ORNL/TM-2000/319

FY 2001 Environment, Safety, Health, Quality, and Infrastructure Management Plan and Execution Plan for the Oak Ridge National Laboratory

November 2000

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FY 2001
ENVIRONMENT, SAFETY, HEALTH, QUALITY, AND INFRASTRUCTURE MANAGEMENT PLAN AND EXECUTION PLAN

FOR THE

OAK RIDGE NATIONAL LABORATORY

November 2000

Prepared by
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Oak Ridge, Tennessee 37831-6302
managed by
UT-Battelle, LLC
for the
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ACRONYMS AND ABBREVIATIONS

ADS	activity data sheet
B&R	Budget and Reporting
DOE	Department of Energy
ES&H	environment, safety, and health
ESH&Q	environment, safety, health, and quality
ESHQ&I	environment, safety, health, quality, and infrastructure
FED	Fusion Energy Division
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
HPRR	Health Physics Research Reactor
HVAC	heating, ventilating, and air-conditioning
ISMS	Integrated Safety Management System
LCAM	Life Cycle Asset Management
LDRD	Laboratory Director's Research and Development (ORNL)
LI	line item
NSSB	Neutron Science Support Building
OCB	oil circuit breaker
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations Office (DOE)
OSHA	Occupational Safety and Health Administration
PMTS	Program Management Tracking System
R&D	research and development
RAC	Risk Assessment Code
RPM	Risk-Based Priority Model
S&H	safety and health
SAMS	Space Allocation Management System
UL	Underwriters Laboratory
UNICALL	Unified Field Budget Call
URL	Uniform Resource Locator
WSSs	Work Smart Standards
WWW	World Wide Web

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ENVIRONMENT, SAFETY, AND HEALTH GOAL STATEMENT

Oak Ridge National Laboratory (ORNL) is committed to excellence in all aspects of environment, safety, health, quality, and operations. This commitment is reflected in the UT-Battelle, LLC Laboratory Agenda that defines our balanced management approach called "Simultaneous Excellence," which is:

- excellence in science and innovative solutions to complex problems;
- excellence as a leader in efficient operation and protection of workers, the public, and the environment; and
- excellence as a trusted and valued community/regional asset.

The management contract between the Department of Energy (DOE) and UT-Battelle establishes the fundamental environment, safety, health, and quality (ESH&Q) expectations of DOE. The Laboratory has established critical outcomes, objectives, and performance indicators to help achieve the goals defined in the Laboratory Agenda.

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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 UT-Battelle, LLC. 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 a management system 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 to regulations 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 and Execution Plan* describes the approach used at ORNL to ensure the health and safety of employees and the public, to protect the environment, and to develop and implement a comprehensive integrated planning process consistent with DOE 430.1A, "Life Cycle Asset Management (LCAM)." 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*, and its issuance satisfies the requirement in the DOE–UT-Battelle, LLC Management Contract, I.101 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.

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. UT-Battelle will deploy management systems as its approach to business management. ISMS will ensure full integration of environment, safety, health, and quality (ESH&Q) at all levels within the organization. Development of management systems such as the Standards-Based Management System; Roles, Responsibilities, Authorities, and Accountabilities; Facility Use Agreements and the Facility Operations Model; and the Facilities Revitalization will institutionalize a method of conducting business that is integral to continuous improvement in ISM and the overall ESHQ&I program.

1. INTRODUCTION

Oak Ridge National Laboratory (ORNL) is managed by UT-Battelle, LLC for the Department of Energy (DOE) under Contract DE-AC05-00OR22725. As part of the Management Contract, ORNL has agreed to submit to DOE an Environment, Safety, Health, Quality, and Infrastructure (ESHQ&I) Management Plan and Execution Plan. Issuance of this management plan satisfies the ORNL commitment stipulated in the management contract.

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 applicable regulatory requirements.

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 Facility and Operations Strategic Planning organization, is to develop and implement a comprehensive/integrated planning process consistent with DOE 430.1A, “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 4100 staff members and annually hosts about 3000 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 successfully implemented the Integrated Safety Management System (ISMS) required by Contract (DEAR Clause 970.5204-2)

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 regulatory requirements 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 and off-site activities.

Specific ORNL ISMS Plans are available on the ORNL Internal Network at
URL (http://svr1.cmo.ornl.gov/isms/index.htm)

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 (ADSs) and funding documents which describe ESH&Q activities, schedules, and funded or requested resources.

4. 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.

Listed below (and in Table 4.1) 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.

4.1 COMPREHENSIVE INTEGRATED PLANNING PROCESS FOR THE OAK RIDGE OPERATIONS SITES

The *ORR Comprehensive Integrated Plan* is intended to assist U.S. Department of Energy (DOE) and contractor personnel in implementing a comprehensive/integrated planning process consistent with DOE Order 430.1A, "Life Cycle Asset Management." 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. (Available on the World Wide Web at URL http://www.ornl.gov/ ~dmsi/cip/)

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.

4.2 ESHQ&I MANAGEMENT PLAN INFORMATION SYSTEM

The ESHQ&I Management Plan Information System was developed to serve as a management decision-making support tool. It accepts and stores data associated with ESHQ&I ADSs either from the ORNL Program Management Tracking System or as direct

Table 4.1. List of organizational contacts for documents/databases

Document/Web address, if applicable	Organizational Contact	Bldg/MS	Phone	UID*
Comprehensive Integrated Planning Process for the Oak Ridge Operations Sites (September 1999) (http://www.ornl.gov/~dmsi/cip/)	P. D. (Pat) Parr UT-Battelle	Bldg. 1505/MS 6038	576-8123	par
ESHQ&I Management Plan Information System (http://svr1.cmo.ornl.gov/eshwc/wc.dll?eshweb~TopPage)	P. E. (Patty) Cox UT-Battelle	Bldg. 1000/MS 6302	576-4183	pcx
Environmental Management Program Baselines (http://www.bechteljacobs.org/busmgt/baseline/Baselines.html)	D. A. (David) Starling Bechtel Jacobs	Bldg. K-1225/MS 7293	576-6501	sa9
ESHQ&I Budget Formulation Submission for ORNL (http://www.ornl.gov/camext/CAMIndex.htm)	P. E. (Patty) Cox UT-Battelle	Bldg. 1000/MS 6302	576-4183	pcx
ESHQ&I Management Plan for ORNL (http://www.ornl.gov/camext/CAMIndex.htm)	R. J. (Rick) Forbes UT-Battelle	Bldg. 1000/MS 6302	574-0404	rfs
ORNL Facility Index (http://www-internal.ornl.gov/~q9t/facility/)	D. (Dave) Kennard UT-Battelle	Bldg. 1000/MS 6302	574-9282	k33
ORNL Institutional Plan (http://www.ornl.gov/inst_plan/IP_Outline.html)	M. B. (Bonnie) Nestor UT-Battelle	Bldg. 4500N/MS 6251	574-4173	mnj
ORNL Land and Facilities Plan (http://www.ornl.gov/~dmsi/landUse/)	A. R. (Tony) Medley, UT-Battelle P. D. (Pat) Parr, UT-Battelle	Bldg. 1000/MS 6302 Bldg. 1505/MS 6038	574-9156 576-8123	arm par
ORNL Laboratory Agenda (http://www-internal.ornl.gov/opsp/osp_labagenda.htm)	M. B. (Bonnie) Nestor UT-Battelle	Bldg. 4500N/MS 6251	574-4173	mnj
Oak Ridge Reservation Annual Site Environmental Report (http://www.ornl.gov/Env_Rpt/aser99/aser.htm)	M. G. (Mike) White UT-Battelle	Bldg. 4500S/MS 6131	241-5378	m9w
Oak Ridge Reservation Management Plan (http://www-internal.ornl.gov/orrmp/)	P. D. (Pat) Parr UT-Battelle	Bldg. 1505/MS 6038	576-8123	par
P&E Division Maintenance Work Plan: FY 1999-FY 2004, ORNL/CF-98/37 (not yet available on World Wide Web)	W. D. (Danny) Davis UT-Battelle	Bldg. 2518/MS 6328	574-7921	wiv
ORNL Strategic Facilities Plan (http://www.ornl.gov/~dmsi/strategic_plan/index.html)	T. E. (Tim) Myrick UT-Battelle	Bldg. 1000/MS 6336	241-4597	uyt

