the needed improvements for future work. ISMS directs responsibility to line management to plan, perform, and evaluate work activities. Line managers assure that work is performed according to standards and ESH&Q provisions that are consistent with the analyzed hazards of the work. They enlist technical assistance of appropriate ESH&Q subject matter experts (SMEs) when selecting, interpreting, communicating, and implementing the appropriate ESH&Q standards and resulting work procedures and when evaluating their effectiveness. It is the responsibility of each worker to work safely within the scope of the established safety envelope and controls.

### 3.3.1 Define the Work and Its Hazards

Core Function 1: Translate the ORNL mission objectives into defined work activities that will meet those objectives and identify expectations for the performance of that work.

Systems:

Work Smart Standards <sup>1</sup> and Reengineering <sup>2</sup>	<a href="http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm">http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm</a>
LMER Operating Contract	<a href="http://x10capserv.ornl.gov/htmldocs/x-10/contract/contrx10.htm">http://x10capserv.ornl.gov/htmldocs/x-10/contract/contrx10.htm</a>
ORNL Funding Documents	<a href="http://www-internal.ornl.gov/auth-cigi-bin/cgiwrap?user=pmts&amp;script=prod/menu.cgi">http://www-internal.ornl.gov/auth-cigi-bin/cgiwrap?user=pmts&amp;script=prod/menu.cgi</a>
ORNL Institutional Plan	<a href="http://www.ornl.gov/inst_plan/IP_Outline.html">http://www.ornl.gov/inst_plan/IP_Outline.html</a> (reference: 3.5.1.2)
ORNL Strategic Plan	<a href="http://www.ornl.gov/inst_plan/STRATEGIC_PLAN/title98sp.html">http://www.ornl.gov/inst_plan/STRATEGIC_PLAN/title98sp.html</a> (reference 3.5.1.3)
ORNL ESHQ/Infrastructure Management Plan	<a href="http://oecdwsrv.oecd.ornl.gov/camplrpt/camindex.htm">http://oecdwsrv.oecd.ornl.gov/camplrpt/camindex.htm</a>
ORNL Land and Facilities Plan	<a href="http://www.ornl.gov/~dmsi/landUse/">http://www.ornl.gov/~dmsi/landUse/</a>
Comprehensive Integrated Plan	<a href="http://www.ornl.gov/~dmsi/cip/cip.htm">http://www.ornl.gov/~dmsi/cip/cip.htm</a>
ORNL Organization Fact Sheets	<a href="http://oecdwsrv.oecd.ornl.gov/camplrpt/ESHPlan/plan99/FactSht.htm">http://oecdwsrv.oecd.ornl.gov/camplrpt/ESHPlan/plan99/FactSht.htm</a>

<sup>1</sup> The Necessary and Sufficient process [[Department of Energy Closure Process for Necessary and Sufficient Sets of Standards \(DOE M 450.3-1\)](#)] has been used to identify all work types, to perform in-depth reviews of hazards of ORNL operations and facilities, and to develop a corresponding comprehensive set of WSSs for ORNL facilities referenced in the Contract, Section H 15(c).

<sup>2</sup> A recent ESH&Q Reengineering study has defined an approach to ESH&Q management

aimed at placing responsibility on the line organizations and redefining the role of the ESH&Q Offices as one of providing oversight, guidance, and support. Implementation of this approach will define specific responsibilities for ESH&Q and interrelated infrastructure responsibilities.

### 3.3.2 Analyze the Hazards

Core Function 2: Identify and analyze the hazards and risks to the workers, the public, and the environment that are associated with the planned work activities.

Systems:

Work Smart Standards	<a href="http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm">http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm</a>
ORNL Directives and Guidance <sup>1</sup>	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
Safety Checklist and Reviews	(Indicates a system rather than a document available on the WWW)
Director’s Review Committees	(Indicates a system rather than a document available on the WWW)

<sup>1</sup>ORNL-level ESH&Q directives are developed to ensure conformance with the WSS-defined standards and implementation issues. These provide the implementation mechanism for WSSs. For line organizations, additional organization-specific standards, procedures, and instructions tailored to the work and hazards of that organization and that supplement the ORNL WSSs and Directives and Guidance System may be required.

### 3.3.3 Develop and Implement Hazard Control

Core Function 3: Identify the applicable standards and requirements that address the identified hazards, establish appropriate work controls to prevent and mitigate those hazards, implement those controls, and allocate resources to ensure that the work is performed safely.

Systems:

Work Smart Standards	<a href="http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm">http://x10capserv.ornl.gov/htmldocs/x-10/ons/onscawss.htm</a>
ORNL Directive and Guidance	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
Safety Checklist and Reviews	(Indicates a system rather than a document available on the WWW)
Director’s Review Committees	(Indicates a system rather than a document available on the WWW)
Environmental/Waste Management Permits	<a href="http://oecdwsrv.oecd.ornl.gov/landerin/permits.htm">http://oecdwsrv.oecd.ornl.gov/landerin/permits.htm</a>
Safety and Health Permits	(Indicates a system rather than a document available on the WWW)

### 3.3.4 Perform Work Within the Controls

Core Function 4: Confirm readiness and perform the work safely in accordance with the

established work controls.

Systems:

ORNL Directive and Guidance	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
(Nonnuclear) QA-P01, “ORNL Quality Assurance Program”	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
(Nuclear) Above plus QA-P02, “ORNL Nuclear Quality Assurance Program” and activities related to 10 CFR 830.120	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>

### 3.3.5 Provide Feedback and Continuous Improvement

Core Function 5: Assess work performance and the adequacy of controls to provide feedback for improving performance and conduct self-assessment and oversight activities.

Systems:

ORNL LCAM Implementation	<a href="http://www-internal.ornl.gov/OQPI/pi/coopi.htm">http://www-internal.ornl.gov/OQPI/pi/coopi.htm</a>
QA-P03, “ORNL Self-Assessment Programs” <sup>1</sup>	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
QA-P07, “ORNL Lessons Learned Program”	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
OR-PO1, “ORNL Occurrence Notification and Reporting”	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
Performance Measures	<a href="http://www-internal.ornl.gov/OQPI/pi/copi.htm">http://www-internal.ornl.gov/OQPI/pi/copi.htm</a>
DOE Teaming with Division and ESH&Q Offices for Walkthroughs	(Indicates a system rather than a document available on the WWW)
PAAA Board	<a href="http://x10capserv.ornl.ornl.gov/htmldocs/x-10/paaa/charter.htm">http://x10capserv.ornl.ornl.gov/htmldocs/x-10/paaa/charter.htm</a>
Director’s Review Committees	(Indicates a system rather than a document available on the WWW)
Human Resources Development Requirements	<a href="http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html">http://www-internal.ornl.gov/ORNL/directives/ORNLcommand.html</a>
Integrated Safety Management Assessments	(Indicates a system rather than a document available on the WWW)

<sup>1</sup> ORNL has an institutionalized Self-Assessment Program. Each line organization has a self-assessment process for its ESH&Q operations, and these processes are in various stages of maturity. In addition, an ORNL-level Laboratory Assessment Program provides guidance for

and monitoring of these line self-assessment activities. It also performs a triennial independent management assessment of their effectiveness. This function coordinates the Lessons Learned Program and the Corrective Actions Management System to address ORNL-level internal and external audit findings and self-assessment findings by means of the Laboratory Issues Database System (LIDS) for tracking Commitments.

### **3.4 ISMS GUIDING PRINCIPLES**

The seven principles guiding the implementation of ISMS at ORNL are listed below. All personnel, at all levels, share responsibility for successful day-to-day use of these principles.

#### **3.4.1 Line Management Responsibility for Safety**

Line management is directly responsible for the protection of the public, the workers, and the environment.

#### **3.4.2 Clear Roles and Responsibilities**

Clear and unambiguous lines of authority and responsibility for ensuring safety are established and maintained at all organizational levels.

#### **3.4.3 Competence Commensurate with Responsibilities**

Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

#### **3.4.4 Balanced Priorities**

Resources are effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment is a priority when activities are planned and performed.

#### **3.4.5 Identification of Standards and Requirements**

Before work is performed, the associated hazards are evaluated and an agreed-upon set of standards and requirements is established, which if properly implemented, provides adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

#### **3.4.6 Hazard Controls Tailored to Work Being Performed**

Administrative and engineering controls to prevent and mitigate hazards are tailored to the work and its associated hazards.

### 3.4.7 Operations Authorization

The conditions and requirements to be satisfied for operations to be initiated and conducted are clearly established and agreed upon.

## 3.5 ORNL INFRASTRUCTURE PLANNING

Infrastructure planning defines present and future plans for ORNL facilities and site development. In addition, it serves as a reference source for a broad base of site and facilities characterization data. Future facility and land requirements are determined by the functional and physical adequacy of existing facilities and equipment and by future mission and program plans. The general plant projects (GPPs) and line item (LI) construction projects required to support ORNL's future mission and program plans are described, and the impacts of this construction on the site's assets are summarized. In addition, essential general-purpose equipment (GPE) needs and plans are described.

### 3.5.1 Infrastructure Planning Documents

Listed below are the key planning documents that support infrastructure planning as well as ESH&Q planning. A short description of the referenced document is provided along with a World Wide Web Uniform Resource Locator (URL) address, if one is available.

#### 3.5.1.1 Comprehensive Integrated Planning: A Process for the Oak Ridge Reservation, Oak Ridge, Tennessee (May 1998) (<http://www.ornl.gov/~dmsi/cip/>)

The *ORR Comprehensive Integrated Plan* is intended to assist DOE and contractor personnel in implementing a comprehensive/integrated planning process consistent with DOE Order 430.1, "Life Cycle Asset Management (LCAM)." DOE contractors are charged with developing and producing the *ORR Comprehensive Integrated Plan*, which serves as a summary document, providing information from other planning efforts regarding vision statements, missions, contextual conditions, resources and facilities, decision processes, and stakeholder involvement.

The [\*ORR Comprehensive Integrated Plan\*](#) is a planning reference that identifies primary issues regarding major changes in land and facility use and serves all programs and functions on-site as well as the DOE Oak Ridge Operations Office (ORO) and DOE Headquarters. The plan illustrates how the ORR, as a valuable national resource, is and shall be managed based on the principles of ecosystem management and sustainable development and how mission, economic, ecological, social, and cultural factors are used to guide land and facility use decisions. The long-term goals of the comprehensive integrated planning process, in priority order, are to support DOE critical missions and stimulate the economy while maintaining a quality environment.

#### 3.5.1.2 ORNL Institutional Plan ([http://www.ornl.gov/inst\\_plan/IP\\_Outline.html](http://www.ornl.gov/inst_plan/IP_Outline.html))

ORNL produces an institutional plan each year to convey information about the Laboratory to DOE. The institutional planning process provides a means for DOE to consider the Laboratory as an institution (rather than as a collection of programs) and to review its mission, its health as an institution, and its plans for the future. DOE approval of ORNL's institutional plan indicates that the Laboratory's mission, vision, and strategic plan are aligned with Departmental needs and plans.

### **3.5.1.3 ORNL Strategic Plan** ([http://www.ornl.gov/inst\\_plan/STRATEGIC\\_PLAN/title98sp.html](http://www.ornl.gov/inst_plan/STRATEGIC_PLAN/title98sp.html))

Since its establishment in 1943, ORNL has anticipated and supported national needs for R&D, developing broad, multidisciplinary capabilities that today are directed primarily toward support for the missions of DOE. Throughout its existence as a DOE national laboratory, ORNL has conducted strategic planning to prepare for new challenges, focus its resources on the future, and explore new technical directions. The Laboratory's current strategic planning efforts are summarized in this document. They reflect significant changes that are occurring at many levels.

### **3.5.1.4 ORNL ESHQ&I Budget Formulation Submission** (<http://oecdwsrv.oecd.ornl.gov/camplrpt/camindex.htm>)

ORNL's fiscal year (FY) 2000 ESHQ&I Budget Formulation Plan was developed in accordance with the guidance in the DOE Guidance Document for the ESHQ&I Planning Process for FY 2000 [Office of Laboratory Operations and ES&H (ER80), Laboratory Infrastructure Division (ER82), *Environment, Safety & Health, and Infrastructure Management Plan - Guidance Manual*, dated February 27, 1998]. It identifies the ESHQ&I activities considered necessary at ORNL to ensure the health and safety of employees and the public; protection of the environment; and compliance with applicable laws, regulations, DOE policies and orders, and other ESHQ&I requirements while carrying out the site's missions and the planning for ORNL infrastructure needs which support R&D as well as ESH&Q. This plan was developed using risk-based planning and priority-setting methodologies to (1) establish and communicate ESHQ&I expectations to all stakeholders, (2) support the development of Departmental budgets and secure funding for ESHQ&I programs and activities, (3) support the integration of ESHQ&I principles in site-wide work planning and execution, and (4) assess ESHQ&I performance and provide feedback to promote continuous improvement.

### **3.5.1.5 Oak Ridge Reservation Annual Site Environmental Report** ([http://www.ornl.gov/Env\\_Rpt/asr96/asr.htm](http://www.ornl.gov/Env_Rpt/asr96/asr.htm))

This document contains a summary of environmental monitoring activities on the ORR and its surroundings. The monitoring and documentation criteria are described within the requirements of [ORO O 450, "Protection of the Public and Environment."](#) The results summarized in this annual report are based on the data collected prior to and through the

reported year.

### **3.5.1.6 Oak Ridge Reservation Management Plan**

The primary purpose of this management plan is to define responsibilities and authority for ORR management. The management plan treats the ORR as a single site wherever possible and addresses roles and responsibilities for managing the physical and human resources of the reservation on both a day-to-day and long-term basis. The focus of the document is to address general overall reservation policy and management, particularly as it relates to the portion of the ORR outside the immediate site boundaries.

### **3.5.1.7 ORNL Facility Index (<http://www-internal.ornl.gov/~q9t/facility/>)**

The ORNL Facility Index is a Web-based database of ORNL facilities with related links that include ORNL site maps, the ORNL Facilities Management Database, the ORNL Area Responsibility Listing, the ORNL Condition Assessment Survey (CAS), the ORNL Space Allocation Management System (SAMS), the Property Management System (PRISM), GLI Web - General Locator Information, and Whos. Photographs of the facilities are also available at this index.

### **3.5.1.8 ORNL Land and Facilities Plan (<http://www.ornl.gov/~dmsi/landUse/>)**

The primary purpose of the [\*ORNL Land and Facilities Plan\*](#) is to provide information on ORNL land and facilities use and planning. Section 2, "ORNL Land Use Plan," provides information on current reservation uses (ORNL and others) and addresses ORNL plans for use of the land outside the ORNL fenced, developed site. Information on planned uses by non-ORNL projects (Bechtel Jacobs Company LLC, Tennessee Department of Transportation, etc.) is included when known. Section 3, "ORNL Integrated Facilities Plan," provides information on planning for facilities and uses within the ORNL developed area. This plan replaced the Technical Site Information Document, the Site Development Plan, and the Integrated Facilities Plan.

## **3.6 ROLES AND RESPONSIBILITIES**

ORNL organizational structures are available at:  
URL (<http://www-internal.ornl.gov/ornlhome/thelab.htm>)

### **3.6.1 Senior Management**

The ORNL Laboratory Director (LD) and the Deputy Laboratory Director (DLD) have the overall responsibility for assuring a safe workplace, for maintaining safe operations, and for maintaining adequate infrastructure resources to fulfill the mission of the Laboratory. The LD and DLD approve the ISMS Policy Statement and the ISMS Program Description, ensure

implementation by conveying to line management their responsibilities for integration of safety performance into all work activities, evaluate the progress and health of the ISMS program, and ensure that planning of infrastructure is sufficient to meet the mission needs of the Laboratory.

The Associate Laboratory Directors (ALDs) are assigned responsibility to set guidance for development of ISMS Plans in the line organizations for which they are responsible, to ensure that these plans are tailored appropriately to mission portfolios, to approve plans, to ensure implementation, to evaluate ongoing effectiveness, and to ensure that infrastructure is maintained at an acceptable level to meet mission needs.

### **3.6.2 Line Organizations**

The Directors of line organizations within the established ORNL organizational structure constitute the focus of “line management responsibility” for protection of the workers, the public, and the environment with the ISMS framework for all work conducted by their assigned employees, on-site subcontractors, and guests in their assigned operating facilities. These Directors, with the approval of their relevant ALDs, establish identified ISMS plan(s) appropriately tailored to the hazards and risks of the work, implement them, perform self-assessments of their effectiveness, and carry out improvements as identified. Infrastructure planning is accomplished by requested programmatic activities and landlord activities, providing maintenance to ensure infrastructure readiness, and to implement funded infrastructure allocations. These Directors are assisted in carrying out these responsibilities, as appropriate, by all line managers in the organization.

Line managers provide the primary operating interface for employees, on-site subcontractors, guests, and visitors. Within the framework of ISMS planning, they contribute to work planning, pre-job communication of work hazards and controls, work monitoring, and evaluation of results. Within the framework of infrastructure planning, they contribute to maintenance of existing infrastructure resources, planning of infrastructure upgrades, and planning of newly identified infrastructure needs.

Facility Managers provide an operating interface, both with workers in their own line organization and with support staff from other line organizations who perform work in the facility, in terms of understanding the facility standards and requirements and ensuring that they are communicated to and implemented by workers who are assigned tasks in the facility.

Effective integration of support from ESH&Q SMEs into line activities is essential to achieving excellence in ISMS. Line Management is responsible for defining and providing an adequate level of SME support, either from its own staff, matrixed from the ESH&Q Offices, or from external sources, as appropriate for the particular line organization and ESH&Q discipline involved.

### **3.6.3 Programs**

ORNL has matrixed Program Directors who serve a program development, management, and

coordination role for specific R&D areas and/or funding sources and who serve as the interface between the funding sponsors and the R&D divisions where the programmatic work is performed. These Program Directors have a shared responsibility to be aware of the safety issues and resource needs of work being proposed and managed, but the prime responsibility for safe performance of that work resides with the relevant line management Director.