*Users external to ORNL should add the extension @ornl.gov to all UIDs (e.g., par@ornl.gov).

input information into an Activity Data Sheet (ADS). The system accepts the risk matrix scores assigned to each ADS by the ORNL Risk Ranking Board and screens for entry of all pertinent data associated with an ADS, and support data validation where possible and appropriate. The system provides flexibility in viewing and editing data with powerful features for querying, indexing, and reporting data. (Available on the World Wide Web at URL http://svr1.cmo.ornl.gov/eshwc/wc.dll?eshweb~TopPage)

4.3 ENVIRONMENTAL MANAGEMENT PROGRAM BASELINES

The Environmental Management Baseline is a fiscal year baseline used by the Bechtel Jacobs Company LLC to plan for completing the cleanup of EM work in the scope of the program. The objective of baseline is to contract for safely accelerating cleanup and maximizing cost effectiveness through the use of competitive subcontracting. (Available on the World Wide Web at URL http://www.bechteljacobs.org/busmgt/ baseline/Baselines.html)

4.4 ESHQ&I BUDGET FORMULATION SUBMISSION FOR ORNL

ORNL's annual Environment, Safety, Health, Quality, and Infrastructure (ESHQ&I) Budget Formulation Plan is developed in accordance with the annual DOE Guidance Document for the ESHQ&I Planning Process. ESHQ&I activities are identified 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 the environment, safety, health, and quality. This plan is 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. (Available at URL http://www.ornl.gov/camext/CAMIndex.htm)

4.5 ESHQ&I MANAGEMENT PLAN AND EXECUTION PLAN FOR ORNL

The annual *ORNL Environment, Safety, Health, Quality, and Infrastructure (ESHQ&I) Management Plan and Execution Plan* was developed to describe the approach used at ORNL to ensure the health and safety of employees and the public, protect the environment, comply with contractual requirements set forth in the Work Smart Standards (WSSs) agreed upon by the contractor and DOE, and manage physical assets and infrastructure from acquisition through operations and disposition. 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 is prepared annually in accordance with guidelines in the annual *DOE Guidance Manual for the ES&H Planning Process*, and its issuance satisfies the requirement in the DOE/UT-Battelle Management Contract, I.101 970.5204-2 (c).

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ORNL has an integrated ESHQ&I database system that enables ORNL to

- meet major ESHQ&I commitments,
- address key issues,
- manage unfunded ESHQ&I risks,
- systematically provide information for the reduction of ESHQ&I risks, and
- establish and maintain stakeholder confidence.

(Available at URL http://www.ornl.gov/camext/CAMIndex.htm)

4.6 ORNL FACILITY INDEX

The ORNL Facility Index is an internally available 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. (Available at http://www-internal.ornl.gov/~q9t/facility/)

4.7 ORNL INSTITUTIONAL PLAN

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. (Available on the World Wide Web at URL http://www.ornl.gov/inst_plan/IP_Outline.html)

4.8 ORNL LABORATORY AGENDA

UT-Battelle's plan for ORNL is guided by a commitment to achieving simultaneous excellence in the areas of science and technology; laboratory operations and environment, safety, and health (ES&H); and community service. The UT-Battelle Leadership Team has developed a Laboratory Agenda to provide a structured framework for the long-term initiatives, critical outcomes, and near-term actions through which it will deliver on this commitment. The Laboratory Agenda is focused on the most significant activities that UT-Battelle must accomplish to deliver on its vision of simultaneous excellence. It includes clear statements of the primary results that will be delivered to DOE over the next few years. (Available at URL http://www-internal.ornl.gov/opsp/osp_labagenda.htm)

4.9 OAK RIDGE RESERVATION ANNUAL SITE ENVIRONMENTAL REPORT

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 DOE Order 5400.1, "General Environmental Protection Program." The results summarized in this annual report are based on the data collected prior to and through the reported year. (Available at URL http://www.ornl.gov/Env_Rpt/ aser99/aser.htm)

4.10 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. (Available on the World Wide Web at URL http://www- internal.ornl.gov/orrmp/)

4.11 P&E DIVISION MAINTENANCE WORK PLAN

The *Plant and Equipment (P&E) Division Maintenance Work Plan: FY 1999–FY 2004*, ORNL/CF-98/37, supports the P&E Division's Long-Range Strategic Plan that, in turn, supports the *ORNL Institutional Plan* and the *ORNL ESHQ&I Management Plan*. The Maintenance Work Plan provides additional information required by DOE Order 430.1, "Life Cycle Asset Management." This fulfills a two-part requirement to discuss maintenance requirements during the period FY 1998 - FY 2000 to correspond with current budget preparations or those years and to detail a projection of maintenance requirements during the period FY 2001–03. (Not yet available on the World Wide Web)

4.12 ORNL STRATEGIC FACILITIES PLAN

The *ORNL Strategic Facilities Plan* provides the following: a brief overview of the Facilities Revitalization Project (FRP) team established to accomplish the revitalization mission; a review of the current inventory and condition of existing ORNL facilities, as well as the programmatic mission drivers that are the basis for future facilities needs; and an outline of the specific facilities consolidation, upgrade, and new construction needs that leads to the overall Master Plan for ORNL development. The preliminary cost and schedule estimates for completing that Master Plan are then provided, followed by a short discussion of the conclusions and recommendations of the strategic planning exercise. (Available at URL http://www.ornl.gov/~dmsi/strategic_plan/index.html)

5. RESOURCE PLANNING, PRIORITIZATION, AND ALLOCATION

The ORNL ESHQ&I management planning process is supportive of DOE's annual ESHQ&I budget formulation planning process. The budget is prepared consistent with guidance provided in the DOE *ES&H Management Plan Guidance Manual* 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).

5.1 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.

5.2 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 and ensures 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.

5.3 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.

5.4 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. 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.

5.5 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.

6. FY 2000 ESHQ&I PERFORMANCE SUMMARY

This section provides a summary of ORNL ESHQ&I performance for the prior budget year (FY 2000).

6.1 SUMMARY OF ESHQ&I INDIRECT ACTUAL COSTS FOR THE PRIOR YEAR (FY 2000)

NOTE: Planned FY 2000 ESHQ&I budget data in Section 6 contains the original data in the FY 2002 Budget Formulation Plan submitted in March 2000. Sections 6.2 and 6.3 explain significant differences between planned and actual FY 2000 costs and funding.

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. Indirect unfunded activities are unfunded supplemental and new activities which would improve compliance and infrastructure systems.

Actual ESHQ&I indirect expenditures (Laboratory Overhead) for FY 2000 were as indicated in Table 6.1.

Table 6.1 Actual FY 2000 ESHQ&I Indirect Expenditures (Laboratory Overhead)		
Activity	**ESH&Q (ONLY) ($ in 000s)**	**ESHQ&I (BOTH) ($ in 000s)**
Office of Environmental Protection	5,173	
Health	2,727	
Lab Protection	14,118	
Office of Safety and Health Protection	3,958	
Office of Nuclear Safety	1,231	
Office of Quality Services	2,432	
Office of Radiation Protection	4,170	
Sanitary Industrial Waste	674	
OSHA/ES&H Corrective Actions	201	
ORNL Engineering		13
Low Value Equipment		379
Plant & Equipment		561
Total	**$34,684**	**$953**

Actual ESHQ&I indirect expenditures (from Space Charge funds) for FY 2000 were as indicated in Table 6.2.