### **3.6.4 ESH&Q Offices**

Effective integration of ESH&Q support functions into line activities is needed for the success of ISMS. The ESH&Q Offices are responsible for ORNL-level ESH&Q programs, for providing overall policy and guidance on ESH&Q issues, and for working with the line organizations to make available necessary and agreed-upon SMEs and other support.

### **3.6.5 Workers**

All ORNL employees, on-site subcontractors, and guests are responsible for becoming knowledgeable of and maintaining awareness of the ESH&Q hazards associated with their work, for contributing to the formulation of hazard controls, and for conducting their work safely in accordance with those controls. They are encouraged to identify ESH&Q issues in their workplace, to work with their management to provide input for improvements and to resolve concerns, and to exercise stop-work authority in cases of imminent danger.

## **4. RESOURCE PLANNING, PRIORITIZATION, AND ALLOCATION**

The ORNL ESHQ&I management planning process is supportive of DOE's annual ESHQ&I budget formulation and management planning process. The budget is prepared consistent with guidance provided in the DOE *ES&H Management Plan Guidance Manual*, which is produced annually, with the guidance for providing ESHQ&I budget planning information incorporated annually in the DOE Controller's Unified Field Budget Call (UNICALL), and with specific guidance from the DOE-HQ Office of Science.

The ORNL ESHQ&I budget formulation and management planning process provides the planning structure and tools needed to help identify and prioritize ESHQ&I needs, make and communicate cost-effective ESHQ&I risk-management decisions, integrate ESHQ&I into all activities and operations, and establish accountability for ESHQ&I performance. ESHQ&I resource planning and prioritization are implemented in a manner consistent with guidance from DOE, as provided in the *ES&H Management Plan Guidance Manual*, the Office of Environmental Management Budget Formulation Guidance, and any supplemental guidance received from individual DOE program offices.

The process generally consists of the following steps:

- ESHQ&I needs assessment,
- activity data sheet (ADS) preparation,

- risk-based prioritization of activities and risk-management decision making, and
- ESHQ&I budget formulation and development of top-level ESHQ&I budget summaries (annually).

#### **4.1 ESHQ&I NEEDS ASSESSMENT**

ESHQ&I needs assessments are performed by ORNL organizations and line management to identify the activities, systems, and programs needed to ensure the effective management of safety, health, environmental, quality, and infrastructure risks and to create a culture within ORNL that effectively integrates employee protection into work planning and the execution of work activities. These assessments are an ongoing and integral part of ORNL work and mission activities and include identification of risks associated with implementing planned mission activities, applicable policies and standards, emerging or strategic issues, and performance expectations. In response to identified ESHQ&I needs, line organizations and ES&H oversight and support organizations identify cost-effective programs and activities to address the existing and anticipated risks, achieve performance expectations, and comply with applicable policies and standards.

#### **4.2 ACTIVITY DATA SHEET PREPARATION**

ESHQ&I ADSs contain the essential scope, schedule, cost, and management information necessary for ORNL organizations to support planning and provide input to the budgeting process. ADSs are prepared for all ESHQ&I programs and activities needed to operate ORNL in a manner that protects the employees, the public, and the environment, meets those requirements set forth in the WSSs agreed upon by LMER and DOE, and ensure adequate infrastructure resources to meet the mission of the Laboratory.

ADSs are prepared to document those programs and activities selected to address the identified ESHQ&I needs. Each ADS contains key information such as a description of the activity; major milestones and deliverables; estimated costs, funding source, and types of funds associated with the activity; and the risk/benefit score for the activity. ADSs are packaged at a level consistent with the manner in which programs and activities are organized and managed. They correspond to decision units in the overall planning and budgeting processes for ORNL.

#### **4.3 RISK-BASED ACTIVITY PRIORITIZATION**

The ORNL Risk Ranking Board uses a Risk-Based Priority Model (RPM) to perform risk evaluations of all ES&H, infrastructure, and overhead ADSs. Using the RPM, a risk-reduction benefit score is derived for each ADS, and ADS scores are used to establish preliminary priority lists that are reviewed by senior management. Priority adjustments are

made as necessary in consideration of additional planning factors.

Risk-based prioritization of ESHQ&I activities supports ORNL's ability to allocate resources to the projects or activities that will produce the maximum feasible benefits to the organization. Risk prioritization is the basis for work planning and scheduling decisions for overhead funded activities at ORNL and is used in conjunction with other planning considerations, such as resource constraints. Where available resources do not allow full and immediate implementation of all proposed ESHQ&I programs and activities, risk-based prioritization provides the mechanism for the allocation of resources.

#### **4.4 RESOURCE ALLOCATION**

ADSs are produced for all direct-funded ESHQ&I activities, both target and unfunded, and reflect projected out-year funding for target as well as unfunded activities. ADSs are also produced for all indirect funded (e.g., overhead) activities for which funding has been requested. The annual cost profile for all ESHQ&I activities to be funded is consistent with the overall funding decisions and target budgets for the planning period.

Resource planning and allocation are done on the basis of ESHQ&I programs essential for compliance, fulfillment of ORNL missions, and assurance of the safety and well-being of ORNL personnel, the public, and the environment. Resource allocation is determined by supporting the highest-ranking activities within the target funding levels. Breakpoints are identified where the cumulative cost of the highest ranked activities equals the target level of funding. Activities below the breakpoints are unfunded for the planning period. The identification of target and unfunded ESHQ&I activities is useful to ORNL management to (1) identify unfunded, risk-significant activities, (2) discuss alternative risk-management strategies, and (3) evaluate alternative resource allocation strategies.

#### **4.5 PROGRAM MANAGEMENT TRACKING AND CHANGE CONTROL SYSTEMS**

The value of having ESHQ&I embedded in the business cycle is demonstrated at ORNL. Achieving excellence in ESHQ&I is accomplished through effective interaction between the line organizations and ESHQ&I staffs and includes employee involvement at all levels. Line management is responsible for fully implementing ESHQ&I requirements by developing systems and approaches that result in the effective management of risks and by creating a culture that effectively integrates employee and environmental protection into work planning, execution of work activities, and performance assessment and feedback.

ORNL management has recognized that it is beneficial, cost effective, and efficient to integrate ESHQ&I management data into the information systems used at each Oak Ridge facility to manage and track projects for budgeting purposes. The Program Management Tracking System (PMTS) has been developed at ORNL to track projects and their requested funds. This includes information relative to ES&H and infrastructure support activities.

An important element in the planning and budgeting system is the control of significant funding allocation changes made during the life of a project/activity documented on an ADS. Laboratory overhead budgets are established prior to the beginning of a planned fiscal year. The DOE ORNL Site Office reviews and approves the annual overhead budget. The site office is notified for concurrence when a change or reallocation of funds in the overhead budget of greater than or equal to \$250K is proposed. Initial allocation and subsequent reallocation of capital asset (GPP and GPE) funds are approved by the site office.

## **5. REPORT ON KEY MANAGEMENT ISSUES**

The purpose of a key issues management process is to ensure that potentially significant issues are recognized, that summary-level information is communicated to the decision-making level, that expectations are established and assigned for resolution, and that issues are resolved in a complete and timely manner.

### **5.1 FY 1998 KEY MANAGEMENT ISSUES**

A set of high-level issues that represent strategic or high-level tactical concerns was identified as key risk management issues for FY 1998. They are as follows:

- integrated safety management system,
- ORNL self-assessment of programs and activities against the Brookhaven National Laboratory report,
- implementation of management and integration (M&I) contract,
- responsibility for waste management of newly generated waste,
- infrastructure improvements and associated funding requirements,
- Safety Analysis Report Update Program (SARUP), and
- issues management process.

#### **5.1.1 Integrated Safety Management System**

**Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

The Department of Energy issued [DOE P 450.4, \*Safety Management System Policy\*](#), which

requires both DOE and its contractors to systematically integrate ES&H protection into work planning and execution at all levels. The requirement for implementation of this policy is specified in the DEAR clause. This clause requires that contractors establish and document for DOE approval an ISMS consistent with the policy.

The ISMS is a comprehensive standards-based safety system used to address both work and business processes. ISMS is being institutionalized through DOE policy and contracts. DOE P 450.4 states that “The Department and contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment.”

On July 14, 1997, [Draft DOE G 450.4-1, \*Integrated Safety Management System Guide\*](#), was issued to provide information on expectations associated with implementation of the policy. The implementation guide provides the link to DOE’s expectations for ISMS. The guide also provides information on the preparation, content, review, and approval of ISMS documentation.

The following are scheduled for completion by the date specified.

- Initiate division-level ISMS plans in January 1998, with completion by August 1, 1998.
- Implement LMER-wide ISMS by September 30, 1998.

**Current Key Issue Status:**

Beginning Calendar Year 1998, ORNL began the process of formally establishing the ISMS process at ORNL. [The \*Integrated Safety Management System Guide \(November 26, 1997\)\*](#), [DOE P 450.4, \*Safety Management System Policy\*](#), Office of Science ISMS Guidance, and the DEAR Safety Management System Contract Clauses were the basis for establishing the ORNL ISMS process. A benchmarking team visited Office of Science research laboratories to study the various approaches to establishing ISMS programs. Following the establishment of an ORNL ISMS Steering Committee, the following events were completed:

- An ORNL ISMS Policy Statement was approved by the Executive Committee of the Laboratory. (January 1998)
- An ORNL Development Workshop was conducted for the Executive Committee members and the division/office/program directors. (April 1998)
- An ORNL ISMS Program Description was drafted to guide division/office/program efforts in the development of ISMS plans. (April 1998)
- An ORNL ISMS Plan Development Workshop was held for program plan developers.

(June 1998)

- The final ISMS Program Description approved and issued. (July 1998)
- Draft ISMS Plans were submitted to Steering Committee members for review and comment. (August 1998)
- Review comments from the Steering Committee were returned to the appropriate organization and revisions made for final issue. (August 1998)
- Final ISMS plans were approved. (September 1998)
- Final ISMS plans were submitted to DOE-ORNL. (October 1998)

The following events will occur in support of the implementation of the ORNL ISMS plans and preparation for verification and validation of the ORNL ISMS program by DOE.

- An ISMS Verification Workshop will be held to provide techniques for developing operational awareness of ISMS for ORNL personnel, guests, visitors, and subcontractors. (November/December 1998)
- An ISMS “Gaps/Opportunities for Improvement” Analysis will be conducted to identify institutional level needs and to develop action plans for the successful implementation of ISMS. (November 1998)
- An ORNL verification readiness will be performed to determine the effectiveness of individual ISMS plans and program implementation. (February 1999)
- A DOE verification review of ORNL ISMS plans and program documents will be conducted. (May 1999)
- An ISMS Validation Workshop will be held to disseminate information concerning the DOE verification review and to begin preparation for DOE validation of the ORNL ISMS Program. (May/June 1999)
- An ORNL validation review will be conducted to ensure full implementation status of the ORNL ISMS Program (August 1999)

The ORNL ISMS will remain a key issue until successful validation of the program by DOE and by ORNL management.

### **5.1.2 ORNL Self-Assessment of Programs and Activities Against the BNL Report**

**Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

During the period of February through April 1997, the Department's Office of Oversight completed an evaluation of Integrated Safety Management, as applicable to ES&H programs, at Brookhaven National Laboratory (BNL). The oversight report was used as the basis for an assessment of ORNL operations against observations related to BNL operations. The "DOE Action Plan for Improved Management of Brookhaven National Laboratory" was issued July 1997. The "Integrated Management at Brookhaven National Laboratory - Implementation Plan" was issued on August 6, 1997, to respond to corrective actions identified in the previously issued action plan.

A self-assessment team composed of DOE ORNL Site Office personnel and ORNL personnel was chartered to review and assess ORNL programs against findings of the BNL report. The self-assessment focused on identifying potential institutional weaknesses or vulnerabilities in the ORNL ES&H management system. Approval of the self-assessment document corrective actions emphasizes ES&H issues that will receive significant effort during FY 1998.

An action plan based on the self-assessment was issued on September 23, 1997, and is currently being implemented with all actions scheduled to be completed by September 30, 1998. An assessment of the efficacy and effectiveness of the corrective actions will be conducted in FY 1999.

#### **Current Key Issue Status:**

Five opportunities for improvement were identified with 113 corrective actions. ORNL has responsibility for 110 actions and DOE has responsibility for three actions. As of September 30, 1998, 112 corrective actions have been closed. The one corrective action which remains open deals with evaluation of the ORNL system effectiveness nine months after issuance of the directive.

The five opportunities for improvement were identified as follows:

- Strengthen the DOE and ORNL line management roles and accountability for implementing environment, safety, and health requirements and initiatives.  
Key issues: (a.) delineating roles and responsibilities within DOE and ORNL  
(b.) development and implementation of WSSs  
(c.) DOE ORNL Site Office Operational Awareness procedure
- Strengthen the ORNL compliance training and qualifications programs.  
Key issues: (a.) centralized ORNL training database  
(b.) review of personnel training and qualifications
- Strengthen the DOE and ORNL self-assessment programs.  
Key issues: (a.) self-assessment programs for ORNL ES&H and individual division/office/program  
(b.) establishment of Risk Ranking Board and corresponding protocol
- Establish an improved ES&H issues tracking management system to address the roles

and responsibilities of various offices that fund work at ORNL;

Key issues: (a.) identifying potentially negative ES&H impacts (e.g., compliance issues) on R&D at ORNL from current DOE Environmental Management Program

- Establish an ORNL Integrated Safety Management System

Key issues: (a.) development of divisional ISM plans

(b.) improvement in planning and budget support systems, including integration of ESHQ&I into one data system, establishment of web-based application for funding requests (ADS), direct input of project information into ESHQ&I Management Plan Information System, implementation of risk-ranking system

(c.) update of safety analysis reports (SARs)

(d.) improving process for safety review of experiments and projects

(e.) list of Facility Authorization Basis documentation on web

One corrective action, which was scheduled for completion on September 30, 1998, remains open. This involves the evaluation of the ORNL system effectiveness nine months after issuance of the directive. Of ORNL's 110 corrective actions, 107 were closed on time (98%). Two of the three DOE corrective actions were closed on time (67%). Nine of ORNL's corrective actions involved date changes and one a text change.

### **5.1.3 Responsibility for Waste Management of Newly Generated Waste**

#### **Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

Responsibility for waste management of newly generated, as well as legacy, waste is currently being transitioned to the new management and integration contractor. Generation and management of wastes are inherent elements of many operations at ORNL. Insertion of an outside contractor into these operations is certain to have economic and operational impacts. LMER has taken the position that the more cost effective approach would have been to leave the responsibility for waste management of newly generated wastes with ORNL as the operating contractor. However, DOE-SC is proposing to return waste management responsibilities for ORNL's newly generated waste from Environmental Management (EM) 30 to DOE-ER by FY 2000 or 2001 at the point in time that EM is no longer the primary liquid waste generator. While this transition provides an opportunity to recover the physical facilities and fiscal responsibility for this critical component of ORNL's research-supporting infrastructure, several near- and long-term issues must be resolved. They include the following.

- Distinction between facilities primarily associated with newly generated wastes and facilities with legacy waste. Some disagreement on these facility splits is expected, and near-term negotiations with the DOE-EM program will be needed.

- Determination of the appropriate approach for charge-back of waste management costs to

generating divisions or justification for a decision not to charge back at that level and to operate instead with base program support and division-specific performance measures to ensure appropriate waste controls.

- Development of a thorough understanding of the long-term DOE-ER vulnerabilities associated with these responsibilities, including inventories of orphan wastes, waste management facilities decontamination and decommissioning and closure costs, and regulatory commitments under permits and/or Federal Facilities Agreements. Each of these issues could have significant impacts on research funding levels at ORNL and on the Laboratory's mission success.

**Current Key Issue Status:** A great deal of progress has been made during the last 6 months regarding the respective Waste Management (WM) roles of the generating programs versus the role of the Bechtel Jacobs Company LLC and its supporting subcontractors.

We have defined the waste management functions incumbent upon the generating programs and are working to determine the level of organization and resources needed to execute those functions. The focus of a newly established Laboratory Waste Services (LWS) organization will be to provide technical assistance to the generators to ensure that their wastes can be successfully handed over to a Bechtel Jacobs subcontractor, provide required certification of wastes, and to manage the operation of 90-day accumulation areas. Waste tracking and reporting would also be part of these responsibilities. The likely funding methodology will be a combination of overhead and charge-back, with the split being on a functional basis. Those functions that are generic to WM would be funded from overhead, those directly proportional to waste generation would be funded by generator charge-back. Under this approach, LWS will operate no facilities, other than 90-day accumulation areas. All treatment and storage facility operation would be performed by the M&I's subcontractor.

Waste will be required to meet the Waste Acceptance Criteria (WAC) of the Bechtel Jacobs subcontractor, and it is expected that those WAC will, over time, move toward requiring wastes to be "road ready" for the planned disposal end-point.

The return of Newly Generated WM responsibility to the mission program (Office of Science) is expected for the FY 2001 - FY 2002 time frame, with all Bechtel Jacobs subcontracts framed in such a manner as to make novation of those contracts back to Office of Science at some future point easily accomplished.

The details of this new operational model (WM with the M&I, an internal LWS) are being developed now, with a target for implementation of February 1999.

#### **5.1.4 Implementation of the Management and Integration Contract**

##### **Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

The Oak Ridge Environmental Restoration program is entering a new phase as the M&I

contractor assumes responsibility for Environmental Management and Waste Management at ORNL effective April 1, 1998. This will affect ORNL in three primary areas: (1) reduction in ORNL direct scientific and support labor in project implementation; (2) increased ORNL vulnerability as outside remediation firms conduct remedial actions near active research and administrative support areas; and (3) regulatory decision-making on long-term land use plans for major portions of the ORNL site. Near-term impacts on research and support divisions are already being felt as DOE steps up its strategy for outsourcing major components of the remediation program. This EM Program funding loss is being somewhat offset by increasing funds in other ORNL programs (e.g., SNS). Both the ES&H concerns related to increasing site presence of new contractors and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) decision-making process related to long-term land use designation for ORNL property need close scrutiny as the new M&I contractor assumes ownership of these issues.

The implementation of the M&I contract, and the related interfaces with ORNL operations and facilities, can be disruptive if not properly handled. A large number of master service agreements, work authorizations, and other facilitating agreements have been negotiated. The likelihood that these documents have addressed all potential areas of impact is questionable. Dealing with the interfaces and issues not clearly addressed in the existing agreements could result in impacts to ORNL operations and related costs. All parties to this transition must be prepared to quickly and decisively deal with issues that arise in an equitable manner in the best interest of DOE and the contractors.

Appropriate organizational interfaces and communications channels are essential during the implementation of the M&I contract. Transition teams have been functioning to effect a smooth transition to the M&I contractor since April 1, 1998. A continuing evaluation of the adequacy and effectiveness of the established interfaces will be necessary as implementation proceeds in FY 1999.

#### **Current Key Issue Status:**

In April 1998, DOE began full implementation of the M&I contractor approach for the Environmental Management (EM) workscope on the Oak Ridge Reservation. Bechtel Jacobs Company LLC was selected as the M&I contractor, and after a 90-day transition period took over the EM responsibilities from Lockheed Martin Energy Systems, Inc. (LMES) on April 1, 1998. The basic strategy of the M&I concept is to outsource essentially all of the EM workscope to qualified, fixed-price subcontractors, and utilize the Bechtel Jacobs Company core staff to administer the subcontractors and integrate the program's technical and regulatory aspects to ensure the most cost effective, safe, and compliant program. The Bechtel Jacobs Company commitment to DOE is to have over 90% of the EM workscope outsourced by April 2000. This workscope includes waste management, environmental restoration, and technology deployment activities at ORNL.

The impacts of the new M&I approach on ORNL are far reaching, but are greatest in four general areas: (1) loss of overhead base as LMER work is outsourced, (2) loss of waste management capability as those responsibilities are transferred to Bechtel Jacobs Company,

(3) reduced role for ORNL in technology development and deployment, and (4) increased vulnerability of ORNL mission during peak remediation periods. Each of these areas is briefly discussed as follows.

In FY 1998, ORNL staff were performing over \$130M of EM workscope, including full-scope waste management operations, several large-scale remediation projects, routine surveillance and maintenance of over 40 inactive facilities, and Laboratory development through full-scale deployment of new environmental technologies. This EM work involved most of the ORNL research and support divisions, was the second largest program sponsor of ORNL work, and provided over \$40M in overhead base for Laboratory operations. By FY 2000, that EM support level is expected to be less than \$40M total, with only \$10M in overhead generation. That level of workscope and overhead reduction within operating divisions and at the Laboratory level will have major impacts on the organization unless significant new work is found to replace it.

An important part of the EM mission is to provide waste collection, treatment, storage, and disposal capabilities for ORNL waste generators. That service has been historically provided by the M&O contractor operating ORNL, which allowed easy integration of that important infrastructure into the primary research mission of the Laboratory. However, under the new M&I approach, DOE has decided to allow Bechtel Jacobs Company to assume direct management responsibilities for that waste function and to outsource the work to experienced waste management contractors. That transfer of workscope is to occur early in FY 1999. Significant transition issues remain to be worked out associated with that proposed transfer, including split of ownership of facilities and personnel. Due to this split, ORNL will require a small waste organization to assist the generators in waste packaging and certification, the costs of which (estimated at \$5M/year) must now be borne by the waste generating divisions.

Development of new technologies and testing of those innovative ideas at field scale have been a part of the ORNL mission for many years. With the shift to the M&I approach, however, the responsibility for field deployment of those technologies has been relegated to the M&I. This shift in deployment emphasis is expected to result in increasing desire by the M&I to outsource technology work rather than relying almost solely on ORNL staff to perform that function. In addition, we expect less interest from the M&I on support basic research for new technologies, as the payback period for that type of program is really beyond their work horizon.

Finally, at the peak of the M&I work execution phase, there could be dozens of subcontractors performing waste management and remedial action projects simultaneously, within the physical boundaries of ORNL. Many of these projects will involve excavation and disposal of highly contaminated soils and equipment in areas adjacent to active research facilities within the main plant area. Proper H&S oversight of those projects will be crucial to maintaining a viable, safe mission focus for ORNL. Inadvertent contamination spread or other operational upsets could result in temporary shutdown of critical research areas and potentially result in a bad public relations image for ORNL as an institution. However, both the M&I and the ORNL ES&H organizations are dedicated to making sure this does not happen.

### **5.1.5 Infrastructure Improvements and Associated Funding Requirements**

#### **Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

ORNL has one of the oldest physical plants in the DOE complex. Adequate funding for, and management of, infrastructure are critical to the success of the DOE and ORNL missions. The success of missions, the health and safety of workers, and the protection of the environment are all dependent upon adequate infrastructure. At a time of mission uncertainty, decreasing program budgets, and pressures to reduce facility overhead, investments in infrastructure are often increasingly difficult to make. However, underfunded infrastructure does not save cost in the long term. Deferred maintenance and infrastructure improvements soon result in increased construction needs, make operations less efficient, and increase ES&H risks. Funding levels for GPPs and GPE have declined significantly, compared to pre-1996 levels. The current GPP budget is less than half the pre-1996 budget. The current level of GPP funds, \$3.1M, remains considerably less than needed or requested. This level of funding is sufficient to meet only a small portion of the Laboratory's most critical needs. The recent increase in the GPP funding level from \$2.0M to \$5.0M further exacerbates this situation by placing an even larger scope of work, previously funded as LI projects, within the GPP funding program. To most effectively meet the future needs of ORNL programs, future GPP funding levels need to be consistent with pre-1996 levels. Although GPE funding levels have not decreased as severely as GPP over the last four years, over 70% of the Laboratory's GPE funds have been committed to two compliance projects: replacement of underground storage tanks and replacement of chlorofluorocarbon (CFC) chillers. To most effectively meet the future needs of ORNL programs, a substantial increase in funding will be required for future years.

Although LI funding for two critical projects, reroofing and a boiler addition to the Steam Plant, has been authorized, a number of LI projects with specific ES&H impacts remain to be funded. These include electrical upgrades, water system upgrades, and fire protection system upgrades.

Infrastructure funding is requested on Field Work Proposal (FWP) ERKCL01, *ORNL General Purpose Equipment - Landlord*; FWP ERKCL02, *ORNL General Plant Projects - Landlord*; as a Line Item request through ERKG funding; or as a separate FWP request. Alternate sources of infrastructure funding need to be identified and reviewed with the ORNL DOE Site Office and the DOE Headquarters Landlord Program.

#### **Current Key Issue Status:**

The requested allocation of GPP and GPE funding has been adjusted to reflect the larger backlog of GPP projects. For FY 1999, the GPP allocation has been adjusted up from \$3,100K to \$4,450K. The GPE allocation has been adjusted down from \$4,650K to \$3,300K. The use of a construction manager for landlord projects at ORNL was discontinued in FY 1998. Data on completed projects will be available in early FY 1999. It is projected that savings of 15% to 20% will be realized for construction projects managed by ORNL. ORNL

Capital Asset Management Program personnel and DOE personnel from ORO and the Headquarters Landlord Program are continually evaluating sources of infrastructure funding based on a prioritization of identified projects and activities.

#### **5.1.6 Safety Analysis Report Update Program**

##### **Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

SARUP is an unfunded compliance activity identified in this plan submittal. The SARUP for ALD purview nuclear facilities would comply with LMER WSSs (DOE Orders [5480.22](#), [5480.23](#), and the associated pending Price-Anderson rules 10 CFR [830.110](#) and [830.320](#)). Nuclear facilities under the ALD purview are facilities 2026, 3019, 3025E, 3027, 3047, 5505, 7900, 7920, and 7930.

Alternative funding sources, including Field Work Proposals, basic operating funds, and user fees, will be considered for SARUP activities. Milestones for completion of SARUP activities by specific facility will be developed.

##### **Current Key Issue Status:**

ORNL and the DOE Site Office have developed and agreed upon a firm schedule for submittal of the documentation. The initial scope of work is unchanged and the work remains directly funded for only some of the facilities. However, progress is being achieved, as scheduled, with alternate funding as necessary (primarily operating funds and user fees). The updated safety analysis documents [SARs and Technical Safety Requirements (TSRs)] have been submitted to DOE for review and approval for facilities 2026, 3025E, 3027, 5505, and 7900. The SARs and TSRs have been conditionally approved by DOE for facility 3025E and the SAR approved for facility 7900 [High Flux Isotope Reactor (HFIR)]. SAR and TSR work for the remaining facilities (3019, 3047, 7920, and 7930) is funded and is being developed as scheduled.

#### **5.1.7 Issues Management Process**

##### **Key Issue as Identified in the FY 2000 ESHQ&I Budget Formulation Submission Transmitted to DOE March 31, 1998:**

Effective management of issues is fundamental to continued success of the ORNL mission. The purpose of an ES&H issues management process is to ensure that potentially significant issues are recognized, that summary-level information is communicated to the decision-making level, that expectations are established and assigned for resolution, and that issues are resolved in a complete and timely manner.

An issues management process should provide an organizational focus on the most important issues and concerns facing ORNL. It should provide an easily understood management focus

on activities intended to introduce needed major changes and ensure that resolution activities remain focused on addressing the issue by satisfying the agreed-upon characteristics of the solution.

A number of data systems already exist to track corrective actions. The LIDS contains action items from self-assessments, occurrence reports, action plans, etc., and provides an effective means of tracking the accomplishments of specific corrective actions. The Issues Database Management System in the ES&H and Infrastructure Management Plan Information System also provides a tool to track key issues at the issue level. Currently, high-level issues management is handled on an ad hoc basis. The need for a more formalized process to deal with key issues should be assessed. The ORNL issues management process will be evaluated to determine that adequate communication and oversight are being provided to ensure identification and resolution of key issues.

### **Current Key Issue Status:**

During FY 1998, key issues identified in the FY 2000 ESHQ&I Budget Formulation plan have been addressed as reported in Section 5 of this plan. Funding was not available during FY 1998 to place the Issues Management Module of the ESHQ&I Management Plan Information System on the WWW. Potential sources of funding will be evaluated during FY 1999 to determine if the module can be placed on the WWW for tracking of issues information; however, existing systems are available to enable cross references. All other components of the ESHQ&I Management Plan Information System are currently on the WWW as a resource to track ESHQ&I projects and activities that address compliance at ORNL.

For 1999, the ORNL ISMS Steering Committee members are working in concert with ORNL line personnel, ESH&Q personnel, and DOE personnel to identify key institutional issues for full implementation of the ISMS process at the Laboratory. These issues will be tracked through LIDS to ensure documentation of issue status and closure. The following are issues (known as "ISMS Gaps") and corrective actions.

## **5.2 FY 1999 KEY MANAGEMENT ISSUES**

Following review of the 34 division/office/program ISMS Plans, the ISMS Steering Committee identified 11 "gaps" at the Laboratory and/or division level which must be addressed to support successful implementation of ISMS at ORNL. Each gap has assigned responsibilities. Action plans to address these needs are under development.

### **5.2.1 Gaps Whose Solutions Lie Primarily at the Laboratory Level**

- Mechanisms to maintain the integrity of the WSSs set are not complete.

Responsibility for Action Plan Development: *Jerry Swanks*

- The ORNL Assessment Program is not meeting the objective of evaluating the divisional self-assessment programs.

Responsibility for Action Plan Development: *Jerry Swanks/Pete Hoke*

- Mechanisms to insure application of ISMS to other prime contractors and subcontractors need to be strengthened.

Responsibility for Action Plan Development: *ISMS Committee*

- Mechanisms to promote sharing Lessons Learned (information on effective solutions, not just identified problems) among organizations need to be strengthened.

Responsibility for Action Plan Development: *Doug Craig/Pete Hoke*

- Teaming between R&D organizations and the ESH&Q support organizations needs to be improved.

Responsibility for Action Plan Development: *ISMS Committee*

### **5.2.2 Gaps Whose Solutions Lie Primarily at the Division Level**

- Awareness of the ISMS approach and implementation by all workers is not complete, and mechanisms to assist workers in obtaining information and assistance need to be improved.

Responsibility for Action Plan Development: *ISMS Committee*

- The ESH&Q Responsibility Matrices between R&D organizations and the ESH&Q support organizations are not yet complete.

Responsibility for Action Plan Development: *Jerry Swanks*

- Development of procedures required by individual organizations to implement the ORNL ESH&Q Directives set is not complete.

Responsibility for Action Plan Development: *Dave Milan*

- Worker involvement in work planning, adjustments during execution, and evaluation needs to be strengthened.

Responsibility for Action Plan Development: *ISMS Committee*

### **5.2.3 Gaps Whose Solutions Will Require Both Laboratory and Division Action**

- Systems to identify training-need profiles for individual workers and to deliver that

training effectively need to be strengthened.

Responsibility for Action Plan Development: *Allen White/Training Committee*

- Metrics used to evaluate performance need to be more proactive.

Responsibility for Action Plan Development: *Pete Hoke*

## 6. FY 1998 ESHQ&I PERFORMANCE SUMMARY

This section provides a summary of ORNL ESHQ&I performance for the prior budget year (FY 1998).

### 6.1 STATUS OF FY 1998 ESHQ&I PERFORMANCE MEASURES

Critical outcomes, objectives, and performance indicators for ESHQ&I and their FY 1998 measures under the LMER-DOE contract are located at the following WWW address:

<http://www-internal.ornl.gov/OQPI/pi/copi.htm>

The specific areas which address ESHQ&I performance are in the following:

- Section 3.0, “Environment, Safety and Health Integration”
- Subsection 4.6, “Establish an Integrated Safety Management System”
- Subsection 4.11, “Demonstrate that each laboratory division has an effective self-assessment program that finds and corrects problems in a timely fashion.”
- Section 5.0, “Life Cycle Assets Management (LCAM)”

### 6.2 SUMMARY OF ESHQ&I INDIRECT ACTUAL COSTS FOR THE PRIOR YEAR (FY 1998)

NOTE: Planned FY 1998 ESHQ&I budget data in Section 6 and the tables in [Appendix A](#) contain the original data in the FY 2000 Budget Formulation Plan submitted in March 1998. No changes were made to any cost and funding data. Sections 6.2 through 6.4 explain significant differences between planned and actual FY 1998 costs and funding.

Total planned indirect ESHQ&I costs for FY 1998, shown in the ADSs included in the FY 2000 ESHQ&I Budget Formulation Submission, were as follows:

Functional Area	Indirect Funding (\$ in 000s)
-----------------	----------------------------------

	Target	Unfunded
Safety and Health	29,210	4,044
Environmental	13,355	534
Infrastructure	0	0
<b>Total</b>	<b>42,565</b>	<b>4,578</b>

A complete listing of ORNL ESHQ&I ADSs for FY 1998 is included in Appendix A, [Table A.1](#). Appendix A, [Table A.2](#), shows FY 1998 Indirect Target ADSs.

Indirect target ADSs are those activities being funded by ORNL's overhead budget allocation. Typically, these activities are core functions required to achieve and maintain compliance to requirements set forth in the WSSs agreed upon by LMER and DOE. Indirect unfunded activities ([Table A.3](#)) are unfunded supplemental and new activities which would improve compliance and infrastructure systems.

Actual ESHQ&I indirect expenditures (Laboratory Overhead) for FY 1998 were as follows:

ACTIVITY	ESH&Q (ONLY) (\$ in 000s)	ESHQ&I (BOTH) (\$ in 000s)
Environmental Protection	5,124	
Health	2,384	
Lab Protection		
Emergency Preparedness	1,055	
Fire Protection Engineering	429	
Nuclear Safety	1,534	
Quality	2,102	
Radiation Protection	4,307	
Safety and Health Protection	4,355	
Indirect Funding for Previous Direct Landlord OE Funded Activities	249	
- OSHA Machine Guarding (\$31K)		
- OSHA Walking/Working Surfaces (\$100K)		
- OSHA Electrical (\$67K)		
- Lead Shop Upgrades (\$43K)		
- Fire Protection (\$8K)		
Capital Assets Management		371
ORNL Engineering		222
Plant & Equipment		8,340

ACTIVITY	ESH&Q (ONLY) (\$ in 000s)	ESHQ&I (BOTH) (\$ in 000s)
<b>Total</b>	<b>21,539</b>	<b>8,933</b>

The difference between planned and actual indirect costs (\$12,093K) is the result of divisions receiving Laboratory overhead funds which may not be wholly dedicated to ESHQ&I (e.g., division administration for overhead organizations, transportation, and materials management).

### 6.3 SUMMARY OF ESHQ&I DIRECT ACTUAL COSTS FOR PRIOR YEAR (FY 1998)

Total planned direct ESHQ&I costs for FY 1998, as documented on ESHQ&I ADSs included in the FY 2000 ESHQ&I Budget Formulation Submission, were as follows:

Functional Area	Direct Funding	
	Target (\$ in 000s)	Unfunded (\$ in 000s)
Safety and Health	32,305	1,210
Environmental	14,458	21
Infrastructure	2,088	0
<b>Total</b>	<b>48,851<sup>1</sup></b>	<b>1,231<sup>2</sup></b>

<sup>1</sup>FY 1998 ADSs for direct funded target activities are shown in Appendix A, [Table A.4](#).

<sup>2</sup>FY 1998 ADSs for direct unfunded activities are shown in Appendix A, [Table A.5](#).