Table 6.2 Actual FY 2000 ESHQ&I Indirect Expenditures (from Space Charge Funds)		
Activity	**ESH&Q (ONLY) ($ in 000s)**	**ESHQ&I (BOTH) ($ in 000s)**
Lab Protection (for Fire Protection Engineering)	436	
Capital Assets Management		804
ORNL Engineering		280
Plant & Equipment		16,778
Special Requirements		2,716
Total	**$436**	**$20,578**

6.2 SUMMARY OF ESHQ&I DIRECT ACTUAL COSTS FOR PRIOR YEAR (FY 2000)

Landlord funding (direct costs) for ORNL is through the DOE-SC Office of Basic Energy Sciences (BES). BES supports a broad spectrum of research in the physical sciences at ORNL through its subprograms in materials sciences, chemical sciences, and engineering and geosciences. The following tables are derived from the planning base systems and documentation for Landlord LIs, GPPs, and GPEs. Planned costs are from the March 2000 FY 2002 ESHQ&I Budget Formulation Submission. These costs are compared to actual direct costs for FY 2000. Table 6.3 contains a listing of planned and actual direct costs for FY 2000 by program elements. Table 6.4 contains a listing of individual LIs, GPPs, and GPE with planned and actual costs for FY 2000.

6.3 FY 2000 ESHQ&I ABATEMENT PERFORMANCE

Several key abatement issues were addressed through the ORNL FY 2002 ESHQ&I Budget Formulation Submission reported in March 2000. ADSs are discussed in this submission to address these key issues.

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 in 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 2001 Budget Formulation Plan were driven by ES&H needs.

A key objective of the ORNL Landlord Program is to achieve timely and efficient utilization of available capital funding. The LCAM Performance Measure PM 3.1 specifies that 50% of available capital funding should be costed to achieve satisfactory performance. ORNL’s objective is to cost at least 65% of available capital funding. Table 6.5 reflects the costing level achieved in FY 2000.

Table 6.3. Planned and Actual Direct Costs for FY 2000 by Program Elements

Program	From the March 2000 FY 2002 ESHQ&I Budget Formulation Submission FY 2000 Planned Direct Budget	Carryover/New FY 2000 Cost	FY 2000 Actual Cost From Table 6.4 ($ in 000s)	Explanations of Categories
DA Activities	6,290		6,290	DA Activities - From the direct target ADSs, the R&D divisions/programs estimated that $6,290K 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 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.
DI Activities	14,275		14,275	DI Activities - From the direct target ADSs, $14,275K was designated cost by ES&H organizations that was distributed to other ORNL divisions/offices/programs for personnel and other resources. These funds were not provided through the Laboratory overhead budget.
HFIR Operating Cost	12,196		12,196	HFIR Operating Costs - HFIR ES&H operating cost is $12,196K as identified on ADS E93D0021, "High Flux Isotope Reactor Operation." This funding recognizes costs for ES&H-related activities that would be funded through the Basic Sciences Program activities.
KG Program Cost (LI)	1,101		2,961	KG Line Item Cost - Three LI projects accrued costs during FY 2000. The Electrical Systems Upgrade is an ongoing project with design activities being completed. The Roofing Replacement LI has one job activity remaining for approximately 15,000 square feet.
KC Program Cost ESHQ&I (GPP)	2,150		460	KC GPP ESHQ&I Cost - Two GPP projects accrued costs for the water reservoir replacement and the fire protection upgrades. Both projects are continuing.
KC Program Cost ESHQ&I (GPE)	2,078	553	1,231	KC GPE ESHQ&I Cost - GPEs having significant environment and/or safety issues. The steam plant projects were delayed for outyear funding.
KC Program Cost Infrastructure Only (GPP)	2,300	1,475	4,486	KC GPP Infrastructure Only Cost - The upgrades for the condensate return system were completed with carryover funding. The remaining projects are continuing or pending action.
KC Program Cost Infrastructure Only (GPE)	1,109	750	930	KC GPE Infrastructure Only Cost - GPEs that do not have significant environment and/or safety issues.
Total KG/KC Program Elements	41,499	2,778	42,829	

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Table 6.4. FY 2000 Direct Program Planned vs Actual Cost for ESHQ&I Landlord Activities

($ in 000s)

Activity	Type	Planned FY Cost	New/Carryover FY Cost	Actual FY Cost	Status	Comments and/or Explanations of Significant Variances
KG Program ESHQ&I Landlord Line Item Program						
Electrical Systems Upgrade	LI	357		233	Ongoing	The design for WBS 1.1.3, Upgrade Building Source Entrance, is approximately 75% complete, and WBS 1.1.4, 4509 Substation Improvements, is approximately 85% complete. Preparation of the design-build specification for WBS 1.1.1, Rebuild Overhead Feeders 244 and 264, has been initiated with Hayes, Seay, Mattern, & Mattern and is approximately 50% complete.
Roofing Replacement, ORNL	LI	744		2,265	Ongoing	Approximately 1,100,000 square feet of deteriorated built-up, shingle and sheet metal roofing has been removed from ORNL buildings and replaced with new roofing. Buildings were reroofed on a priority basis. The roofing activity for this line item will be completed in FY 2001 with approximately 15,000 square feet remaining.
Steam Plant Boiler Upgrades	LI	0		463	Pending	All work is complete and the boiler is operational. Awaiting "final release" from Indek to issue the final payment (retainage). The project completion report will be issued approximately 30 days after the contract is closed out.
TOTAL KG Program	LI	1,101		2,961		
KC Program ESHQ&I Landlord GPP Program						
Replace #1 Reservoir (1.5 Million Gallon)	GPP	2,000		232	Ongoing	Design kick-off meeting was held on July 27, 2000. Ninety percent design review documentation received prior to FY 2001. Project to continue for design completion and construction during FY 2001.
Fire Protection Systems Upgrade	GPP	150		228	Ongoing	The base ESO #K6643 was approved. The ESO was revised to $650,000 and the preliminary proposal was approved. The ESO was revised to include CAD translation of drawings.
TOTAL KC GPP Program ESHQ&I Landlord	GPP	2,150		460		
KC Program ESHQ&I Landlord GPE Program						
Engineering Equipment Replacement	GPE	323		315	Complete	Digital drawing and coping equipment upgraded for engineering reproduction center.
Replace Steam Plant Economizer	GPE	100	440	3	On hold	On hold to determine long-term revitalization plans for ORNL.
Backup Diesel Generator for #6 Boiler	GPE	250		0	On hold	Deferred for possible outyear funding.
CFC Phaseout - Clean Air Act Compliance	GPE	110		33	Ongoing	Chiller replacement in Buildings 1505 and 3025. Building 7510 deferred to FY 2001.
Primary Substation SF6 Breakers	GPE	490		361	Ongoing	Remaining breaker replacements will be completed in FY 2001.
Replace Fleet Vehicles	GPE	100	100	158	Ongoing	Total planned cost revised to procure $158,000 of vehicles during the planning year.
HVAC Upgrades	GPE	400		68	Ongoing	Building 9204-1 35-Ton HVAC replacement completed.
Remote Readout Electronic Dosimeter System	GPE	55		57	Complete	Dosimeter system upgrades completed to ensure continued DOELAP certification.
Replace Condensing Units/Evaporators at Cafeteria	GPE	82		47	Ongoing	HVAC units procured and partial replacement completed. Remaining units to be installed in FY 2001.
LERC Data Acquisition System Upgrade, Building 4512	GPE	83		94	Ongoing	Emergency equipment replacements for LERC Data Acquisition was installed.
Whole Body Counting Lab Liquid Nitrogen Tank	GPE	85	13	95	Complete	A new nitrogen tank was installed with upgraded valving.
TOTAL KC GPE Program ESHQ&I Landlord	GPE	2,078	553	1,231		
KC Program Infrastructure Only GPP Program						
Fuel Oil Tank Storage Facility	GPP		1,000	988	Complete	Fuel oil tanks installation completed.
Environmental and Life Sciences Laboratory	GPP	200		2,336	Ongoing	Original project complete. Laboratory equipment modifications are ongoing.
HFIR Cooling Tower Replacement	GPP	1,800		589	Ongoing	Road and fencing work was completed during FY 2000. Design reviews are continuing for FY 2001 construction. Construction is approximately 10% complete.
Lab Expansion-Nanoscience Facility	GPP	300		293	Ongoing	Building 3500, Room A-19, modifications started on June 13, 2000, for nanoscience facility and were completed. Design for Rooms 8, 9, and 10 and the clean room procurement is scheduled for completion in FY 2001 with construction to begin in FY 2002.
Neutron Science Support Facility	GPP		247	247	Pending	Construction complete. Claims are currently pending.
Upgrade Condensate Return System	GPP		195		Complete	Condensate return systems upgrade at the steam plant and building auxiliary return systems.
Air Compressor Upgrade	GPP		33	33	Complete	Compressor upgrades completed.
TOTAL KC GPP Program Infrastructure Only	GPP	2,300	1,475	4,486		
KC Program Infrastructure Only GPE Program						
Enterprise GIGABIT Ethernet Backbone Switches	GPE	55		49	Complete	Instrumentation and controls upgrades completed for Ethernet system.
Logic Analyzer, High-Speed, Deep Memory	GPE	103		101	Complete	Computer upgrades completed for logic analyzer.
Workstation for Development Sys - ORNL Supercomputers	GPE	58		46	Complete	Supercomputer workstation procurement completed.
50-GHZ High Bandwidth Digitizing Oscilloscope	GPE	58		0	Delayed	Procurement delayed.
33-MHZ to 3-GHZ Timing Generator	GPE	68		0	Delayed	Procurement delayed.
Computing Systems & Supporting Modules for SAP	GPE	250		28	Ongoing	SAP-Sun storage capacity for TST completed. Procurement of other remaining equipment deferred to FY 2001.
Shared Systems Computing Equipment for Separation	GPE	223		203	Complete	Computer equipment upgrades completed for separation of components related to restructuring.
EMAIL.CIND System/WWW.ORNL.GOV WEB Server Upgrades	GPE	83		71	Complete	Web server equipment procured and upgrades completed. Installation to be completed in FY 2001.
LDRD - General Purpose Equipment	GPE	167	93	163	Complete	Identified LDRD GPE was purchased.
Mailmobile Replacement 4500N 1st Floor	GPE	44		43	Complete	New mobile mailcart is now operating on the first floor of 4500N.
10,000-Gallon Ethanol Tank	GPE		75	26	Ongoing	New project funded for alternative fuel for tank installation. Installation to be completed in FY 2001.
Dry Chemical Processing Station	GPE		582	200	Ongoing	Remaining cost committed for equipment installation during FY 2001.
TOTAL KC GPE Program Infrastructure Only	GPE	1,109	750	930		

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Table 6.5 FY 2000 Capital Funding Costs			
Funding Category	**Available Funding ($ in 000s)**	**Actual Cost ($ in 000s)**	**% Costed**
MEL/FS Line Item	4,594	3,075	66.9%
General Plant Projects	8,749	5,138	58.7%
General Purpose Equipment	3,887	2,357	60.6%
Total	**$17,230**	**$10,570**	**61.3%**

Overall, 61.3% of available capital funding was costed in FY 2000. One area for improvement is GPP costing. Factors which impacted GPP costing included delays in placing the contract for the replacement of the No. 1 Water Reservoir resulting in a July start of the design and finalization of the scope and cost estimate of work. Additionally, the High Flux Isotope Reactor (HFIR) Cooling Tower was delayed for management approval until June 2000. Funding for these two projects totaled $3.5 million in FY 2000. These delays significantly limited the ability to incur costs for work accomplished in FY 2000.

6.3.1 FY 2000 Key Abatement Issues

Steam Plant Upgrade (Boiler Addition) (ADS S97D0017) (LI)

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

Status: All work is complete and the boiler is operational. Awaiting “Final Release” from Indeck to issue the final payment (retainage). The project completion report will be issued approximately 30 days after the contract is closed out.

Environmental and Life Sciences Laboratory (ADS C98D0120) (GPP)

This project constructs a 59-foot-wide by 154-foot-long laboratory building located in close proximity to two generic office buildings immediately west of Building 1000.

The new research laboratory facility consists of eight large laboratories of approximately 1,250 square feet 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.

This project will assist in providing a means for achieving future research goals by relocation of development organizations at Y-12 to the ORNL research complex. Improved research capabilities and increased interaction with other strong R&D programs at ORNL are the

primary objectives. Constructing the facility at ORNL is vital to a plan to relocate ORNL personnel so that they will be ideally situated for effective collaboration with scientists in other ORNL divisions instead of being adjacent to a high-security weapons production facility.

Status: Construction is 100% completed. Additional funding was added to the scope of the GPP for addition of laboratory bench and case structures. The structures have been identified and procurement contacts have been accepted. Installation of structures will be completed in FY 2001 for occupancy.

Replace Deteriorated Roofing (ADS S97D0029) (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 numerous leaks. In many instances, these leaks have adversely affected equipment, records, and research as well as the 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: Remaining activity is to reroof approximately 15,000 square feet of additional space during FY 2001.

Fire Protection Systems Upgrade (ADS C97D0071) (GPP)

Fire protection systems at facilities within ORNL are increasingly demonstrating lack of reliability and degradation of system components relative to age and exposure to corrosive conditions. This project provides the following improvements:

- Upgrade of fire sprinklers in the Central Research and Administration Building (4500S). This upgrade will include the extension of fire sprinklers into some areas not currently protected and interface modification between the sprinkler systems and the fire alarm systems.

- Replacement of identified 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), the High-Level Radiochemical Laboratory Building (4501), the Experimental Engineering Building (4505), and the 3012 Rolling Mill.

- Replacement of identified aged and maintenance-intensive automatic dry-pipe sprinkler systems with reliable and effective automatic wet-pipe sprinkler systems in the General Stores, Shipping, and Receiving Complex.

- Upgrade of 4500N Wing 5 alarm system and connection to the 4500N alarm system.
- Upgrade of antiquated fire alarm systems in the HFIR Building.
- Upgrade of antiquated fire alarm panels in various ORNL buildings.
- Replacement of fire doors in 4500N between the wings and main corridors.
- Upgrade of 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' Laboratories, Inc. (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.
- Installation of early warning smoke detectors at the CESAR Laboratory in Building 6010 to provide area protection and to give early indication of an incipient fire to fire response forces. 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.
- The manually operated gasoline engine driver and water pump in Pumphouse No. 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 (HPRR) building currently being utilized for storage of unique one-of-a-kind replacement parts for the HFIR. 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.
- Installation of the 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.

Status: All planned work is completed . Approximately $400,000 will be added to the original project for FY 2001 HFIR upgrades.

Neutron Sciences Support Building (ADS S97D0001) (GPP)

This project provides a support facility of approximately 5000 square feet constructed adjacent to the existing beam room at the HFIR. The facility facilitates the separation of user activities from reactor operations at the HFIR for Basic Energy Science, Health and Environmental Research, and Energy Efficiency and Renewable Energy programs. The facility provides critically needed space for equipment storage during routine beryllium reflector changeouts and other reactor maintenance.

This project substantially reduces the risk of Health Physics and Safeguards and Security noncompliances and allows ORNL to project a more "user friendly" image while improving overall security at HFIR. HFIR has the highest thermal neutron flux in the world, and the multiprogram demand for HFIR research (materials, energy efficiency, structural biology) is growing. Approximately $2 million/year is possible in new research funding and an additional $10 million in equipment is contingent on completion of this project.

Status: Beneficial occupancy was achieved on September 24, 1999. The HVAC system and site work remain to be completed. Construction, originally scheduled to be completed in May 1999, was completed in November 1999.

Upgrade the Condensate Return System (ADS C98D0177) (GPP)

This project provides an evaluation of the existing 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. Initial projections include 30 collection stations with 60 pumps that need to be reworked.

Status: Upgrades of the condensate return system were completed.