The following is a listing of planned and actual direct cost for FY 1998 by Program elements:

Program	From the March 1998 FY 2000 ESHQ&I Budget Formulation Submission	FY 1998 Actual Cost As Reported in the Following Tables (\$ in 000s)
	FY 1998 Planned Direct Budget (\$ in 000s)	
DA Activities <sup>1</sup> (Appendix A, <a href="#">Table A.4.1</a> )	6,291	6,291
DI Activities <sup>2</sup> (Appendix A, <a href="#">Table A.4.2</a> )	12,847	12,847

Program	From the March 1998 FY 2000 ESHQ&I Budget Formulation Submission		FY 1998 Actual Cost As Reported in the Following Tables (\$ in 000s)	
	FY 1998 Planned Direct Budget (\$ in 000s)			
HFIR Operating Cost <sup>3</sup> (Appendix A, <a href="#">Table A.4.3</a> )	12,196		10,863	
KG Program Cost <sup>4</sup>	ESHQ&I <sup>5</sup>	7,642	Planned ESHQ&I <sup>7</sup>	4,316
	I (only) <sup>6</sup>	0	Planned I (only)	0
KC Program Cost <sup>8</sup>	ESHQ&I <sup>9</sup>	7,787	Planned ESHQ&I <sup>11</sup>	3,459
	I (only) <sup>10</sup>	2,088	Planned I (only)	0
			Not Previously Reported ESHQ&I <sup>12</sup>	720
			Not Previously Reported I (only) <sup>13</sup>	2,507
	<b>Total</b>	<b>48,851<sup>14</sup></b>	<b>Total</b>	<b>41,003</b>

<sup>1</sup>From the direct target ADSs, the R&D divisions/programs estimated that \$6,291K of their division programmatic funds were used to support ES&H needs. These activities included support for internal division personnel with dedicated ES&H roles (e.g., division safety officer) and other expense activities such as the correction of safety shower and eyewash station deficiencies. In addition, direct target funds reported were from expected funding to support projects and activities with an identifiable percentage for ES&H support as well as infrastructure support. Direct unfunded ADSs were for ESHQ&I activities which would improve compliance ([Table A.5](#)). Unfunded items were continually reviewed to determine if funding allocations need to be adjusted to allow for completion of these activities.

<sup>2</sup>From the direct target ADSs, \$12,847K (Appendix A, [Table A.4.2](#)) was designated cost by ES&H organizations which was distributed to other ORNL divisions/offices/programs for personnel and other resources. These funds were not provided through the Laboratory overhead budget.

<sup>3</sup>HFIR ES&H operating cost is \$12,196K (Appendix A, [Table A.4.3](#)) as identified on ADS E93D0021, “High Flux Isotope Reactor Operation.” This funding recognizes costs for ES&H related activities which would be funded through the Basic Energy Sciences Program activities.

<sup>4</sup>Landlord responsibilities were reassigned from KG to KC prior to FY 1998.

<sup>5</sup>Appendix A, [Table A.4.4](#), Planned KG ESHQ&I Projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>6</sup>Appendix A, [Table A.4.5](#), Planned KG Infrastructure (Only) Projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>7</sup>Planned versus actual operating expense and capital funding for previously reported ESHQ&I FY 1998 Landlord activities KG Program cost.

Activity	Type	Planned Cost (\$ in 000s)	Actual Cost (\$ in 000s)
Underground Storage Tank (UST) Compliance	OE	135	34
Electrical OSHA Noncompliance	OE	11	11
<b>Total</b>	<b>OE</b>	<b>146</b>	<b>45</b>
CFC Unit Replacement	GPE	21	20
CFC Chiller, 7920 (Closeout)	GPE	13	9
Form Roller, Building 7012	GPE	35	33
Replace Primary Transformer, 7901 Area	GPE	374	73
Aerial Work Platform	GPE	52	53
Electrical Personnel Lift	GPE	30	28
Dechlorination System	GPE	132	130
<b>Total</b>	<b>GPE</b>	<b>657</b>	<b>346</b>
3000 Area Water Isolation Valve	GPP	273	328
Upgrade HVAC Unit 4, Building 9210	GPP	320	319
West End Steam Lines	GPP	389	249
<b>Total</b>	<b>GPP</b>	<b>982</b>	<b>896</b>
Steam Plant Boiler Addition	LI	1,255	705
Replace Deteriorated Roofing	LI	4,000	2,324
<b>Total</b>	<b>LI</b>	<b>5,255</b>	<b>3,029</b>

Activity	Type	Planned Cost (\$ in 000s)	Actual Cost (\$ in 000s)
<b>Grand Total</b>		<b>7,040</b>	<b>4,316</b>

Explanation of significant variances shown in the table above:

- The UST Compliance project accomplished the required work at a much lower cost than planned.
- During FY 1998, costs for the 7901 Primary Transformer project were transferred from the KG program to the KC program. See the KC program table for transferred costs.
- The West End Steam Lines project terminated the initial contract without completing all planned work due to disagreement on potential claims from the contractor. This required rebidding the unfinished work, resulting in a 6-month delay in project completion and costing.
- The Steam Plant Boiler Addition contract was awarded in April 1998 (approximately 4 months late) due to late receipt of LI funding. This delayed the start of work and the planned cost.
- Replace Deteriorated Roofing -- The cost of roofing replacement and materials disposal is approximately one half the estimated cost to date. The scope of the project has been increased to almost double the original scope.

<sup>8</sup>ORNL Landlord – DOE Office of Science/Basic Energy Sciences (KC)

<sup>9</sup>Appendix A, [Table A.4.6](#), Planned KC ESHQ&I Projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>10</sup> Appendix A, [Table A.4.7](#), Planned KC Infrastructure (only) Projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>11</sup>Planned versus actual operating expense and capital funding for previously reported ESHQ&I FY 1998 Landlord activities KC Program cost.

Activity	Type	Planned Cost (\$ in 000s)	Actual Cost (\$ in 000s)
N/A	OE	0	0
<b>Total</b>	<b>OE</b>	<b>0</b>	<b>0</b>
Replace Primary Transformer, 7901 Area	GPE	90	333

<b>Activity</b>	<b>Type</b>	<b>Planned Cost (\$ in 000s)</b>	<b>Actual Cost (\$ in 000s)</b>
Replace UST, Building 7931	GPE	15	6
Replace UST, Building 4514	GPE	91	188
Replace CFC Chiller, Building 4509, Unit 6	GPE	775	714
Replace CFC Chiller, Building 6000N	GPE	67	56
Replace CFC Chiller, Building 3025	GPE	125	151
Replace CFC Chiller, Building 6000S	GPE	38	34
Replace CFC Chiller, Building 7900	GPE	878	372
Replace CFC Chiller, Building 7930	GPE	550	458
Replace CFC Units, Sitewide	GPE	500	328
Conveyor System Upgrade, Building 7001	GPE	324	312
Bottom Discharge Dump Truck	GPE	94	90
Trash Truck, Compactor	GPE	170	0
Dosimetry System Upgrade	GPE	170	154
Safety Valve Test Stand	GPE	113	103
69KV 4WD Bucket Truck	GPE	160	0
<b>Total</b>	<b>GPE</b>	<b>4,160</b>	<b>3,299</b>
3000 Scfm Air Compressor, Building 2519	GPP	1,000	56
Rubb Tent for Coal Yard Treatment Facility	GPP	111	104
<b>Total</b>	<b>GPP</b>	<b>1,111</b>	<b>160</b>
N/A	LI	0	0
<b>Total</b>	<b>LI</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>		<b>5,271</b>	<b>3,459</b>

Explanation of significant variances shown in the table above:

- Delays in development of the necessary planning packages for the HFIR (Building 7900) chillers precluded completing this work before the cooling season; therefore, the work was delayed until this fall.
- Procurement of the trash truck compactor and 4WD bucket truck is taking longer than planned.
- The 3000 Scfm Air Compressor, Building 2519, was added to the GPP program after another project was canceled. This resulted in a late start and very little cost.

<sup>12</sup>Planned versus actual operating expense and capital funding for not previously reported ESHQ&I FY 1998 Landlord activities KC Program cost.

Activity	Type	Planned Cost (\$ in 000s)	Actual Cost (\$ in 000s)
N/A	OE	N/A	0
<b>Total</b>	<b>OE</b>	<b>N/A</b>	<b>0</b>
Procure Y2K-Compliant Liquid Scintillation Counter	GPE	50	55
Procure Y2K-Compliant Gasflow Proportional Counter	GPE	67	68
Replacement Portable Gamma Spectrometer	GPE	28	31
Procure Y2K-Compliant Portable Gamma Spectrometer	GPE	32	30
Fleet Vehicle Replacements	GPE	252	28
Boot Shop Spray Booth Automation	GPE	120	66
Emergency Response Vehicle	GPE	115	0
Particulate Counter for Filter Testing	GPE	49	8
Ambulance	GPE	70	0
Network Appliance F230	GPE	125	119
Wet Magnetic Particle Inspection System	GPE	68	82
<b>Total</b>	<b>GPE</b>	<b>976</b>	<b>487</b>
West End Steam Upgrade Completion	GPP	200	200
Upgrade the Condensate Return System	GPP	200	33
<b>Total</b>	<b>GPP</b>	<b>400</b>	<b>233</b>
N/A	LI	0	0
<b>Total</b>	<b>LI</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>		<b>1,376</b>	<b>720</b>

Explanation of significant variances shown in the table above:

- Orders for fleet vehicles were placed in May instead of November, and most vehicles were not received by the end of FY 1998.
- Work on the Boot Shop Spray Booth Automation has been delayed pending delivery of system components.
- Work on the condensate systems design began later than planned.

<sup>13</sup>Planned versus actual operating expense and capital funding for not previously reported Infrastructure (only) FY 1998 Landlord activities KC Program cost.

Activity	Type	Planned Cost (\$ in 000s)	Actual Cost (\$ in 000s)
N/A	OE	N/A	0
<b>Total</b>	<b>OE</b>	<b>N/A</b>	<b>0</b>
Computing Systems & Supporting Modules for SAP	GPE	672	644
Replace Boiler Economizers (2)	GPE	550	543
COMPAQ Server & Subsystem Components	GPE	46	0
LDRD - GPE	GPE	79	80
Ion Pumps	GPE	75	18
Distilled Water Makers, 4500N and 4500S	GPE	85	52
Data Processors/Storage	GPE	123	14
Pipe Bending Machine	GPE	72	66
Condenser Pumps	GPE	125	93
CNC Engraver	GPE	32	37
<b>Total</b>	<b>GPE</b>	<b>1,859</b>	<b>1,547</b>
Environmental and Life Sciences Laboratory	GPP	200	6
HFIR Users Facility	GPP	300	300
5505 Motor Control Center	GPP	195	180
REDC Cooling Tower	GPP	640	465
Neutron Sciences Support Building	GPP	1,565	9
<b>Total</b>	<b>GPP</b>	<b>2,900</b>	<b>960</b>
N/A	LI	0	0
<b>Total</b>	<b>LI</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>		<b>4,759</b>	<b>2,507</b>

Explanation of significant variances shown in the table above:

- Orders for the COMPAQ servers and Data Processors/Storage were placed later than planned.
- Orders for the ion pumps were placed later than planned.

- Selection of an architect engineer and design for the Environmental and Life Sciences Laboratory started later than planned.
- Delivery of Radiochemical Engineering Development Center (REDC) Cooling Tower components took longer than planned with some rework required on them.
- Work on the Neutron Sciences Support Building was delayed until the HFIR transformers were relocated.

<sup>14</sup>Appendix A, [Table A.4](#), Total Planned ESHQ&I from the FY 2000 ESHQ&I Budget Formulation Submission.

The Operations, Environment, Safety, and Health Directorate performs a large portion of the indirect ES&H activities, and ORNL is committed to ensuring that budget reductions do not result in significant increases in risk to the environment or to the safety and health of the workers or the public. An important task of the indirect cost reduction effort is the introduction of more cost-effective approaches to ESH&Q management and service delivery. A current ES&H reengineering effort is examining inefficiencies and nonessential functions and is expected to provide a means for ES&H activities to function more effectively at reduced cost.

#### **6.4 FY 1998 ESHQ&I ABATEMENT PERFORMANCE**

Several key abatement issues were addressed through the FY 2000 ESHQ&I Budget Formulation Submission for FY 1998. ADSs were included in the submission to address the key issues; however, many of those ADSs were noted as unfunded because of existing resource expectations and constraints. Unfunded issues were individually evaluated to assure that H&S of the public and site employees and environmental resources were protected. The limited ORNL budget resources were distributed based on this evaluation to assure that administrative or other compensatory measures are in place to address ES&H risks, even though full funding is not available to eliminate the risk.

ORNL possesses one of the oldest physical plant facilities within the DOE system. About one-third of ORNL's total existing buildings are over 40 years old, and DOE capital expenditures to upgrade and replace ORNL facilities have been only a small fraction of those of normal industrial practice. Thus, ORNL has accumulated a substantial legacy of ES&H problems for correction. The existing buildings, utilities, and equipment require substantial maintenance cost to ensure reliability to continue R&D efforts in an environmentally and worker-safe condition. The ESHQ&I process has been initiated at ORNL to provide a means of reporting infrastructure planning and budgeting information in an integrated, efficient, timely, and consistent manner that will support ORNL and DOE budgetary needs and requests. Many infrastructure activities may have an impact on the environment and on the safety and health of site workers and the public. Similarly, ES&H requirements and needs drive many infrastructure activities. Many infrastructure activities identified in the development of the FY 2000 Budget Formulation Plan were driven by ES&H needs.

Key abatement issues for Operating Expense (OE) and GPPs are noted below.

### **Underground Storage Tank Compliance (KG-OE)**

This funding is carryover funding from FY 1996 that supports land farming of soil, waste disposal, analytical services, geological subcontract support, program management, and project management. It provides for the disposal of soils and residues from the various tank removals/remediations and monitoring of UST sites prior to state approval of remediation activities.

Status: This work is on schedule and is projected to be completed by December 1999.

### **Electrical Occupational Safety and Health Administration (OSHA) Compliance (KG-OE)**

This project corrected some of the currently identified Risk Assessment Code (RAC) 3 electrical noncompliances.

Status: All funded scheduled activities completed.

### **3000 Area Water Isolation Valve (GPP)**

This project installed motor-operated isolation valves on primary water supply lines serving the 3000 Area (the oldest portion of ORNL). This work included installation of motor operators on some existing valves, installation of new valves with operators at some existing locations, and installation of motorized isolation valves in new locations. Also, some new concrete valve pits were constructed to house the valve and operators to provide accessibility.

Status: Construction was completed in August 1998.

### **HVAC Upgrade, Building 9210, Unit 4 (GPP)**

Upgrades of the 9210 heating, ventilating, and air-conditioning (HVAC) allow for reliable environmental air quality within the Building 9210 R&D facility. The purpose of this project was to refurbish and upgrade the HVAC system in Building 9210, Unit 4, to return the system to nominal operating condition as designed. Contemporary equipment, materials, dampers, control valves, and instrumentation will result in an even more efficient system than originally designed.

Status: Construction was completed in March 1998.

### **3000 Scfm Air Compressor, Building 2519 (GPP)**

This project will purchase and install a new 3000 scfm, rotary screw turbine type, oil-less air compressor to replace aging units at the plant. The new unit will provide the Steam Plant with the capability to produce sufficient quantities of oil-free compressed air to satisfy the current 2200+ scfm site-wide demand. Clean, oil-free compressed air is used throughout the Laboratory to control equipment, systems, and processes and is a critical utility in the operation and maintenance of ORNL.

Status: Design 85% complete. Construction starts November 1998.

### **Rubb Tent for Coal Yard Treatment Facility (GPP)**

A 50 ft by 50 ft (approximately) Rubb temporary structure was purchased and installed as an interim measure to house the existing clarifiers, tanks, and sand filters located on the south side of the ORNL Coal Yard Runoff Treatment Facility, Building 2644.

Status: Construction was completed in December 1997.

### **West End Steam Upgrade Completion (GPP)**

This project began those activities necessary to complete the West End Steam System Upgrade. Included in the work will be the installation of concrete trench duct, installation of steam piping, compressed air piping, condensate return piping, insulation of this piping, and final tie-ins to existing buildings. Design work has been completed and materials for completion of these tasks are on hand.

Status: Construction is 82% complete as of the end of September 1998.

### **Upgrade the Condensate Return System (GPP)**

This project provides for the evaluation of the existing condensate return system to determine whether to repair or replace the various components of the system, purchase and install components needing replacement, and repair the repairable ones. The condensate return was installed as part of the east end steam distribution system upgrade. Because of problems with the condensate after chemical treatment, the system was never placed in service, was not maintained properly, and therefore has deteriorated to the point of not being reliable. There are approximately 30 collection stations with 60 pumps which need to be reworked. Treating the condensate is required to eliminate contaminants picked up in the steam distribution system which may damage the boiler and boiler auxiliaries.

Status: Design 35% complete.

### **Environmental and Life Sciences Laboratory (GPP)**

This project began planning for construction of a 64-ft-wide by 100-ft-long two-story laboratory building located in close proximity to two generic office buildings immediately west of Building 1000.

The new research laboratory facility will consist of eight large laboratories of approximately 1,250 sq ft each. The laboratories will have HEPA ventilated hoods, sinks, and topical

counters. General laboratory equipment will be moved from Y-12 and other ORNL sites.

Status: Design 10% complete. Construction starts in April 1999.

### **HFIR Users Facility (GPP)**

This project provides urgently needed office space for a broad spectrum of HFIR users and HFIR Upgrade project personnel. HFIR users have nearly doubled in the past three years, and there is no space to accommodate this increase. In addition, the HFIR Upgrade project has been funded, and it is essential that the project team be located in close proximity to HFIR. This project will provide 21 offices to alleviate overcrowding in 7962, provide space for the HFIR Upgrade project team, provide space for instrument scientists for the Spallation Neutron Source (SNS) project (SNS instrument scientists will be expected to maintain active research programs at HFIR in order to keep current), and provide space to accommodate the increased numbers of users at HFIR.