HFIR Cooling Tower Replacement (ADS A99D0048) (LI)

The cooling tower replacement consists of demolishing and disposing of the existing HFIR Cooling Tower (Building 7902) and constructing a new cooling tower on the same location.

Status: Design work is over 90% complete. P&E has completed cleaning the access roadway. Fence and roadway work was initiated on September 18, 2000. The tower was scheduled for initiation of removal on October 10, 2000. Anticipated schedule for completion of cooling tower for operation is July 2001.

Lab Expansion-Nanoscience Metrology (A99D0020) (GPP)

The 3500 High Bay is an existing two-story open space, within Building 3500 at the ORNL site, currently housing a machine shop, offices, equipment for environmental testing of instruments, and a systems mockup area. The modifications to this area are to add an exit stair and second floor structural system to the upper high bay to create approximately an additional 3000 square feet of usable modular clean room laboratory space and reconfigurable

office space for the proposed Laboratory Expansion for Nanoscience Metrology and Instrumentation. In addition to the high-bay modifications, Room A-19 in Building 3500 will be converted from laboratory space to an electron microscope facility. The conversion will require modifications to the room HVAC system and possible foundation modifications for vibration isolation.

Status: Modifications to Room A-19 have been completed and the electromicroscopes installed. Further planning for the purchase of the clean room and additional related modifications await FY 2001 funding.

Replace No. 1 Reservoir (1.5 Million Gallons) ADS S97D0021 (GPP)

This project will construct a new 1.5-million-gallon steel water reservoir at a location east of the existing 0902 concrete reservoir. The addition of this reservoir structure will improve the reliability of the ORNL water distribution system by adding the redundancy needed to allow major maintenance work to be performed on the existing 50-year-old concrete structure. The old reservoir cannot be taken out of service for extended periods without impacting day-to-day activities in Bethel Valley facilities. ORNL relies on a gravity-fed water system with the reservoir system providing the necessary "head" to maintain the required water pressure throughout the plant. If we were to take the existing concrete reservoir off-line and instead rely on the head provided by the reservoir structures at the Water Treatment Plant north of Y-12, we would be unable to maintain the necessary system pressures required by fire protection in many of the Bethel Valley facilities. The addition of a new reservoir will allow us to maintain pressures while repairing the existing concrete structure.

Of added benefit, the new reservoir will increase the Laboratory's on-site water reserve to 7.5 million gallons. On normal summer days, this represents less than a 2-day supply of water, but it is felt to be sufficient to provide the cushion necessary if normal water supplies from the Water Treatment Plant are interrupted. The Water Treatment Plant was turned over to the City of Oak Ridge in April of 2000 and the transition does represent a possible shift in the operating philosophy. When DOE ran the facility, the emphasis was to provide a reliable and safe supply of water to Y-12 and X-10 as well as to the City of Oak Ridge. City of Oak Ridge management at the Water Plant will no doubt place their needs ahead of the DOE facilities and, as such, we will be more vulnerable to outages affecting our water supply. The addition of another 1.5 million gallons of water reserves at the Laboratory will help insulate us from possible outages.

Status: Design meetings have been held and ninety percent of design review documentation was received prior to September 30, 2000. Project to continue for design completion and construction during FY 2001.

Fuel Oil Tank Storage ADS S97D0055 (GPP)

Construct a 250,000-gallon prefabricated steel storage tank and secondary containment structure adjacent to the ORNL Steam Plant. This tank will be used to store fuel oil, which

is used as an emergency fuel source for the generation of steam at the facility. Associated fuel oil transfer lines and pumps used to move the fuel from the tank into the steam plant will be included in the project as will a fire suppression system for the tank and its equipment.

Status: Approximately $1,000,000 was costed in FY 2000 to complete the storage tank and containment installation. The system is currently operational.

Neutron Science Support Facility ADS A99D0147 (GPP)

The proposed site for the Neutron Science Support Building (NSSB) Extension is located south of the HFIR (Building 7900) and east of the 7961 collection tanks. The NSSB Extension [Small Angle Neutron Scattering (SANS) Facility] will be an 80-foot by 80-foot extension to the south wall of the NSSB, Building 7970.

Status: All construction has been completed. Claims are pending.

6.3.2 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.

7. FY 2001 ESHQ&I EXECUTION PLAN

7.1 BUDGET ANALYSIS AND IMPACTS

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 Field Work Proposals (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. 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 the 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 2001 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) and burdened accounts supported by a specific division (BC). 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 the Department of Energy-Office of Science. 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 2001 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.

7.2 FY 2001 ESHQ&I INDIRECT BUDGET SUMMARY

Table 7.1 reports the ESHQ&I indirect budget (Laboratory Overhead) for FY 2001, pending DOE approval.

Table 7.1 Planned FY 2001 ESHQ&I Indirect Expenditures (Laboratory Overhead)		
Organization/Functional Area	**From the March 2000 FY 2002 ESHQ&I Budget Formulation Submission**	**Reflects Current ORNL Overhead Budget Planning Figures**
	FY 2001 Planned Indirect Target ($ in 000s)	**FY 2001 Revised Target ($ 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	5,195	4,949
Health Division MS - Occupational Medical Services	2,774	2,814
Office of Laboratory Protection EP - Emergency Preparedness FP - Fire Protection Engineering	14,000 (Reflects entire OLP budget)	13,983 (Reflects entire OLP budget)
Office of Safety and Health Protection Office of Nuclear Safety IS - Industrial Safety IH - Industrial Hygiene NS - Nuclear Safety TS - Transportation Safety MO - Management and Oversight	5,100 (Combined Total)	2,691 1,023
Office of Quality Services MR - Environmental Management, Oversight, and Reporting MO - Safety Management and Oversight	2,143	2,544
Office of Radiation Protection RP - Radiation Protection	4,151	3,815
Laboratory Waste Services	1,906	1,882
OSHA/ES&H Corrective Actions	254	174
Low Value Equipment	428	279
Plant and Equipment	15,255	(See Table 7.2) 505
ORNL Engineering	294	31
Laboratory Logistical Services	6,045	4,986
Total Planned FY 2001 ESHQ&I Indirect Budget	**$57,545**	**$39,676**

Planned ESHQ&I indirect expenditures (from Space Charge funds) for FY 2001 are shown in Table 7.2.

Table 7.2
Planned FY 2001 ESHQ&I Indirect Expenditures from Space Charge Funds

Activity	ESH&Q (ONLY) ($ in 000s)	ESHQ&I (BOTH) ($ in 000s)
Lab Protection	323	
Capital Assets Management		702
ORNL Office Moves		300
ORNL Engineering		234
Plant & Equipment		17,500
Special Requirements		2,800
Total	**$323**	**$21,536**

7.3 FY 2001 ESHQ&I DIRECT BUDGET SUMMARY

UT-Battelle's plan for ORNL is guided by a commitment to achieving simultaneous excellence in the areas of science and technology, laboratory operations and ES&H, and community service. The UT-Battelle Leadership Team has developed a Laboratory Agenda to provide a structured framework for the long-term initiatives, critical outcomes, and near-term actions through which it will deliver on this commitment. A primary focus of this agenda is to accomplish a fully modernized Laboratory of the 21st Century. The FY 2001 funding represents some of the changes in priorities associated with capital funding to initiate the Facilities Revitalization Project. Table 7.3 is a listing of planned FY 2002 direct costs and revised funding targets following reconciliation of FWPs and ADSs. Table 7.4 contains a listing of individual LIs, GPPs, and GPEs with planned costs for FY 2001.

7.4 FY 2001 PLANNED ESHQ&I ABATEMENT ACTIVITIES

NOTE: This section contains current planning for the FY 2003 ESHQ&I Budget Formulation Submission. Additional details will be submitted in the March 2001 planning document.