Status: Construction was completed in September 1998.

### **Neutron Sciences Support Building (GPP)**

This project provides an equipment support facility of approximately 5000 sq ft to be constructed adjacent to the existing beam room at the High Flux Isotope Reactor. The facility will facilitate the separation of user activities from reactor operations at HFIR, provide research access to HFIR for Basic Energy Sciences, Health and Environmental Research, and Energy Efficiency and Renewable Energy programs and provide critically needed space for equipment storage during routine beryllium reflector changeouts and other reactor maintenance.

Status: Design 60% complete. Construction starts in November 1999.

### **REDC Cooling Tower (GPP)**

This project provides for the construction of a new 480-ton cooling tower to permit the removal of the heat load for the REDC, Buildings 7920 and 7930.

Status: Construction is 75% complete.

### **5505 Motor Control Center (GPP)**

This project provides for refurbishment of the Building 5505 Transuranium Research Laboratory motor control center.

Status: Construction was completed in September 1998.

### **Steam Plant Upgrade, Boiler Addition (LI)**

This project will provide an additional 100,000-lb boiler capacity at the ORNL Steam Plant. The new boiler will be capable of burning either natural gas or fuel oil using modern boiler technology. Also included in the project will be those boiler auxiliaries (pumps, fans, tanks, etc.) necessary to support plant operations.

Status: Design is 60% complete. Construction of building footings is underway.

### **Roofing Replacement (LI)**

This project involves the replacement of deteriorated roofs on buildings and facilities throughout the ORNL complex. Most of the roofs at the complex have been in service for over 30 years; because of deterioration, they have developed many leaks. In many instances, these leaks have adversely affected equipment, records, and research as well as health and safety of personnel working with the facilities. The scope of this project includes the replacement of built-up roofing, including removal and disposal of existing membrane and insulation, inspection and repair of damaged deck, and installation of new insulation and membrane with associated flashing and trim.

Status: Project is approximately 50% complete. In FY 1998, five buildings totaling 250,000 sq ft were completed. To date, 13 buildings totaling 435,000 sq ft have been completed.

#### **6.4.1 Treatment of Key Abatement Issues**

Compliance with ESHQ&I regulations, orders, and procedures is the responsibility of ORNL line management. Excellence in ESHQ&I is achieved through close cooperation with the ESHQ&I professional and technical staff members.

An ADS describes each ESHQ&I activity, associated milestones, risk of not implementing or continuing activity, and activity funding requirements and funding sources. Risk-based ranking of programs and activities was performed to ensure that activities providing the highest-risk benefit were funded from the limited pool of funding resources.

### **6.5 FY 1998 UNFUNDED COMPLIANCE ACTIVITIES**

After allocation of the FY 1998 overhead budget funding and acknowledgment of the funded Field Work Proposal request, the following 21 ADSs were identified as unfunded compliance for planning years FY 1998 through FY 2004 (Appendix A, Table A.6). Core program funding met necessary compliance requirements; however, funding needs were liabilities identified to improve activities.

The following ADSs have unfunded requirements associated with them. Actions to mitigate risk are noted for each ADS.

#### **C97D0071 Fire Protection Systems Upgrade (KC-GPP)**

The following projects/tasks are in support of the ORNL fire protection systems:

1. Upgrade fire sprinklers in the Central Research and Administration Building (4500S). The upgrade will include the extension of fire sprinklers into some areas not currently protected and interface modifications between the sprinkler systems and fire alarm systems in this 275,000-sq-ft building.
2. Replace two aged and failure-prone automatic preaction sprinkler system deluge valves with highly reliable automatic wet-pipe sprinkler system alarm valves in the High Voltage Accelerator Laboratory (5500). Interface modifications between the sprinkler systems and fire alarm system in this 52,000-sq-ft building will also be conducted.
3. Replace one aged and failure-prone automatic preaction sprinkler system deluge valve with a highly reliable automatic wet-pipe sprinkler system alarm valve that protects portions of the High-Level Radiochemical Laboratory Building (4501) and the Experimental Engineering Building (4505).
4. Improve protection of the vital Cooling Tower (7902) for the High Flux Isotope Reactor by replacing the corroded automatic dry-pipe sprinkler system that provides inadequate protection with state-of-the-art automatic pilot deluge sprinkler system.
5. Replace three aged and maintenance-intensive automatic dry-pipe sprinkler systems with more reliable/effective automatic wet-pipe sprinkler systems in the 45,000-sq-ft General Stores/Shipping and Receiving Complex (7001).
6. Replace the antiquated fire alarm system at the HFIR; upgrade various antiquated fire alarm system components in ORNL research and support facilities; install early warning fire detection equipment in high-value research equipment areas; and replace the ORNL Central Fire Alarm Receiving Station. The HFIR fire alarm system is over 30 years old and is not capable of being further modified to perform all monitoring functions necessary to support continuing changes at the HFIR complex. Replacement parts are no longer available for many critical components. Additionally, fire alarm control and announcement equipment is located deep inside the HFIR complex and may not be accessible to Fire Department personnel during a fire event. This project would replace the HFIR fire alarm system with state-of-the-art equipment capable of performing all necessary alarm and supervisory monitoring functions, alarm zone annunciation at the building entrance and in the control room, and be expandable to accept future changes at the complex.
7. Correct fire protection engineering assessment deficiencies in Building 7035B.
8. Install code-approved fire barriers and upgrade electrical wiring and fixtures in the paint storage and mixing areas of 7035.
9. HFIR Fire Protection Upgrade. FY 1999 (Accelerator Improvement Program/HFIR).

Mitigating Actions: Although the systems are aging and becoming more failure prone, they are on a rigid inspection, testing, and maintenance schedule. Failure rates and types are recorded and accumulated. Should failure rates reach a "critical" level where negative impacts on people and property appear imminent, direct contact will be made with upper management to get funds for immediate action on an emergency basis. Routine fire protection engineering assessments, monthly building inspections, and frequency of alarms are other methods utilized to monitor systems reliability.

#### **P98D0019 ORNL Safety and Health (S&H) - Building Electrical System Upgrade (KC-OE)**

ORNL Facilities' Condition Assessment Survey identified legacy vulnerabilities from fire and electrical shock hazards principally due to aging facilities and installations which do not meet the National Electrical Code. Many of these were categorized as Urgency Repair Code #1 - asset condition critical, Urgency Repair Code #2 - asset condition serious, or Urgency Repair Code #3 - asset condition degrades. Money is not available to address large electrical safety infrastructure issues under current funding programs. Therefore, a building electrical system upgrade proposal is logical and cost effective. It is essential that these needs be identified within the budgeting process. The primary areas requiring this enhanced support are (1) wiring and panelboard replacement, (2) circuit identification and removal of abandoned services, (3) upgrade of wiring to meet the National Electrical Code, and (4) motor control center upgrades.

Mitigating Actions: Electrical workers will follow safety-related work practices when performing electrical work on aging or potentially defective equipment. Facility maintenance personnel recognize that much of the electrical system and associated electrical apparatus located at the Laboratory is old and requires a higher level of care. Employees working on the equipment do so with a heightened sense of awareness and look for problems they would not normally be concerned with on newer equipment. Deficiencies found to be immediately dangerous to safety or health or property will be corrected with available maintenance funds.

#### **P98D0028 Chlorine Removal from Storm Drains (KC-OE)**

Current National Pollutant Discharge Elimination System (NPDES) permits require monitoring of each outfall for chlorine and where amounts above 1.2 grams per day are found, remediation is required. The source of chlorine is once through cooling of processes, water-cooled condensers, and underground water leaks. Funds from this project will be used to identify sources and eliminate them from the storm drain system.

Mitigating Actions: While waiting for funds to complete this project, ORNL maintains and services 18 dechlorination units located on high-chlorine-concentration drain systems. These dechlorination units put chemicals into the drain system that react with and remove the chlorine. These chemicals can cause environmental problems if overfeed occurs, but the risk of this is low. Low-chlorine-concentration drain systems are monitored, and remediation plans are prepared. However, these plans are not implemented until in-stream compliance points

are influenced or funds become available.

### **C97D0097 Water System Upgrade (KG-LI) (Now categorized as KC-GPP)**

This project will provide a needed infrastructure upgrade for the fire protection and potable water systems in the 6000 Area, 7600 Area, and west end of the Bethel Valley area of the ORNL. The project will install new lines to replace major feed lines installed during the early 1940s that have undergone structural degradation with age. The project will also provide improved fire protection capabilities and more reliable potable water supply to three locations in the Bethel Valley area that have been impacted the most by growth during the past 50 years. The upgrade will consist basically of the installation of approximately 19,000 ft of new 16-in./12-in. water mains, isolation valves and motor controllers, and pressure-reducing valves and valve pits.

Mitigating Actions: Though provided by a single line, fire protection water for the facilities located in the 6000 and 7600 Areas is adequate. Any impairment on supply lines will be repaired as quickly and efficiently as possible while fire protection personnel stand by on fire watch at the affected facilities.

Should the water line that runs through the 6000 Area break at a point where it would cause flooding within the building, emergency plans specify that building occupants be evacuated from the facility. Administrative control will minimize the potential for electrical shock incidents by requiring that personnel remain away until water levels recede and/or main power supplies are turned off.

Water from a break on the line would cause an excessive discharge of chlorine to the creek, but it would not result in any long-term damage to the stream ecosystem. Operators will make every effort to isolate the leaking line as quickly as possible to prevent damage to the facility and its unique research capabilities as well as the surrounding environment. By responding quickly, environmental and other impacts are expected to be minimized.

### **C97D0147 Fire Protection Systems Upgrade (KG-LI)**

The following projects/tasks are in support of the ORNL fire protection systems:

1. Extend automatic wet-pipe sprinklers throughout offices, corridors, and under the attic floor slabs in Wings 1-4 of the Central Research and Administration Building (4500N). These specific areas are not protected with a fire-suppression system.
2. Upgrade automatic fire sprinkler systems and water spray systems in the hot cells and cubicles containing combustible solids and liquids in the Radiochemical Engineering Development Center (Building 7920). Existing fire suppression systems protecting these

areas cannot be fully tested/maintained and show signs of water spray nozzles plugged with pipe scale/rust.

3. Replace numerous fire alarm control panels with modern fire alarm equipment and modify alarm device/evacuation horn circuits to utilize the full capability of the new control panels. Many fire alarm control panels and annunciators at ORNL are 30 to 40 years old and operate via antiquated technology (springs and shunts) which do not permit interface with modern fire detection and fire alarm initiation devices. These older panels also do not perform self-monitoring of fire alarm and evacuation horn circuits as required by mandated National Fire Codes, and replacement parts are not available to facilitate timely maintenance/repairs.
4. Install early warning smoke detectors to provide area protection in this laboratory and give early indication of an incipient fire to fire-response forces. High-value robotics research is conducted at the CESAR Laboratory in Building 6010. High-value, one-of-a-kind robotics equipment and work stations in this densely populated laboratory create the potential for a fire loss exceeding \$1 million.
5. Upgrade the Central Fire Alarm Receiving Station at ORNL Fire Department Headquarters to replace antiquated equipment currently performing this vital function. This 20-year-old equipment monitors the condition of fire alarm systems and provides notification of fire alarm system activation for 200+ buildings at the X-10 site. It is imperative that this equipment remain highly reliable and that replacement parts be readily available. As the equipment ages, replacement parts are more difficult to procure and maintenance costs increase, resulting in questionable reliability.
6. Upgrade the engine driver and water pump in Pumphouse 7953. The manually operated gasoline engine driver and water pump in Pumphouse Number 7953 were installed in the early 1960s. This pump supplies fire protection and potable water to the DOSAR Site, which includes the Radiation Calibration Laboratory (7735), laboratories handling radioactive material in Building 7710, and Building 7709, the Health Physics Research Reactor Building currently being utilized for storage of one-of-a-kind replacement parts for the High Flux Isotopes Reactor. Recent tests of the aged pump and pump driver resulted in a failure to operate. This project will replace the manually operated pumping system with an automatic starting pump along with updating the aged maintenance-intensive equipment with modern equipment.
7. Upgrade fire barriers in ORNL facilities. National Fire Codes and regional/DOE adopted building codes contain requirements to limit the spread of fire to a certain square foot area. The Life Safety Code requires physical separation in protected means of egress. Both code requirements must be met by installed fire barriers, which are rated by Underwriters Laboratory (UL) to withstand a fire for a time period (e.g., one-hour rated, two-hour rated, etc.). These two old, very large administrative and research facilities do not currently have required fire barriers in place.
8. Install sprinklers in Room C110 and fire detection equipment in Rooms C109 and C111

of Building 6000. Recommendation from Fire Protection Engineering Assessment Building 6000 and Tiger Team Assessment ORNL-6657/VI/R3 of 10/90 (FP.4-1).

9. Upgrade fire alarm and sprinkler system for Building 4505. The fire alarm upgrade includes the following: replace the shunt-trip-type fire alarm annunciator panel; eliminate heat-actuated devices throughout the facility and replace with water flow switches for zone annunciation; add above/below sprinkler lines and heads as deemed necessary; and replace the horn panel in the east stairwell controlling all evacuation horns in the building.
10. Upgrade fire alarm and sprinkler systems for Building 4501. The fire alarm and sprinkler upgrades include the following: eliminate one of two master fire alarm boxes (MFABs) which serve 4501; replace two shunt-trip-type fire alarm annunciator panels adjacent to the two existing MFABs and an auxiliary annunciator panel near the sprinkler system risers in the basement; eliminate heat-actuated devices throughout the facility and replace with water flow switches for zone annunciation; add above- and below-ceiling sprinkler lines and heads as necessary; and replace the horn panel in the east stairwell controlling all evacuation horns within the building.
11. National Fire Codes and regional/DOE-adopted building codes contain requirements to limit the spread of fire to a certain square foot area. The Life Safety Code requires physical separation in protected means of egress. Both code requirements must be met by installed fire barriers which are rated by UL to withstand a fire for a time period (e.g., one-hour rated, two-hour rated, etc.). 4500N does not currently have required fire barriers in place.
12. Install fire alarm system in Building 7604, which is used for storage of experimental and test equipment such as development hardware, computers, and instrumentation. A portion of the building is used periodically as a control room for experiments conducted in adjacent areas outside the building. No personnel are housed full time in this building, but some personnel enter the building on a regular basis as part of their responsibilities, particularly when there is experimental activity in the control room area. The building has no fire protection system other than portable fire extinguishers. This activity adds a fire protection alarm system to Building 7604. Fire and smoke detectors will be installed in Building 7604 and will be connected to an existing fire alarm system in adjacent Building 7601.

Mitigating Actions: Although the systems are aging and becoming more failure prone, they are on a rigid inspection, testing, and maintenance schedule. Failure rates and types are recorded and accumulated. Should failure rates reach a "critical" level where negative impacts on people and property appear imminent, direct contact will be made with upper management to get funds for immediate action on an emergency basis. Routine fire protection engineering assessments, monthly building inspections, and frequency of alarms are other methods utilized to monitor systems reliability.

7920 Hot Cells and Cubicles - Compensatory measures include the following:

- All spray nozzles in the cubicles were replaced with an improved type.
- Bypass valves were installed to flow test to the cell face.
- Regular pneumatic test and electrical circuit tests are conducted for leaks and continuity.
- Full-scale tests by Lawrence Livermore National Laboratory determined a high likelihood of confinement to a single cell and self extinguishment based on fuel available.

#### **A95D0037 Facility Safety Documentation - SARUP (KC-OE)**

*NOTE: During FY 1998, significant progress was made on the activities addressed in this ADS. Reference Section 5.1.6 of the status for key issues.*

Facility safety documentation upgrade for the DOE-OR Assistant Manager for Laboratories (AML) purview nuclear facilities to comply with LMER WSSs - DOE Orders [5480.22](#) and [5480.23](#) (and the associated pending Price-Anderson rules 10 CFR [830.110](#) and [830.320](#)). This activity will produce compliant Safety Analysis Reports and Technical Safety Requirements. This work is being accomplished under SARUP. Those nuclear facilities in this scope under AML purview are facilities 2026, 3019, 3025E, 3027, 3047, 5505, 7900, 7920, and 7930.

Mitigating Actions: ORNL and the DOE Site Office have developed and agreed upon a firm schedule for submittal of the documentation. The initial scope of work is unchanged and the work remains directly funded for only some of the facilities. However, progress is being achieved, as scheduled, with alternate funding as necessary (primarily operating funds and user fees). The updated safety analysis documents (SARs and TSRs) have been submitted to DOE for review and approval for facilities 2026, 3025E, 3027, 5505, and 7900. The SAR and TSR have been conditionally approved by DOE for facility 3025E and the SAR approved for facility 7900 (HFIR).

SAR and TSR work for the remaining facilities (3019, 3047, 7920, and 7930) is funded and is being developed as scheduled.

#### **C97D0080 Asbestos Abatement, ORNL at Y-12 - ERKCL51 (KC-OE)**

Asbestos abatement includes removing asbestos from piping and equipment, as well as replacing asbestos ceiling panels, deteriorated asbestos ceiling plaster, etc. All these items increase the cost of maintenance if repairs are required. Some rooms/areas where asbestos lines or ceiling panels have fallen (steam/water leaks) are totally closed off where HVAC units and controls are located.

Mitigating Actions: As maintenance jobs are worked that require removal of asbestos insulation and ceiling tiles, the repairs include going back with nonasbestos material. Several major problem areas are being administratively controlled with tagging and sealing off to limit access.

#### **P98D0013 Remove Asbestos from Controlled Areas (KC-OE)**

Asbestos controlled areas are areas where friable asbestos-containing insulation has become deteriorated and presents a potential health hazard (employee exposure) to employees entering these areas. Personal protective equipment is required to enter these areas. Work includes the removal of friable asbestos-containing insulation via high-powered vacuum system (super sucker) and via insulation encapsulation. The targeted controlled areas are as follows: (1) Building 2000 attic, (2) Building 2001 attic, (3) Building 3550 attic, and (4) Building 2517 crawl space.