Electrical Systems Upgrade (ADS C97D0106) (LI)

The ORNL electrical distribution system requires significant restoration and expansion to assure the continued operation in support of the research and operation missions of the Laboratory. Specific funded activities associated with this LI include

- *Overhead Feeders 244 and 264 Upgrade*. The 13.8-kV overhead feeders run from the ORNL Primary Substation to the 7600 Area Robotics and Process Systems Division

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Table 7.3. Planned Direct Costs for FY 2001 by Program Elements

Program	From the March 2000 FY 2002 ESHQ&I Budget Formulation Submission FY 2001 Planned Direct Budget	Revised FY 2001 Planned Cost From Table 7.4	Explanations of Categories
DA Activities	6,290	6,290	DA Activities - From the direct target ADSs, the R&D divisions/programs estimated that $6,290K 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 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.
DI Activities	14,275	14,275	DI Activities - From the direct target ADSs, $14,275K was designated cost by ES&H organizations that was distributed to other ORNL divisions/offices/programs for personnel and other resources. These funds were not provided through the Laboratory overhead budget.
HFIR Operating Cost	12,196	12,196	HFIR Operating Costs - HFIR ES&H operating cost is $12,196K 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 Sciences Program activities.
KG Program Cost (LI)	6,627	6,891	KG Line Item Cost - Three LI projects accrued costs during FY 2000. The Electrical Systems Upgrade is an ongoing project with design activities being completed. The Roofing Replacement LI has one job activity remaining for approximately 15,000 square feet.
KC Program Cost ESHQ&I (GPP)	915	1,935	KC GPP ESHQ&I Cost - Two GPP projects accrued costs for the water reservoir replacement and the fire protection upgrades. Both projects are continuing.
KC Program Cost ESHQ&I (GPE)	3,287	1,700	KC GPE ESHQ&I Cost - GPEs having significant environment and/or safety issues. The steam plant projects were delayed for outyear funding.
KC Program Cost Infrastructure Only (GPP)	3,650	5,318	KC GPP Infrastructure Only Cost - The upgrades for the condensate return system were completed with carryover funding. The remaining projects are continuing or pending action.
KC Program Cost Infrastructure Only (GPE)	510	546	KC GPE Infrastructure Only Cost - GPEs that do not have significant environment and/or safety issues.
Total KG/KC Program Elements	47,750	49,151	

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Table 7.4. FY 2001 Direct Program Planned Costs for ESHQ&I Landlord Activities

Activity	Type	Budget Funding	Carryover Funds	Planned FY 2001	Comments and/or Explanations of Significant Variances
KG Program ESHQ&I Landlord Line Item Program					
Electrical Systems Upgrade	LI	5,543	264	5,807	Project activities include 244 and 264 overhead feeder upgrades, metering systems installation, building-specific electrical service entrance upgrades, and substation 4509 improvements.
Fire Protection Systems Upgrade	LI	584		584	This project is to provide more reliable fire alarm and suppression capabilities by replacing deteriorated, obsolete systems, replacing the single 16-inch water main in the East Campus with a looped system, and by extending coverage of automatic alarm systems and sprinkler systems to areas not previously served.
Laboratory Facilities HVAC Upgrade	LI	500		500	This project will provide improvements to a number of heating, ventilating, and air conditioning (HVAC) systems located throughout the 13 buildings that comprise ORNL's central research complex.
Total KG Landlord Program	*LI*	*6,627*	*264*	*6,891*	
KC Program ESHQ&I Landlord GPP Program					
Lambert Quarry Signage and Fencing	GPP	165		165	Approximately 4500 feet of 4/5-strand barbed wire fence will be erected around Lambert Quarry. Signage will be affixed to the fence at 30-foot intervals.
Fire Protection Systems Upgrade	GPP	500	50	550	Project activities include building-specific sprinkler system upgrades, fire alarm upgrades, fire alarm panel replacements, and egress improvements.
East Campus Electrical systems Upgrade	GPP	300		300	This project will extend the existing 13.8-kV electrical feeder #254 into the new East End Campus area and provide transformer stations as needed to provide electrical service to new facility development.
East Campus Infrastructure Improvements	GPP	400		400	This activity provides for the construction of infrastructure roads, parking, and common areas associated with the new East Campus development of the ORNL Facilities Revitalization Project.
Open Campus Improvements - Safety Fence	GPP	420		420	The security restructuring project will consist of providing restructuring of the existing safety fence and adding new fencing for the Central Campus.
Chemical Reuse Center, Building 7013	GPP	100		100	The Chemical Reuse Center will provide active management of excess chemicals and will locate new users for the chemicals within, and outside of, the DOE system.
TOTAL KC GPP Program ESHQ&I Landlord	*GPP*	*1,885*	*50*	*1,935*	
KC Program ESHQ&I Landlord GPE Program					
Backup Diesel Generator For #6 Boiler	GPE	250		250	This project will purchase and install a generator for Building 2519.
Open Campus Improvements - Badge Reader System	GPE	1,071		1,071	This project will provide building access controls to ensure authorized access as well as safety controls.
Primary Substation SF6 Breakers	GPE	100	279	379	This project will replace three existing Primary Substation 161-kV oil breakers with surplus SF6 breakers.
TOTAL KC GPE Program ESHQ&I Landlord	*GPE*	*1,421*	*279*	*1,700*	
KC Program Infrastructure Only GPP Program					
7600 Area Office Building	GPP	300		300	The 7600 Area office building will house Fusion Energy Division personnel who will move from the ORNL at Y-12 facilities as part of the ORNL Facilities Revitalization Program.
Building 7602 High Bay Upgrade	GPP	200		200	This project will provide a needed upgrade to the high bay of Building 7602 to return a portion of an unused facility under EM40 into a vital ORNL work and research space.
HFIR Cooling Tower Replacement	GPP	3,000	1,211	4,211	This project will replace the HFIR cooling tower, including the piping to the primary pump flanges, on the existing basin. An updated flow control system will also be provided.
Lab Expansion Nanoscience Metrology	GPP	600	7	607	This project will convert 3500 existing space into vital research space for the nanoscience metrology and instrumentation sciences.
TOTAL KC GPP Program Infrastructure Only Landlord	*GPP*	*4,100*	*1,218*	*5,318*	
KC Program Infrastructure Only GPE Program					
Internet Firewall	GPE	94		94	This project will provide for a security internet firewall to be procured and installed.
LDRD - General Purpose Equipment	GPE	70		70	This activity will provide LDRD funding for general-purpose equipment items.
Dry Chemical Processing Station	GPE		382	382	This station will consist of units for plasma and chemical vapor based film deposition and etching.
TOTAL KC GPE Program Infrastructure Only	*GPE*	*164*	*382*	*546*	

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facilities. The feeders serve the 6010 Oak Ridge Electron Linear Accelerator, the 6011 Computing and Telecommunications Facility, the 6012 Computer Science Research Facility, and the 5510 Analytical Mass Spectrometer Laboratory; they serve as a dual-feed to the 4509 and 2632 major 2.4-kV secondary substations within the Laboratory. The feeders will be completely rebuilt to ensure reliable continuation of service.

- *Electrical Metering System*. A computerized electrical metering system will be installed in the ORNL electrical distribution system. Electrical meters will be installed on major distribution feeders and on significant facilities throughout the Laboratory.

- *Building Electrical Service Entrance Upgrades*. Obsolete and inadequate switchgear, transformers, and conductors will be replaced at the main service entrances of Buildings 2519, 4501, 4500S, and 5500. New switchgear and cabling will be added to the bus ties in Buildings 4500N and 4500S.

- *Substation 4509 Improvements*. Secondary Substation 4509 will be upgraded by installing two new 13.8/2.4-kV, 7500-kV transformers, and new 2.4-kV switchgear to form a 13.8-kV primary selective arrangement and a 2.4-kV transformer and switchgear double-ended arrangement. Existing 13.8-kV switchgear "A" will be reinsulated and refurbished. A 13.8-kV primary selective system arrangement will be provided for two internal Building 4509 service transformers.