Mitigating Actions: Presently, these controlled areas have limited access from the general plant population. Workers entering these areas are required to have asbestos awareness training prior to performing any work in the area. A periodic walk-through, by a representative of the Asbestos Management Group, identifies areas needing additional attention.

### **P98D0007 ORNL H&S-Radiological/Toxicological Sabotage (KC-OE)**

DOE Notice [5630.3A](#), "Protection of Departmental Facilities Against Radiological and Toxicological Sabotage," dated 6-28-93, was made applicable to ORNL by inclusion of Oak Ridge Order 151.1 Rev. 1, dated 9-30-96, into the baseline. It requires contractors to perform graded assessments of the risk due to sabotage with the level of hazards present in their facilities.

Mitigating Actions: At facilities where there are plans to modify current operations or significantly change the inventory of nuclear or hazardous materials that could cause potential adverse public health and safety impacts due to sabotage, we are requiring the facility/program manager to provide funding for a radiological/toxicological sabotage assessment as part of his planning process.

### **P98D0005 Compliance with Revised NPDES Limits (KC-OE)**

NPDES Permit renewal includes effluent limits that may be met best by physically combining existing NPDES outfalls X01 (Sewage Treatment Plant), X02 (Coal Yard Runoff Treatment Facility), and possibly other outfalls. Combining outfalls may allow effluent constituent and receiving-stream impacts to be moderated such that permit limits can be met. This activity would involve hard piping, excavation work, and installing pumps and other related components. The result would be improved capability to comply with NPDES permit limits and reduced level of effort and cost for environmental sampling required under NPDES.

Mitigating Actions: To mitigate NPDES permit compliance risks associated with the unfunded ADS P98D005, "Compliance with Revised NPDES Limits," the following actions have been taken: (1) ORNL is engaged in a project to install a new ozone disinfection system at the ORNL Sewage Treatment Plant. This system is expected to facilitate compliance with new NPDES limits on chlorine and on fecal coliform bacteria; (2) ORNL recently completed a toxicity-reduction evaluation at the STP, which has helped STP staff optimize operating parameters to minimize effluent toxicity; (3) DOE/ORNL has appealed certain limits imposed in the new NPDES permit, including fecal coliform at STP and arsenic and selenium at CYRTF. Until the appeal is resolved by the state of Tennessee, compliance with the new

permit limits for those parameters is not required.

### **C98D0167 Cooling Tower Maintenance - ERKCL30 (KC-OE)**

Cooling Towers 2026, 3525, 4511, and 6001 are critically degraded due to age and inadequate maintenance. GPP Funding is being requested to replace 4511 and 6001 towers; however, until the towers are replaced, extensive maintenance is required to preserve their operability and ensure the safety of personnel required to periodically clean the towers and maintain fans and gearboxes. (1) Building 4511 is currently unusable and cannot be placed in operation until underground crosstie valves (connecting its basin to 4510 tower) are replaced. The wooden structure is deteriorating at a rapid rate under dry conditions and becomes increasingly hazardous to maintain. The stagnant basin provides fertile conditions for legionella bacteria. (2) Building 6001 has undergone numerous structural repairs in the last two years and currently is in need of fan control upgrades along with system and basin cleaning to improve bacteria control and operating efficiency. (3) Building 3525 is operated for a potentially surplus facility, but is unsafe to access. Tower basin and piping leaks are also creating risk for unpermitted chlorine discharges to nearby storm drains. (4) Building 2026 requires a redesign of piping to eliminate overflows to the roof drain during bypass operation. Overflows increase risks for NPDES permit violations and frequently shut down building cooling operations.

Mitigating Actions: Towers with structural deficiencies are inspected and repaired as necessary to minimize safety problems for maintenance workers and operators working on or around the towers. Operation of the towers (i.e., starting fans and pumps, water treatment controls) requires routine testing and monitoring by the operators and refrigeration mechanics. These towers are equipped with annunciated alarms in their respective control rooms.

### **C98D0169 Supplemental Roof Maintenance and Emergency Repairs - ERKCL30 (KC-OE)**

Currently, leaks in roofing are causing structural failures and unsafe working conditions for the general plant population and visitors. Additional funding would permit the reduction of roof repair backlog and would permit predictive and programmed maintenance of ORNL roofing.

Mitigating Actions: Plant and Equipment Division inspects 100% of the ORNL roofs each year, and the results are communicated back to the facility managers within 45 days following the inspection. The roof inspections and communicated deficiencies are included in the LCAM performance measures for Operations and Maintenance. Roof replacement needs have been prioritized (based on asset condition and mission importance), and many of the roofs are scheduled to be replaced in FY 1999 and FY 2000.

### **C98D0181 Fire Systems Upgrade, ORNL at Y-12 - ERKCL51 (KC-OE)**

Fire systems upgrade includes replacing and repairing identified fire protection issues: exit and emergency lights for egress, stairwell fire wall penetration repairs, fire doors replacement or repair, sprinkler systems installed, replacement of ceiling panels to comply with fire protection standards, etc. All facilities have identified findings currently in the ORNL LIDS System that require addressing.

Mitigating Actions: Fire system upgrades include replacing and repairing identified fire protection issues (e.g., exit and emergency lights for egress, stairwell fire wall penetration repairs, fire door replacement or repair, sprinkler system installation, replacement of ceiling panels to comply with fire protection standards, etc.). Exit and emergency lights are checked quarterly and are replaced if required on overhead funds as part of the preventive maintenance program. Combustibles in unprotected areas are relocated by building personnel. Fire doors are repaired on building maintenance overhead funding as part of normal building maintenance. All fire protection issues are being evaluated to address the risk to building personnel. Administrative controls are in place where appropriate to limit access to areas with fire protection concerns.

### **S97D0058 Lockheed Martin Transportation and Packaging Management Facility (KC-GPP)**

The new Lockheed Martin Transportation and Packaging Management (LMTPM) Organization facility is to be utilized by all LMTPM employees at ORNL. LMTPM personnel are located in three facilities: Building 3036 in Isotope Circle houses packaging engineers, chemical operators, and a material assistant; Building 7001 houses primarily traffic and shipping personnel, but also has packaging and Quality Assurance employees; Building 6026G houses transportation management, packaging engineers, and compliance personnel. Besides improving the effectiveness and efficiency of the entire LMTPM operation at ORNL, the primary need for the new LMTPM facility is to relocate LMTPM personnel in Building 3036 and return Building 3036 to the Chemical Technology Division.

Mitigating Actions: LMTPM follows ES&H standards and procedures in ensuring compliance in relation to fixed-contamination controls. Such controls include, but are not limited to, conducting weekly health physics surveys for operations and office areas, green-tagging operational items (i.e., containers, equipment) before entering the facility, and conducting an annual integrity survey for wearing/thinning paint.

### **P98D0021 ORNL Safety and Health - OSHA Regulatory Compliance (KC-OE)**

LMER's 1998 goal of identifying and correcting all serious OSHA noncompliances (RAC 1s and 2s), and 100% of all previous other-than-serious noncompliances (RAC 3s) has resulted in compliance funding requirements beyond that which current programs can fund. Money is not available to address large OSHA noncompliance issues that meet the above demands. Therefore, an OSHA Regulatory Compliance proposal is logical and cost effective. It is essential that these needs be identified within the budgeting process. This activity is proposed to upgrade ORNL facilities and programs to achieve compliance with OSHA standards. The primary areas requiring this enhanced support are (1) continued assessment of OSHA noncompliances to evaluate and select compliance alternatives and define and prioritize

abatement plans and (2) corrective actions for noncompliances with emphasis on serious- and medium-risk noncompliances (RAC 1s, 2s, 3s). Continued inspections have been made to identify industrial hygiene and industrial safety noncompliances. The results of these inspections and recent surveys have specifically identified and quantified many noncompliances by subpart. Additional out-year expense and capital funding will be required to provide for upgrades of ORNL facilities and programs to a level of worker health and safety equivalent to OSHA requirements. In addition, programs will be established to ensure the maintenance of this level of worker safety and health protection.

Mitigating Actions: All serious noncompliances (RAC 1s and 2s) are corrected within 24 hours. All other than serious noncompliances (RAC 3s) are corrected within 90 days, or administrative controls are implemented to ensure that employees are safe. Access to attic areas in the 4500 complex has been restricted to only those personnel who have been trained regarding hazards associated with unguarded machinery.

#### **P98D0026 ORNL Facility Asbestos Survey (KC-OE)**

Approximately 60% of the facilities located at ORNL have been surveyed for the identification of asbestos. This program will provide funding to complete the asbestos survey for the remaining 40% of the buildings within the ORNL facility.

Mitigating Actions: The only records from the previous surveys are located in the Asbestos Program office. This information is contained in about 90 spiral-bound volumes. Requests for new work require a visit to the area and sampling by a member of the Asbestos Management Group. These samples are recorded in the program office for future reference.

#### **C97D0069 Upgrade Electrical systems, 3019, 3025, 3500 (KC-GPP)**

This project will replace obsolete and inadequate switchgear and transformers at the main electrical service entrances to these buildings. These electrical devices are the control points for the main electrical systems in each of these facilities. Much of this equipment has been in service for 50 years and must be replaced to ensure reliable electrical service to the customers and provide a safe environment for building occupants, system operators, and maintenance personnel.

Mitigating Actions: Electrical service is provided to these facilities through 50-year-old service entrances and other aged equipment. In most facilities, this equipment is serviceable and will remain reliable as long as it is properly maintained. All new loads on facility electrical systems are reviewed for possible impacts on these older services. Facility maintenance personnel recognize that many of the electrical systems are old and require a higher level of care.

#### **C97D0070 Upgrade Electrical Systems, 6000 and 7000 Areas (KC-GPP)**

This project will replace obsolete and inadequate switchgear, transformers, and motor control

centers at the main electrical service entrances to these buildings. These electrical devices are the control points for the main electrical systems in each of these facilities. Much of this equipment has been in service for 50 years and must be replaced to ensure reliable electrical service to the customers and provide a safe environment for building occupants, system operators, and maintenance personnel.

Mitigating Actions: Electrical service is provided to these facilities through 50-year-old service entrances and other aged equipment. In most facilities, this equipment is serviceable and will remain reliable as long as it is properly maintained. All new loads on facility electrical systems are reviewed for possible impacts on these older services. Facility maintenance personnel recognize that many of the electrical systems are old and require a higher level of care.

### **S97D0036 Electrical Upgrade, ORNL at Y-12 - ERKCL51 (KC-OE)**

Electrical upgrades include (1) replacing lighting center, (2) restoring 480V electrical systems, (3) replacing crane feed rails, (4) upgrading switchgear areas, and (5) upgrading intercom/radio system.

Mitigating Actions: This ADS includes (1) replacing lighting centers, (2) restoring 480V electrical systems, (3) replacing crane feed rails, (4) upgrading switchgear areas, and (5) upgrading intercom/radios. During FY 1998, \$100,000 from building overhead funds was allocated to replace and perform preventive maintenance on deteriorated 480V breakers. Preventive maintenance will continue to be performed on breakers to avoid damage to the equipment as part of the building maintenance program.

### **C97D0081 Water System Upgrade in ORNL Facilities (KC-GPP)**

The scope of this activity includes the upgrade of water supply systems and encompasses the following:

1. Installation of safety showers and eye washes with potable water supply.
2. Replacement of existing water stills that supply distilled water.
3. Replacement of piping and associated components used to supply and remove process water.
4. Replace piping and associated components used for heating.

This project includes the removal and replacement of any existing eyewash stations and safety showers in the laboratories and corridors of Wings 2 and 3 of the Central Research and Administration Building, 4500N, and safety showers and eyewash stations in 4501 and 4505. To meet OSHA standards, potable water headers will be installed to supply the water for the safety shower and eyewash stations.

Mitigating Actions: The safety showers and eyewash stations in Building 4500N are supplied with process water. No mitigative actions can be taken, and piping modifications are required to supply these safety showers and eyewash stations with potable water.

## **P98D0003 Nuclear Criticality Safety Program: 0 420.1 Upgrade (KC-OE)**

Section 4.3 of DOE Order O 420.1 has been adopted as the principal Nuclear Criticality Safety (NCS) WSS requirement for LMER. While bringing needed flexibility in the application of American Nuclear Society (ANS) 8 NCS requirements and recommendations, O 420.1 does increase the number of NCS requirements that must be addressed by Nuclear Criticality Safety Evaluations (NCSEs) and Nuclear Criticality Safety Approvals (NCSAs). This proposal requests the additional funding, above that provided to overhead-funded LMER NCS Program, that is required to bring LMER into compliance with O 420.1. This includes completing the upgrade of NSRs to NCSAs/NCSEs per the approved implementation plan for 5480.24 (the predecessor to O 420.1 Section 4.3).

Mitigating Actions: DOE-ORO approved the LMER implementation plan for DOE Order 5480.24 on 7/2/97 after not funding FWP ERKG016. This implementation plan pointed out that completion of the NSR to NCSA upgrade work on the proposed implementation plan schedule was dependent on FWP ERKG016 being funded. The implementation plan also pointed out that conducting the surveillance program for fissionable material in hidden locations also was dependent on funding. FWP ERKG016 had been submitted to cover both of these items.

FWP ERKG016 has been resubmitted as ERKCL10 (which corresponds to ADS P98D0003). If FWP ERKCL10 is not funded, the NSR to NCSA conversion work will continue but on a much- drawn-out schedule as operating divisions with NSRs find funding to convert NSRs to NCSAs. The fissionable material surveillance program for hidden accumulations will also be delayed and only limited work will be done as operating divisions find funds for the work.

### **7. FY 1999 ESHQ&I EXECUTION PLAN AND ISSUES**

#### **7.1 BUDGET ANALYSIS AND IMPACTS**

A listing of ORNL ESHQ&I ADSs for FY 1999 with known target, supplemental, and new requests is included in [Appendix B, Table B.1](#).

##### **7.1.1 Major Planning Assumptions**

Planning assumptions are based on direct guidance from the Cognizant Secretarial Offices funding programmatic activities at ORNL. In addition, DOE-ORO funding guidance is followed to assure consistency of FWPs, ADSs, Capital Equipment Requests, GPP Requests, and LI Requests. All overhead planning assumptions are based on a prioritization of risk to the mission of ORNL, infrastructure needs, personnel safety and health, environmental issues, and public issues. ORNL is dedicated to assuring that all regulatory requirements are at least met. Reductions in funding may impact compliance with some of the requirements of DOE orders and may severely impact implementation of best management practices.

##### **7.1.2 Funding Bases**

The Secretarial Office responsible for Landlord activities at ORNL is the Office of Science, Basic Energy Sciences. With the exception of activities funded directly by the Office of Environmental Restoration and Waste Management Program (EM), all direct funding allocated to ORNL by Office of Science and other programs is recognized within the ESHQ&I Management ADS submittals. Where cost is escalated on an ADS included in this plan, a cost escalation rate of approximately 3.2% for labor and materials is used.

For each ADS submitted in the FY 2000 ESHQ&I Management Plan, ESHQ&I activities are designated as either direct (Program) funded or indirect funded from a variety of allocable cost pools. ORNL ESHQ&I activities to be direct (Program) funded are identified as either target (funded) or unfunded with the appropriate Resource Structure Code and budget and reporting (B&R) code specified. The allocable cost pools include the site overhead pool (OH) and division-specific overhead pools (DA). Other allocable cost pools which may be designated are distributed accounts through service organizations (DI), burdened accounts supported by a specific division (BC), and centralized accounts (PD). Each ADS to be funded from these allocable cost pools is identified as either target or unfunded and includes identification of the associated funding pool.

All indirect funded ORNL ESHQ&I offices (e.g., Office of Environmental Protection) recognize their cost of operation through target, funded supplemental, or funded new ADSs for which the costs correspond directly with the ORNL overhead budget documents. Unfunded activities corresponding with the ORNL overhead budget are recognized as unfunded supplemental or unfunded new. Direct programmatic funding requests by the ORNL ESHQ&I organizations are submitted through FWPs with associated ADSs submitted to DOE-OS. The FWP submittals working in concert with the ADS submittals allow both the overhead organizations and the programmatic organizations to request Landlord direct funding for ESHQ&I activities.

Current ESHQ&I funding targets were developed as part of the FY 1998 ORNL Site overhead budgeting process. Following risk prioritization of activities, recommendations were made to ORNL management for funding of targets and consideration for the funding of supplemental and new requests. ORNL management then allocated available target funding to ESHQ&I organizations for their activities. Overhead funding is reviewed by DOE Site personnel for concurrence. Following adjustments, ESHQ&I organizations were allocated the available funds to support the highest ranked activities. Adjustments of funded programs are made during the fiscal year based on risk prioritization and management approvals. In addition to the site overhead process, programmatic organizations support intradivisional ESHQ&I activities through a division-specific overhead structure. This funding is controlled by line management to ensure internal compliance to ESHQ&I requirements.

### **7.1.3 Impact of Potential Budget Reductions**

Significant reductions in funding for labor, materials, and services affecting ORNL ESHQ&I programs have recently occurred. Further reductions are likely and could result in the elimination or reduction in scope of various ESHQ&I programs and activities. The most significant impacts will likely be on the ADSs associated with the lowest ranked activities and

programs to which target overhead funding has been allocated in the plan.

Following the final allocation of functional area indirect budgets, it is anticipated that budget reductions would likely result in the deferral or reduction in scope of the following activities. More significant budget reductions would begin to affect core ESHQ&I programs (indirect funded) necessary to accomplish ORNL's missions and maintain current levels of regulatory compliance.

### **ORNL Business Application Planning and Development (ESHQ&I)**

This task includes planning for and creating ORNL's Business Application Architecture and Administrative IT Strategy. The business applications include many of ORNL's most vital infrastructure systems including payroll, PALS, etc. This task also includes compiling and monitoring all ORNL business application computing costs for the 90+ systems that will not be replaced by SAP (includes transaction fees in order to assess the true cost of computing for ORNL). Development of new technology systems is included in this function.

### **Corporate Information Center/Data Warehouse (ESHQ&I)**

ORNL's share of the LMES Corporate Information Center efforts includes a strategy for the future of ORNL's data warehouse. It also includes conversion of some data to Oracle; however, this funding will not allow complete conversion of data to ORNL's data warehouse. Therefore, this increment will violate terms of the MOU between LMES and LMER. The warehouse, when populated with data, will serve as a centralized repository for a wide range of institutional data from diverse sources such as human resources, finance, health and safety, compliance, facility, and other data. The most useful subsets of data from these source systems will be brought together in various ways to make the collection available in a coherent, integrated model. The data warehouse will form a foundation upon which a new generation of information-delivery applications can be built. Of particular interest is the utilization of the World Wide Web for information delivery.

### **FY 1999 Budget Reduction - Reallocation - Maintenance (ESHQ&I)**

This project provides for the maintenance and repairs for ORNL occupied facilities located at the Y-12 site necessary to preserve the infrastructure and provide a safe environment. Tasks include repair of building structures, roofs and masonry; maintenance and repairs of building electrical, piping, and HVAC systems; exterior and interior maintenance painting; maintenance of building insulating systems; and asbestos removal.

### **FY 1999 Budget Reduction - Reallocation (Delivery Services) (Infrastructure)**

This task funds resources to operate the ORNL Taxi service and ORNL Mail/Package Pickup and Delivery services. The Taxi Service operates with two vehicles on staggered schedules to maintain continuous service for the Laboratory until 5:15 p.m. every day. The taxi enables ORNL to reduce its vehicle fleet size, saving dollars on fuel cost, maintenance and operating cost, and capital outlays, as well as reducing air emissions. The taxi is also a service

encouraged by DOE Property Management. The Mail/Package Pickup and Delivery service provides resources to pick up items from throughout ORNL buildings, Reproduction, and the Mail Room and deliver them to the entire Lockheed Martin complex, including off-site locations such as Commerce Park, Mitchell Road, Y-12, and the East Tennessee Technology Park (ETTP). These services benefit the entire ORNL community by easing transportation throughout the Laboratory and speeding information flow in the entire DOE complex.

### **Transportation Services (Infrastructure)**

This task funds resources to operate the ORNL Taxi service and ORNL Mail/Package Pickup and Delivery services. The Taxi Service operates with two vehicles on staggered schedules to maintain continuous service for the Laboratory until 5:15 p.m. every day. The taxi enables ORNL to reduce its vehicle fleet size, saving dollars on fuel cost, maintenance and operating cost, and capital outlays, as well as reducing air emissions. The taxi is also a service encouraged by DOE Property Management. The Mail/Package Pickup and Delivery service provides resources to pickup items from throughout ORNL buildings, Reproduction, and the Mail Room and deliver them to the entire Lockheed Martin complex, including off-site locations such as Commerce Park, Mitchell Road, Y-12, and ETTP. These services benefit the entire ORNL community by easing transportation throughout the Laboratory and speeding information flow in the entire DOE complex.

### **Scrap Materials (Infrastructure)**

The function of this account is to collect revenue received from the sale of noncapital materials sold through Property Sales, the cost of materials shipped parcel post lost or damaged in transit that exceeds the liability limit of the carrier, and the cost of materials that have been deteriorated or been damaged while in stores inventory.

### **Returnable Containers (Infrastructure)**

Provides for returnable container deposit charges that occur when materials are received in drums, carboys, and stainless steel kegs.

### **Loss on Disposal of Excess Stores Inventory (Infrastructure)**

Required to fund reserve for loss on the disposal of stores inventory that is excess to ORNL requirement.

### **Price Adjustment (Infrastructure)**

Provide funds for monthly reconciliation between the General Ledger and Subsidiary Ledger accounts. This function could result in debit or credit adjustments.

### **Safety Incentive Award Program (ESHQ&I)**

Provide funds for safety incentive awards.

### **Analytical Laboratory Services (ESHQ&I)**

Provide supplementary funds for analytical laboratory services.

### **WWW Electronic Forms Instruction (Infrastructure)**

Conversion of the most frequently used forms so that they can be filled in via the WWW. This will include automatic routing and approval of the forms where this is possible. This activity is a major reengineering project targeted to eliminate the need for additional forms software packages by users, thereby saving purchases, money, and user time.

### **Freight and Cartage (Infrastructure)**

Freight and Cartage Contract

### **ORNL Procedures Coordinator (ESHQ&I)**

This supplemental task collects costs for 0.8 full-time equivalent (FTE) associated with secretarial duties related to ORNL and DOE directives coordination and ongoing operation of the new Office of Directives and Guidance (ODG).

### **ORNL Procedures Coordinator (ESHQ&I)**

This account collects costs for ORNL and DOE directives coordination and ongoing operation of the new ODG.

### **Special Instruction (ESHQ&I)**

Personnel from Instrumentation and Controls, Plant and Equipment, and Quality Engineering and Inspection are responsible for establishing specifications for stores items and providing inspection services.

### **ORNL Postage (ESHQ&I)**

Postage for all outgoing U.S. Postal Service mail.

### **NEPA/NHPA Review and Documentation (ESHQ&I)**

The National Environmental Policy Act (NEPA)/National Historic Preservation Act (NHPA) Program coordinates NEPA compliance for ORNL by regulatory and scientific interpretation of the DOE NEPA regulations codified at [10CFR1021](#); coordinates NHPA compliance for ORNL by interpretation of historic preservation law, including regulations and federal agency requirements codified at [36CFR800](#), [36CFR60](#), [63](#), [65](#), and [78](#), and [43CFR7](#); provides a regulatory compliance interface between ORNL and DOE regarding NEPA and NHPA compliance issues; provides regulatory guidance to ORNL management and staff to fulfill DOE and ORNL requirements for compliance with NEPA and NHPA; screens all new and ongoing ORNL activities for compliance with NEPA, which total more than 60 activities

during FY 1998; assesses the potential environmental and historical consequences of proposed actions that included renovation/demolition projects in FY 1998; and prepares or coordinates the preparation of required project-specific or programmatic NEPA and NHPA compliance documentation, which total more than 30 in FY 1998.

### **Personnel Security (Infrastructure)**

Processes security clearances. Provides a Security Awareness Program, the Personnel Security Assurance Program, and the Foreign Ownership, Control or Influence Program. Processes unclassified and classified visits and badges employees, subcontractors, and visitors.

### **Compliance Assurance, PAAA, and NRC Transition (ESHQ&I)**

The Compliance Assurance Program (CAP) supports the Price-Anderson Amendments Act (PAAA) as part of the laboratory's commitment to have an aggressive self-identification and reporting program. During the current fiscal year (FY 1998) two potential significant PAAA violations have been reported. The PAAA program coordinator assisted ORNL and the personnel at the High Flux Isotope Reactor in the preparation and review process during an official investigation during May of 1998. The PAAA program retains as an independent consultant a former manager from the Nuclear Regulatory Commission to ensure the program meets the expectations of senior management. A lessons-learned program is also maintained on PAAA issues to ensure everyone understands the current expectations of DOE and ORNL management.

The CAP also provides support to the contract review process for ES&H requirements, maintains an ORNL compliance home page for contract requirements, WSSs, and other applicable commitments. The program coordinates and issues the monthly performance measures required by DOE as part of the Pilot ES&H Oversight Reduction Program. Technical, administrative, and program support is provided for the NRC-DOE Pilot Program for external regulation. This effort is expected to expand significantly during the next fiscal year.

### **PSO: Security Management Control System (Infrastructure)**

Provides automated access control system configuration, system changes and upgrades, and operation of 120 badge readers. Procures and maintains system equipment.

### **FY 1999 Budget Reduction - Reallocation - Condition Assessment Surveys (ESHQ&I)**

This project provides for activities associated with the ORNL Condition Assessment Survey Program. Tasks include conducting inspections of facilities and infrastructure; identifying physical deficiencies; and documenting, analyzing and publishing condition findings.

### **CAS Activity (ESHQ&I)**

This project provides for activities associated with the ORNL Condition Assessment Survey

Program. Tasks include conducting inspections of facilities and infrastructure; identifying physical deficiencies; and documenting, analyzing and publishing condition findings.

## 7.2 FY 1999 ESHQ&I INDIRECT BUDGET SUMMARY

Planned ESHQ&I indirect expenditures (Laboratory Overhead) for FY 1999 are as follows:

ESHQ&I Indirect (Laboratory Overhead)	From the March 1998 FY 2000 ESHQ&I Budget Formulation Submission	Reflects Current ORNL Overhead Budget Planning Figures
	FY 1999 Planned Indirect Target (\$ in 000s)	FY 1999 Revised (\$ in 000s)
Office of Environmental Protection  CA - Protection of Air Quality CW - Protection of Water Quality HW - Solid and Hazardous Waste (Oversight Only) CS - Control of Toxic Substances MR - Environmental Management, Oversight, and Reporting PP - Pollution Prevention Oversight	4,781	5,172
Health Division  MS - Occupational Medical Services	2,685	2,471
Office of Laboratory Protection  EP - Emergency Preparedness FP - Fire Protection Engineering	5,786 (Reflects entire OLP budget)	1,368 (Reflects only EP and FP functions)
Office of Safety and Health Protection and Office of Nuclear Safety  IS - Industrial Safety IH - Industrial Hygiene NS - Nuclear Safety TS - Transportation Safety MO - Management and Oversight	5,775	5,183
Office of Quality Services  MR - Environmental Management, Oversight, and Reporting MO - Safety Management and Oversight	1,992	1,784
Office of Radiation Protection  RP - Radiation Protection	4,227	3,805
Sanitary Industrial Waste	608	560

ESHQ&I Indirect (Laboratory Overhead)	From the March 1998 FY 2000 ESHQ&I Budget Formulation Submission	Reflects Current ORNL Overhead Budget Planning Figures
	FY 1999 Planned Indirect Target (\$ in 000s)	FY 1999 Revised (\$ in 000s)
Other Overhead <sup>1</sup> - OSHA Compliance Machine Guarding - OSHA Compliance, RAC 3 Nonelectrical - OSHA Compliance, RAC 3 Electrical - Lead Shop Upgrade - General ESHQ&I		235
Capital Asset Management/Low Value Equipment	Not Identified	780
Plant and Equipment	15,097	14,662
ORNL Engineering	Not Identified	300
<b>Total Planned FY 1999 Indirect</b>	<b>40,951<sup>2</sup></b>	<b>36,320<sup>3</sup></b>

Not all indirect (overhead) funding allocations are included in the above table. Some organizations receive Laboratory overhead funds which are not wholly dedicated to ESHQ&I activities; however, the activities may have a specific supporting role to ESHQ&I (e.g., transportation activities, the Tennessee Oversight Agreement, ESHQ&I Management Planning).

<sup>1</sup>These overhead funds were authorized for allocation to activities previously funded through KG02. No indirect funded ADSs exist for these projects, although the scope of work was previously included in the KG02 direct funded ADSs, which are currently unfunded.

<sup>2</sup>FY 1999 target indirect ADSs are listed in Appendix B, [Table B.2](#). FY 1999 unfunded indirect ADSs are listed in Appendix B, [Table B.3](#).

<sup>3</sup>Revision to FY 1999 target indirect ADSs following the FY 1999 budget review. The FY 2001 ESHQ&I Budget Formulation Plan will reflect the revised overhead budget.

### 7.3 FY 1999 ESHQ&I DIRECT BUDGET SUMMARY

The following is a listing of planned FY 1999 direct costs (Appendix B, [Table B.4](#)) and revised funding targets following reconciliation of FWPs and ADSs.

Program	From the March 1998 FY 2000 ESHQ&I Budget Formulation Submission		FY 1999 Planned Cost As Reported in the Following Tables (\$ in 000s)	
	FY 1999 Planned Direct Budget (\$ in 000s)			
DA Activities <sup>1</sup> (Appendix B, <a href="#">Table B.4.1</a> )	6,291		6,291	
DI Activities <sup>2</sup> (Appendix B, <a href="#">Table B.4.2</a> )	12,847		12,847	
HFIR Operating Cost <sup>3</sup> (Appendix B, <a href="#">Table B.4.3</a> )	12,196		12,196	
KG Program Cost <sup>4</sup>	ESHQ&I <sup>5</sup>	6,808	Planned ESHQ&I <sup>7</sup>	8,672
	I (only) <sup>6</sup>	0	Planned I (only)	0
KC Program Cost <sup>8</sup>	ESHQ&I <sup>9</sup>	5,131	Planned ESHQ&I <sup>11</sup>	5,128
	I (only) <sup>10</sup>	2,765	Planned I (only) <sup>12</sup>	6,333
	<b>Total</b>	<b>46,038<sup>13</sup></b>	<b>Total</b>	<b>51,467</b>

<sup>1</sup>From the direct target ADSs in the FY 2000 Budget Formulation Submission, \$6,291K was designated spending by R&D divisions and programs from their division programmatic funds in support of ES&H needs. These activities included support for internal division personnel with dedicated ES&H roles (e.g., division safety officer) and other expense activities such as the correction of safety shower and eyewash station deficiencies. In addition, direct target funds reported were from expected funding to support projects and activities with an identifiable percentage for ES&H support as well as infrastructure support. Direct unfunded ADSs will be identified in the FY 2001 Budget Formulation Submission. Unfunded items are continually being reviewed to determine if funding allocations need to be adjusted to allow for completion of these activities.

<sup>2</sup>From the direct target ADS C97D0148 in the FY 2000 Budget Formulation Submission, \$12,847K was designated as planned distributed cost incurred by the Office of Radiation Protection for services procured by other ORNL divisions/offices/programs.

<sup>3</sup>HFIR operating cost is the total operating cost of \$12,196K on ADS E93D0021, "High Flux Isotope Reactor Operation." This funding recognizes some costs for ES&H-related activities which would be funded through the Basic Energy Sciences Program activities.

<sup>4</sup>Landlord responsibilities were previously reassigned from KG to KC.

<sup>5</sup>Appendix B, [Table B.4.4](#), planned FY 1999 KG ESHQ&I projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>6</sup>Appendix B, [Table B.4.5](#), planned FY 1999 KG infrastructure (only) projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>7</sup>Revised FY 1999 planned KG Program cost is for ESHQ&I expense and capital funding requirements associated with Landlord activities. (These figures are in the process of being updated for the FY 2001 Budget Formulation Submission to be completed March 1999.)

Activity	Type	Budget (\$ in 000s)	Carryover (\$ in 000s)	Planned 1999 Cost (\$ in 000s)
UST Compliance	OE	0	25	25
OSHA Compliance, RAC 3 Electrical	OE	0	75	75
<b>Total</b>	<b>OE</b>	<b>0</b>	<b>100</b>	<b>100</b>
N/A	GPE	0	0	0
<b>Total</b>	<b>GPE</b>	<b>0</b>	<b>0</b>	<b>0</b>
West End Steam Lines	GPP	37	240	277
<b>Total</b>	<b>GPP</b>	<b>37</b>	<b>240</b>	<b>277</b>
Steam Plant Boiler Addition	LI	1,900	2,695	4,295
Replace Deteriorated Roofing	LI	4,908	2,358	4,000
<b>Total</b>	<b>LI</b>	<b>6,808</b>	<b>5,053</b>	<b>8,295</b>
<b>Grand Total</b>		<b>6,845</b>	<b>5,393</b>	<b>8,672</b>

<sup>8</sup>ORNL Landlord – DOE Office of Science/Basic Energy Sciences (KC).

<sup>9</sup>Appendix B, [Table B.4.6](#), Planned FY 1999 KC ESHQ&I Projects from the FY 2000 ESHQ&I Budget Formulation Submission.

<sup>10</sup>Appendix B, [Table B.4.7](#), Planned FY 1999 KC Infrastructure (Only) Projects from the FY 2000 Budget Formulation Submission.

<sup>11</sup>Revised FY 1999 planned KC Program cost is for ESHQ&I expense and capital funding requirements associated with Landlord activities. (These figures are in the process of being updated for the FY 2001 Budget Formulation Submission to be completed March 1999.)

Activity	Type	Budget (\$ in 000s)	Carryover (\$ in 000s)	Planned 1999 Cost (\$ in 000s)
N/A	OE	0	0	0
<b>Total</b>	<b>OE</b>	<b>0</b>	<b>0</b>	<b>0</b>
Fleet Vehicle Replacement	GPE	300	224	480
Boot Shop Spray Booth	GPE	0	54	54
Uninterruptible Power System for LERC	GPE	40	0	40
Emergency Response Vehicle	GPE	0	115	115

Ambulance	GPE	0	70	70
Safety Valve Test Stand	GPE	0	20	20
HFIR Primary Transformers	GPE	0	158	87
Particulate Counter Filter Test	GPE	0	47	47
Trash Truck, Compactor	GPE	0	170	170
CFC Chiller Replacement, Building 3025	GPE	550	94	644
CFC Chiller Replacement, Building 7900	GPE	0	593	593
CFC Chiller Replacement, Building 1505	GPE	450	150	600
CFC HVAC Unit Replacement, Site Wide	GPE	0	150	150
Dechlorinator System	GPE	0	33	33
69V and Bucket Truck	GPE	0	160	160
Electronic Heat Sealer	GPE	0	36	36
<b>Total</b>	<b>GPE</b>	<b>1,340</b>	<b>2,074</b>	<b>3,299</b>
3000 Scfm Air Compressor	GPP	0	1,194	1,194
Fire Protection Upgrades	GPP	490	0	440
Upgrade Condensate Return	GPP	0	167	167
West End Steam Upgrade	GPP	0	28	28
<b>Total</b>	<b>GPP</b>	<b>490</b>	<b>1,389</b>	<b>1,829</b>
N/A	LI	0	0	0
<b>Total</b>	<b>LI</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>		<b>1,830</b>	<b>3,463</b>	<b>5,128</b>

<sup>12</sup>Revised FY 1999 planned KC Program cost is for Infrastructure (only) expense and capital funding requirements associated with Landlord activities. (These figures are in the process of being updated for the FY 2001 Budget Formulation Submission to be completed March 1999.)