Fire Protection Systems Upgrade (ADS A99D0018) LI

The mission of this project is to provide ORNL with improved, more reliable fire alarm and suppression capabilities by replacing deteriorated, obsolete systems, replacing the single 16-inch water main in the east central section of ORNL with a looped system, and by extending coverage of automatic alarm systems and sprinkler systems to areas not previously served. Many of the ORNL's fire detection alarm and suppression systems are approaching or have exceeded their useful service lives. Replacement parts are not available for these systems. Consequently, there are increasing problems with the systems that degrade or jeopardize their protective capabilities. The upgrades will reduce maintenance costs, and the new upgrade installations will comply with current codes and standards. New fire alarm equipment will provide emergency responders with greatly improved annunciation of the causes and locations of alarms and will provide code-compliant occupant notification evacuation alarms for enhanced life safety. It will also include timesaving, automatic diagnostic capabilities that will reduce maintenance costs. The new occupant notification systems will comply with the Americans with Disabilities Act. The fire alarm receiving equipment at the site fire department headquarters will be upgraded to ensure its reliability, modernize its technology, and meet the demands of an expanded fire alarm system network.

Specifically this project will:

1. Replace antiquated fire alarm systems in seven major research buildings:
   - Isotope Technology Building, 3047
   - Instrumentation and Controls Building, 3500

- Central Research and Administration Building, 4500N (Computer Room)
- Radiochemical Laboratory Building, 4501
- Experimental Engineering Building, 4505
- Metals and Ceramics Laboratory, Building 4508
- Central Research and Administration Building, 4500S

2. Add sprinkler protection in offices and corridors of Wings 1–4 in the Central Research and Administrative Building, 4500N.

3. Replace and add redundancy in the fire alarm and circuit monitoring functions of the central receiving stations.

4. Replace the 55-year-old 16-inch underground water main in the 6000 Area of ORNL with approximately 7000 feet of new lines. Associated isolation valves, pressure reducing valves, hydrants, and valve pits will be installed with the new water main.

Laboratory Facilities HVAC Upgrade (ADS A99D0017) (LI)

The mission of this project is to provide much-needed improvements to a number of heating, ventilating, and air conditioning (HVAC) systems located throughout the 13 buildings which comprise ORNL's central research complex. These facilities range from 9 to 51 years in age and require significant capital improvements to their basic building environment systems in order to continue to provide a safe, stable environment for ongoing research, computing, and administrative tasks:

- Install primary/secondary central chilled water plant pumping system by modifying pipe headers, pumps, and control valves in 4509 and throughout the 13 buildings.

- Install 4501/4505 chilled water cross-tie. Approximately 800 feet of 8-inch-diameter pipe will be installed from the underground tie-line between 4500N/4509 to Building 4505.

- Install 3500 East chilled water line and replace the 3500E air handler. Approximately 500 feet of 4-inch-diameter pipe will be used to feed new chilled water coils. The existing 50-year-old air handler will also be upgraded with new dampers, filters, steam coils, and controls.

- Replace selected air handlers in Buildings 4501 and 4500N. These 40- to 50-year-old air handlers provide a constant volume of outside air to laboratories. Filters, dampers, coils, fans, housings (e.g., S-1 and S-2 in 4501), and control valves will be replaced to efficiently improve HVAC service.

- Replace 4500S reheat systems, including variable air volume improvements. The hot water distribution, piping, and approximately seventy 40-year-old terminal reheat coils will be replaced to temper air in laboratories and offices.

Lambert Quarry Signage and Fencing (ADS A99D0042) (GPP)

Lambert Quarry is an ORNL responsibility located on the eastern border of Parcel ED-1 (which is currently under development by the Community Reuse Organization of East Tennessee through a lease with DOE). ORNL has unsuccessfully tried to move responsibility for the quarry to Bechtel Jacobs. The quarry, while not visible from the road, is known to and visited by many in the local community. DOE considers it to be an "attractive nuisance" (see December 3, 1996, letter to W. W. Teer from C. A. Spoons). Evidence of public use of the site, including bottles, picnic litter, and floats, is increasing. With the increased use in areas surrounding the quarry (e.g., ED-1 development, DOE greenway), it has become more urgent that the area be fenced. Last year there was concern that there may be contamination in the quarry. Special surveys were conducted and debris removed, and the quarry has been declared clean and reconfirmed as ORNL responsibility. Attorney-Client communication (February 25, 1998, e-mail to Parr from Stivers) acknowledges that there is liability concern that could be alleviated through fencing.

Review of options by the ORNL Land and Facilities Use Committee resulted in the recommendation that the entire quarry area be signed and fenced including gates at the two main access roads. Approximately 4500 feet of 415-strand barbed wire fence will be erected around Lambert Quarry. Signage will be affixed to the fence at 30-foot intervals.

Fire Protection Systems Upgrade (ADS C97D0071) (Contingency GPP)

Fire protection systems at facilities within ORNL are increasingly demonstrating lack of reliability and degradation of system components relative to age and exposure to corrosive conditions. This project will provide the following improvements:

- Upgrade of antiquated fire alarm systems in the HFIR Building (will be completed in FY 2001).

- Replacement of identified aged and failure-prone automatic preaction sprinkler system deluge valves with highly reliable automatic wet-pipe sprinkler system alarm valves in Building 3012.

- Replacement of fire doors in 4500N between the wings and main corridors; upgrade of 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 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.

- The manually operated gasoline engine driver and water pump in Pumphouse No. 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 HPRR building currently being utilized for storage of unique one-of-a-kind replacement parts for the HFIR. 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.

- Installation of 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.

East Campus Electrical Systems Upgrade (ADS AA0D0058) (GPP)

This ADS will provide the resources necessary to extend the existing 13.8-kV electrical feeder #254 into the new east end campus area and set transformer stations as needed to provide electrical service to the new facilities to be located there. For aesthetic purposes, the new electrical services will be run underground in a concrete ductbank and placed in an established utility easement that will be flexible enough to provide for future expansion within the area without requiring constant utility relocations.

East Campus Infrastructure Improvements (ADS AA0D0065) (GPP)

This activity provides for the construction of infrastructure roads, parking, and common areas associated with the new East Campus development portion of the ORNL Facilities Revitalization Project. This infrastructure improvement will support the East Campus reconstruction by providing new or improved parking lots in the 4500N, 6026, 6000, and 3513 areas to replace the main ORNL parking lot that will be the site of new buildings and common areas. The project also provides for construction of associated new roads and the common areas (tree-lined landscaped quadrangle and entrance ponds) to the east of the ORNL Research Support Building line item. Approximately 0.75 miles of roads would be upgraded or replaced, 4 acres of pond area constructed, 15 acres of parking lots upgraded/constructed, and 0.5 acre of landscaped common area provided. In addition, a line of trees from the 7000 Area to the West Campus would be installed as part of this project.

Open Campus Improvements – Badge Reader Aspects (ADS AA0D0084) (GPP) and Fencing Aspects (ADS AA1D0005) (GPE)

The security restructuring project consists of four subprojects, each independent of the other but each supporting one another:

1. Security perimeter reconfiguration: The present security perimeter (fence) will be reconfigured to an access control system located closer to the resources being protected (building, room, etc.). Rather that having guards controlling access, proximity cards and administrative means will be utilized for access control.
2. ORNL security interests and the associated security measures will be segregated into those that are specifically covered by DOE orders and those that are covered by plans, agreements, and best management practices (academic).

3. All ORNL security procedures, processes, and requirements will be reviewed to determine linkage to DOE guidance/requirements.

4. The Integrated Safeguards and Security Management will assist the site in transition to an emerging ORNL Facility Management Program. This program will assist the facilities in controlling access to the buildings as well as providing education on changing requirements.

Chemical Reuse Center, Building 7013 (ADS AA1D0004) (GPP)

The Chemical Reuse Center (CRC) will be established in Building 7013 to provide active management of excess chemicals and will locate new users for the chemicals within, and outside of, the DOE system. Building 7013 will be upgraded with 6-inch-thick insulation batts on the building walls and roof, installation of a new used-oil heating unit, installation of a new building ventilation fan, and replacement of the existing electrical panel to supply the new equipment and additional service outlets.