Activity	Type	Budget (\$ in 000s)	Carryover (\$ in 000s)	Planned 1999 Cost (\$ in 000s)
N/A	OE	0	0	0
<b>Total</b>	<b>OE</b>	<b>0</b>	<b>0</b>	<b>0</b>
Condenser Pumps	GPE	0	31	31
Distilled Water Maker	GPE	0	33	33
Ion Pumps	GPE	0	64	64

Data Processors/Storage	GPE	0	110	110
Compaq Server	GPE	0	46	46
Computing System for SAP	GPE	800	28	800
Secure Network Remote Access Firewall	GPE	93	0	93
Lab Infrastructure Management System	GPE	50	0	50
Enterprise GIGA Bit Ethernet Backbone Switches	GPE	55	0	55
Network Video/Audio Broadcast System	GPE	55	0	55
Replace Boiler Economizers	GPE	570	0	570
LDRD Equipment	GPE	260	0	260
Mail Mobile Replacement	GPE	35	0	35
<b>Total</b>	<b>GPE</b>	<b>1,918</b>	<b>312</b>	<b>2,202</b>
Neutron Sciences Support Building	GPP	0	1,665	1,665
REDC Cooling Tower	GPP	0	175	175
5505 Motor Control Center	GPP	0	10	6
5-Teraflops Computer Facility	GPP	2,250	0	930
Environmental and Life Sciences	GPP	1,550	194	1,355
<b>Total</b>	<b>GPP</b>	<b>3,800</b>	<b>2,044</b>	<b>4,131</b>
N/A	LI	0	0	0
<b>Total</b>	<b>LI</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Grand Total</b>		<b>5,718</b>	<b>2,356</b>	<b>6,333</b>

<sup>13</sup>Appendix B, [Table B.4](#), Total Planned FY 1999 ESHQ&I from the FY 2000 ESHQ&I Budget Formulation Submission.

#### **7.4 FY 1999 PLANNED ESHQ&I ABATEMENT ACTIVITIES**

**NOTE: This section contains current planning for the FY 2001 ESHQ&I Budget Formulation Submission. ADS numbers and additional details will be submitted in the March 1999 planning document.**

##### **Steam Plant Upgrade, Boiler Addition (LI)**

This project will construct an additional 100,000-lb boiler capacity at the ORNL Steam Plant. The new boiler will be capable of burning either natural gas or fuel oil using modern boiler technology. Also included in the project will be those boiler auxiliaries (pumps, fans, tanks,

etc.) necessary to support plant operations.

### **Roofing Replacement (LI)**

The project described involves the replacement of deteriorated roofs on buildings and facilities throughout the ORNL complex. Most of the roofs at the complex have been in service for over 30 years; because of deterioration, they have developed many leaks. In many instances, these leaks have adversely affected equipment, records, and research as well as health and safety of personnel working with the facilities.

The scope of this project includes the replacement of built-up roofing, including removal and disposal of existing membrane and insulation, inspection and repair of damaged deck, and installation of new insulation and membrane with associated flashing and trim.

### **3000 Scfm Air Compressor (GPP)**

This project purchased and installed a new 3000 scfm, rotary screw turbine type, oil-less air compressor to replace aging units at the plant. The new unit provided the Steam Plant with the capability to produce sufficient quantities of oil-free compressed air to satisfy the current 2200+ scfm site-wide demand. Clean, oil-free compressed air is used throughout the Laboratory to control equipment, systems, and processes and is a critical utility in the operation and maintenance of the Laboratory.

### **Fire Protection Systems Upgrade (GPP)**

The following projects/tasks are in support of the ORNL fire protection systems:

1. Upgrade the 4500N Wing 5 alarm system and connect to the 4500N alarm system.
2. Replace aged and failure-prone automatic preaction sprinkler system deluge valves with highly reliable automatic wet-pipe sprinkler system alarm valves that protect portions of the High-Level Radiochemical Laboratory Building (4501), the Experimental Engineering Building (4505), and the High Voltage Accelerator Laboratory (5500).
3. Replace five aged and maintenance-intensive automatic dry-pipe sprinkler systems with more reliable/effective automatic wet-pipe sprinkler systems in the 45,000-sq-ft General Stores/Shipping and Receiving Complex (7001).
4. Upgrade various antiquated fire alarm system components in ORNL research and support facilities, including 1505, 1506, 2010, 4508, and 7910.

### **Upgrade Condensate Return (GPP)**

This project provides for the evaluation of the existing condensate return system to determine whether to repair or replace the various components of the system, purchase and install components needing replacement, and repair the repairable ones. The condensate return was installed as part of the east end steam distribution system upgrade. Because of problems with

the condensate after chemical treatment, the system was never placed in service, was not maintained properly, and therefore has deteriorated to the point of not being reliable. There are approximately 30 collection stations with 60 pumps which need to be reworked. Treating the condensate is required to eliminate contaminants picked up in the steam distribution system which may damage the boiler and boiler auxiliaries.

### **West End Steam Lines Completion (GPP)**

This project consists of those activities necessary to complete the West End Steam System Upgrade. Included in the work will be the completion of concrete trench duct, installation of steam piping, compressed air piping, condensate return piping, insulation of this piping, and final tie-ins to existing buildings. Design work has been completed and materials for completion of these tasks are on hand.

### **Neutron Sciences Support Building (GPP)**

This project provides an equipment support facility of approximately 5000 sq ft to be constructed adjacent to the existing beam room at the High Flux Isotope Reactor. The facility will facilitate the separation of user activities from reactor operations at HFIR, provide research access to HFIR for Basic Energy Sciences, Health and Environmental Research, and Energy Efficiency and Renewable Energy programs and provide critically needed space for equipment storage during routine beryllium reflector changeouts and other reactor maintenance.

### **REDC Cooling Tower (GPP)**

This project provides for the construction of a new 480-ton cooling tower in order to permit the removal of the heat load for the REDC, Buildings 7920 and 7930.

### **5505 Motor Control Center (GPP)**

This project provides for refurbishment of the Building 5505 Transuranium Research Laboratory motor control center.

### **Five-Teraflops Computer Facility (GPP)**

This project will provide space, utilities, and power for the installation of a 5-teraflops computer system in Building 4500N to support the Strategic Simulation Initiative.

### **Environmental and Life Sciences Laboratory (GPP)**

This project will construct a 64-ft-wide by 100-ft-long two-story laboratory building located in close proximity to two generic office buildings immediately west of Building 1000.

The new research laboratory facility will consist of eight large laboratories of approximately 1250 sq ft each. The laboratories will have HEPA ventilated hoods, sinks, and topical

counters. General laboratory equipment will be moved from Y-12 and other ORNL sites.

## **7.5 FY 1999 UNFUNDED COMPLIANCE ACTIVITIES**

**NOTE: This section contains current planning for the FY 2001 ESHQ&I Budget Formulation Submission. ADS numbers and additional details will be submitted in the March 1999 planning document.**

Based on risk prioritization scores, the following are the unfunded ADSs which were submitted for preliminary planning of FY 1999 ADSs in the FY 2000 Budget Formulation Submission, excluding SARUP planning which was abated during FY 1998. Each of the ADSs identified activities which have direct compliance impacts. Significant changes to the compliance ADSs are expected in the FY 2001 Budget Formulation Document, which will be submitted April 1999. Therefore, these ADSs may not remain as the top unfunded ADSs for FY 1999.

### **Chlorine Removal From Storm Drains**

Current NPDES permits require monitoring of each outfall for chlorine and where amounts above 1.2 grams per day are found, remediation is required. The source of chlorine is once through cooling of processes, water cooled condensers, and underground water leaks. Funds from this project would be used to identify sources and eliminate them from the storm drain system.

### **ORNL S&H Building Electrical System Upgrades**

ORNL facilities' Condition Assessment Survey identified legacy vulnerabilities from fire and electrical shock hazards principally due to aging facilities and installations which do not meet the National Electrical Code. Many of these were categorized as urgency repair code #1 - asset condition critical, urgency repair code #2 - asset condition serious, or urgency repair code #3 - asset condition degrades. Money is not available to address large electrical safety infrastructure issues under current funding programs. Therefore, a building electrical system upgrade proposal is logical and cost effective. It is essential that these needs be identified within the budgeting process. The primary areas requiring this enhanced support are: (1) wiring and panelboard replacement, (2) circuit identification and removal of abandoned services, (3) upgrade of wiring to meet the National Electrical Code, and (4) motor control center upgrades.

### **Asbestos Abatement, ORNL at Y-12**

Asbestos abatement includes removing asbestos from piping and equipment, as well as replacing asbestos ceiling panels, deteriorated asbestos ceiling plaster, etc. All these items increase the cost of maintenance if repairs are required. Some rooms/areas where asbestos lines or ceiling panels have fallen (steam/water leaks) are totally closed off where HVAC units and controls are located.

## **Remove Asbestos from Controlled Areas**

Asbestos controlled areas are areas where friable asbestos-containing insulation is deteriorated and presents a potential health hazard (employee exposure) to employees entering these areas. Personal protective equipment is required to enter these areas. Work includes the removal of friable asbestos-containing insulation via high-powered vacuum system (super sucker) and via insulation encapsulation. The targeted controlled areas are as follows: (1) Building 2000 attic, (2) Building 2001 attic, (3) Building 3550 attic, and (4) Building 2517 crawl space.

## **ORNL H&S - Radiological/Toxicological Sabotage**

[DOE Notice 5630.3A](#), "Protection of Departmental Facilities Against Radiological and Toxicological Sabotage," was made applicable to ORNL by inclusion of Oak Ridge Order 151.1, dated 9/30/96, in the baseline. The order requires contractors to perform graded assessments of the risk due to sabotage with the level of hazards present in their facilities. Significant milestones would be to identify and rank hazardous materials targets, perform vulnerability assessments of credible threat and target combinations, evaluate sabotage risk reduction options, and select and implement prevention and mitigation options.

## **Compliance with Revised NPDES Limits**

ORNL NPDES Permit renewal included effluent limits that may be met by physically combining existing NPDES outfalls X01 (Sewage Treatment Plant) and X02 (Coal Yard Runoff Treatment Facility) and possibly other outfalls. Combining outfalls may allow effluent constituent and receiving-stream impacts to be moderated such that permit limits would be in compliance. This activity would involve hard piping, excavation work, and installation of pumps and other related components. The result would be improved capability to comply with NPDES permit limits and reduced level of effort and cost for toxicity testing, environmental sampling, and laboratory analysis required under NPDES.

## **Cooling Tower Maintenance**

Cooling Towers 2026, 3525, 4511, and 6001 are critically degraded due to age and lack of adequate maintenance. GPP funding is being requested to replace 4511 and 6001 towers; however, until the towers are replaced, extensive maintenance is required to preserve their operability and assure the safety of personnel required to periodically clean the towers and maintain fans and gearboxes. (a) 4511 is currently unusable and cannot be placed in operation until underground crosstie valves (connecting its basin to 4510 tower) are replaced. The wooden structure is deteriorating at a rapid rate under dry conditions and becomes increasingly hazardous to maintain. The stagnant basin provides fertile conditions for legionella bacteria. (b) 6001 has undergone numerous structural repairs in the last two years and currently is in need of fan control upgrades along with system and basin cleaning to improve bacteria control and operating efficiency. (c) 3525 is operated for a potentially surplus facility, but is unsafe to access. Tower basin and piping leaks are also creating risk for unpermitted chlorine discharges to nearby storm drains. (d) 2026 requires a redesign of piping

to eliminate overflows to the roof drain during bypass operation. Overflows increase risks for NPDES permit violations and frequently shut down building cooling operations. Total Approximate Cost for Project 1: FY 1999 - \$200K; FY 2000 - \$208K

### **Supplemental Roof Preventive Maintenance and Emergency Repairs**

Currently, leaks in roofing are causing structural failures and unsafe working conditions for the general plant population and visitors. Additional funding would permit the reduction of roof repair backlog and would permit predictive and programmed maintenance of ORNL roofing.

### **Fire Systems Upgrade, ORNL at Y-12**

Older ORNL facilities at Y-12 have served various occupancies and research projects. Less reliable sprinkler systems are in place to protect selected portions of these facilities. Both preaction- and deluge- (open-head) type sprinkler systems, which are maintenance intensive and substantially less reliable, were utilized for earlier occupancies and are still in use. As research emphasis shifted and occupancies changed, these systems were not updated to more reliable and minimum maintenance wet-pipe systems. Other fire systems upgrades include removal of exhaust fans, installation of fire barriers and louvers in duct systems, replacement of fire doors, replacement of illuminated exit and emergency signs, installation of emergency lighting, and installation of fixed fire suppression equipment in some of the walk-in cold rooms.

Plans are in place to relocate ORNL at Y-12 facility operations to the ORNL site. As these plans take place, the risk conditions will change at the ORNL at Y-12 facilities.

### **ORNL Safety and Health - OSHA Regulatory Compliance**

ORNL's goal of identifying and correcting all serious OSHA noncompliances (RAC 1s and RAC 2s) and 100% of all previous other-than-serious noncompliances (RAC 3s) has resulted in compliance funding requirements far beyond that which current programs can fund. Funding is not available to address large OSHA noncompliance issues. This activity is proposed to upgrade ORNL facilities and programs to achieve compliance with OSHA standards. The primary areas requiring the enhanced support are (1) continued assessment of OSHA noncompliances to evaluate and select compliance alternatives and define and prioritize abatement plans and (2) corrective actions for noncompliances with emphasis on serious and medium-risk noncompliances. A past survey identified OSHA noncompliance issues. Since that time, continued inspections and recent surveys have specifically identified and quantified many noncompliances by subpart. Significant additional out-year expense and capital funding will be required to provide upgrades of ORNL facilities and programs to a level of worker health and safety equivalent to OSHA requirements. In addition, programs would be established to ensure the maintenance of this level of worker safety and health protection. Specific project descriptions and milestones are included in Sections 26 and 28 of ADS C97D0144.

## **ORNL Facility Asbestos Survey**

Approximately 60% of the facilities located at ORNL have been surveyed for the identification of asbestos. This program will provide funding to complete the asbestos survey for the remaining 40% of the buildings within the ORNL facility.

## **Electrical Upgrade, ORNL at Y-12**

Electrical upgrades include (1) replacing lighting center, (2) restoring 480V electrical systems, (3) replacing crane feed rails, (4) upgrading switchgear areas, and (5) intercom/radio system upgrades.

## **Nuclear Criticality Safety Program: O 420:1 Upgrade**

Section 4.3 of [DOE Order O 420.1](#) has been adopted as the principal NCS WSS requirement for LMER. While bringing needed flexibility in the application of ANS 8 NCS requirements and recommendations, O 420.1 does increase the number of NCS requirements that must be addressed by NCSEs and NCSAs. This proposal requests the additional funding, above that provided to overhead-funded LMER NCS Program, that is required to bring LMER into compliance with O 420.1. This includes completing the upgrade of NSRs to NCSAs/NCSEs per the approved implementation plan for 5480.24 (the predecessor to O 420.1 Section 4.3).

## **7.6 EXECUTION OF RESOURCES**

One common method will be initiated for tracking the execution of resources applied for ESHQ&I remediation activities and the change control process. ORNL has an integrated ESHQ&I management planning system. Along with this integration is a programming bridge to PMTS. Contractor managers are responsible for entering overhead funding requests and FWP requests for direct funding into PMTS. PMTS provides data electronically to complete the corresponding ADS. Contractor managers verify information and are responsible for tracking and updating information. The ESHQ&I Program Administrator monitors PMTS to ensure updated ADS information. The administrator verifies changes with the contractor manager prior to changing the database. Finance and Budget Division personnel are the only individuals who can give authorization for PMTS tasks prior to submitting information to ORNL management for resource allocations of overhead funds or for issuing an FWP to DOE. Planning information for GPPs, GPEs, and LIs is entered directly into the ESHQ&I Management Plan Information System database through the WWW. The ORNL Capital Assets Manager verifies all submitted GPE, GPP, and LI ADSs.

## **7.7 CHANGE CONTROL**

The identified projects and planned costs in Section 7 reflect ORNL's commitment to meeting the requirements of DOE-LMER Management Contract I.71 [DEAR 970.5204-2 Paragraph C](#) at this time. Changing circumstances and requirements over the course of FY 1999 may

necessitate revision of this plan. The Laboratory overhead, GPP, and GPE budgets and projects are approved by the DOE ORNL Site Manager.

Significant changes to these budgets will be submitted to the DOE ORNL Site Manager for concurrence. The ESHQ&I Management Plan Information System will be revised to reflect changes and updated on the World Wide Web as they occur.



APPENDIX A

ORNL One-Line ADS Tables for FY 1998

NOTES REGARDING ALL TABLES IN [APPENDIX A](#)

Significant changes have occurred in the FY 1998 actual budget amounts since transmittal of the FY 2000 ESHQ&I Budget Formulation Submission in March 1998. **Sections 6.2 and 6.3** of this submittal denote actual spending for FY 1998.

APPENDIX B

ORNL One-Line ADS Tables for FY 1999

NOTE REGARDING ALL TABLES IN [APPENDIX B](#)

Significant changes have occurred in the FY 1999 actual budget amounts since transmittal of the FY 2000 ESHQ&I Budget Formulation Submission in March 1998.

Planned FY 1999 ESHQ&I budget data in [Section 7](#) and the tables in [Appendix B](#) contain data that will be updated for the FY 2001 Budget Formulation Submission in March 1999.