HFIR Cooling Tower Replacement (ADS A99D0048) (GPP)

The HFIR Secondary Coolant System is composed of the secondary coolant piping, pumps, valves, cooling tower, and its control system. The components of the secondary coolant system are over 33 years old and are approaching their end of life. Recent inspection of the wooden cooling tower internal structural components shows extensive degradation. Additionally, recent ORNL fire protection inspections of the cooling tower fire protection system found leaks in this system and strongly argue for its complete replacement. The remaining life for the HFIR cooling tower is estimated at 3 to 5 years. This project will replace the HFIR cooling tower, including the piping to the primary pump flanges, on the existing basin. An updated flow control system will be provided. This project will be accomplished during the shutdown of the HFIR reactor for reflector changeout.

Lab Expansion - Nanoscience Metrology and Instrumentation (ADS A99D0020) (GPP)

The 3500 High Bay is an existing two-story open space, within Building 3500 at the ORNL site, currently housing a machine shop, offices, equipment for environmental testing of instruments, and a systems mockup area. The modifications to this area are to add an exit stair and second-floor structural system to the upper high bay to create approximately an additional 3000 square feet of usable modular clean room laboratory space and reconfigurable office space for the proposed Laboratory Expansion for Nanoscience Metrology and Instrumentation. In addition to the high-bay modifications, Room A-19 in Building 3500 will be converted

from laboratory space to an electron microscope facility. The conversion will require modifications to the room HVAC system and possible foundation modifications for vibration isolation.

7600 Area Office Building (ADS- AA0D0071) (GPP)

The Fusion Energy Division (FED) is an ORNL organization located at the Y-12 Plant on Bear Creek Road. For the past several years there have been several attempts to relocate the FED facilities to the ORNL site as a result of increasing costs to maintain old World War II structures in which the FED is presently located. Other reasons for leaving the Y-12 site are the access problems for foreign nationals into the Y-12 Plant, with which FED collaborates; legacies of contamination in the FED building; and increasing (and uncertain) mission burden at the Y-12 Plant. More importantly, the new UT-Battelle management team has stressed the need to have *all* ORNL facilities located within the bounds of the ORNL campus. The most recent efforts for the Laboratory revitalization have placed the FED in the 7600 Area. The primary reason that the 7600 Area was selected for the FED is the availability of electrical power. FED requires 161-kV power distribution with 13.8-kV feeders for their basic infrastructure.

Currently, the relocation of FED personnel to the 7600 Area, in accordance with the ORNL Revitalization Program, indicates there are offices that would accommodate approximately 32 people, which indicates a shortage of approximately 60 offices. In an effort to move all personnel to the ORNL campus, a new office complex will be required in the 7600 Area to keep all FED personnel together to encourage the strong interaction between FED sections.

Building 7602 High Bay Upgrade (ADS A99D098) (GPP)

This project will provide a needed upgrade to the high bay of Building 7602 to return a portion of an unused facility under EM40 into a vital ORNL work and research space. The project will involve covering the pit area with the fabrication and installation of pit cover blocks, removing and dispositioning of contaminated equipment, decontaminating floors and walls, and painting of surfaces.

Backup Diesel Generator for #6 Boiler (ADS AA0D0016) (GPE)

Purchase/install diesel generator at Building 2519 to provide backup power to No. 6 Boiler. This project will be a turnkey job and provide 480V, 600 Amp service in the event normal power is lost.

Primary Substation SF6 Breakers (ADS A99D0033) (GPE)

This project will replace three existing 161-kV oil circuit breakers (OCBs) with three new surplus SF6 insulated breakers in the ORNL Primary Substation. An Option I in the contract would replace two incoming line breakers. Option I is not currently funded. The breakers to be replaced are the three power transformer primary breakers (874, 884, and 894). The work will include removal, transport, and disposition of the oil from the old breakers, removal of the existing OCBs and associated buswork, installation of new concrete pads, installation of the new SF6 breakers, reinstallation of associated buswork connections, and installation of

new control cables to the existing 0901 control building. The installation of the power transformer No. 3 breaker will require the removal of an existing switch support structure and foundations and the relocation of existing metering current transformers.

Internet Firewall (ADS A00D0034) (GPE)

Depending upon the speed/performance of equipment available at the time of purchase, this equipment will either be installed between ORNL and the internet or in parallel to ORNL's current connection to the Internet. In either case, the implementation of this equipment will immediately meet two needs: (1) to satisfy external reviewers/auditors and emerging requirements that require DOE sites to implement firewalls and (2) provide increased security for users/machines that have no need to serve information "to" the internet. With the addition of this equipment, ORNL's cyber security tools will be further enhanced such that both the sharing and protection of data will become easier for ORNL staff.

Dry Chemical Processing Station (ADS A99D0102) (GPE)

As part of the microfabrication infrastructure for ORNL, this chemical processing station consists of units for plasma and chemical vapor based film deposition and etching. Units must process wafers in controlled atmospheres of high-purity gases under the combined influence of plasma generation, thermal activation, and e-beam or laser bombardment. Units needed include plasma-enhanced chemical vapor deposition, simple chemical vapor deposition, e-beam and thermal evaporation and sputtering, and plasma-driven chemical etching. Film deposition includes metal conductors, insulating passivation films, and amorphous and polycrystalline semiconducting films. Etching must accommodate selective etching of a wide variety of films and doped and undoped substrate bulk. Additional station equipment includes thermal treatment units to anneal damage to bulk and films resulting from various processing steps.

8. UNFUNDED COMPLIANCE ACTIVITIES

NOTE: This section contains current planning for the FY 2003 ESHQ&I Budget Formulation Submission. Additional details will be submitted in the March 2001 planning document.

The following are unfunded compliance tasks which have been identified for funding in the out-years. Significant changes to the compliance ADSs are expected in the FY 2003 Budget Formulation Document, which will be submitted March 2001. Therefore, these ADSs may not remain as the top unfunded ADSs for the out-years.

ORNL H&S - Radiological/Toxicological Sabotage (ADS P98D0007) (Safeguards and Security - Direct Funding)

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 September 30, 1996, 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.

Mitigative 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, the facility/program manager is required to provide funding for a radiological/toxicological sabotage assessment as part of the planning process.

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

ORNL's goal of identifying and correcting all serious Occupational Safety and Health Administration (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 numerous 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 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.

Mitigative Actions: All serious noncompliances (RAC 1s and 2s) are corrected within 48 hours. All other-than-serious noncompliances are corrected within 90 days, or administrative controls are implemented to ensure that employees are safe.

ORNL S&H - Building Electrical System Upgrade (ADS P98D0019) (KC-OE)

ORNL's facilities Condition Assessment Survey identified legacy vulnerabilities from fire and electrical shock hazards principally due to aging facilities and installations that 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.

Mitigative Actions: Preventive maintenance and safety practices control situations where immediate hazards could cause concerns.

Update Nuclear Facility Drawings (ADS AA0D0042) (KC-OE)

This activity provides for the update of nuclear facility drawings required to define the design bases for safety. "As-built" drawings are required by the facility authorization basis documentation. Difficulties in controlling "as-built" drawings could have a serious operational impact on the facility operations, with the potential for a reportable occurrence. A coordinated program for periodic update of required drawings for these facilities is necessary to assure compliance with approved facility safety basis.

Mitigative Actions: Currently all drawings are in a controlled redline status. Authorization Basis documentation is within compliance with the controlled documentation.

9. EXECUTION OF RESOURCES

One common method is in place 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. 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. 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 Facility and Operations Strategic Planning Director verifies all submitted GPE, GPP, and LI ADSs.

10. CHANGE CONTROL

The identified projects and planned costs in Section 7 reflect ORNL’s commitment to meeting requirements. Changing circumstances and requirements over the course of FY 2001 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 updates on the World Wide Web as they occur.

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