OAK RIDGE NATIONAL LABORATORY
FY 2000 ENVIRONMENTAL, SAFETY, HEALTH, QUALITY, AND INFRASTRUCTURE
BUDGET FORMULATION PLAN

FACILITY ESHQ&I NARRATIVE SUMMARY

March 31, 1998

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OAK RIDGE NATIONAL LABORATORY
FY 2000 ENVIRONMENTAL, SAFETY, HEALTH, QUALITY, AND INFRASTRUCTURE (ESHQ&I) BUDGET FORMULATION PLAN
FACILITY ESHQ&I NARRATIVE SUMMARY

I. Background

The environmental, safety, and health (ES&H) mission of the Oak Ridge National Laboratory (ORNL) is to conduct research and development (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. ORNL is operated by the Lockheed Martin Energy Research (LMER) Corporation under Department of Energy-LMER Management Contract DE-AC05-96OR22464.

ORNL's Fiscal Year (FY) 2000 ESHQ&I Budget Formulation Plan was developed in accordance with the guidance in the Department of Energy (DOE) Guidance Document for the ESHQ&I Planning Process for FY 2000 [Office of Laboratory Operations and ES&H (ER-80), Laboratory Infrastructure Division (ER-82), Environment, Safety & Health, and Infrastructure Management Plan - Guidance Manual, dated February 27, 1998]. It identifies the ESHQ&I activities considered necessary at ORNL to ensure the health and safety of employees and the public; the protection of the environment; and the compliance with applicable laws, regulations, DOE policies and orders, and other ESHQ&I requirements while carrying out the site's missions and the planning for ORNL infrastructure needs which support R&D as well as ESH&Q. This Plan was developed using risk-based planning and priority-setting methodologies to (1) establish and communicate ESHQ&I expectations to all stakeholders, (2) support the development of Departmental budgets and secure funding for ESHQ&I programs and activities, (3) support the integration of ESHQ&I principles in site-wide work planning and execution, and (4) assess ESHQ&I performance and provide feedback to promote continuous improvement.

The Plan has been derived from the various levels and systems of ORNL's organizational structure. ORNL's self-assessment programs and external assessments were key in identifying and characterizing ESHQ&I issues documented herein and on the submitted Activity Data Sheets (ADSs). The risk-based prioritization methodology used to develop this Plan has been adopted by ORNL to prioritize all overhead activities, landlord capital requirements, and ESHQ&I programmatic activities. Except for constraints associated with the various funding sources for ORNL activities, that priority-setting methodology is the basis for work planning and scheduling decisions for the site.

The ORNL Capital Assets Manager is responsible for the development and maintenance of a

continuous integrated approach to ESHQ&I planning, to ensure that risks and compliance requirements are recognized and considered in the planning and execution of all activities designed to carry out ORNL's missions.

II. Summary

The FY 2000 integrated ESHQ&I Budget Formulation Plan identifies the following summary data of project/activity information.

Total Open ADSs	240		
Core ADSs		18	
Compliance ADSs		28	
Funded			7
Unfunded			21
Improvement ADSs		194	
Funded			53
Unfunded			141
Indirect ADSs		64	
Funded			15
Unfunded			49
Direct ADSs		176	
Funded			62
Unfunded			114

Total Funding Request (Open ADSs, OE-Operating Expense, CE-Capital Expense/General Plant Equipment, LI-Line Item)

	OE	CE	GPP	LI	Total
FY 1998	79,854	6,410	3,640	7,321	97,225
FY 1999	98,163	6,229	7,310	6,808	118,510
FY 2000	93,766	7,368	16,495	6,949	124,578
FY 2001	77,665	4,257	13,922	22,900	118,744
FY 2002	76,753	3,890	15,195	9,500	105,338
FY 2003	76,761	2,090	5,846	2,400	87,097
FY 2004	74,985	2,880	5,201	6,600	89,666
Total	$577,947	$33,124	$67,609	$62,478	$741,158

III. ESHQ&I Management Plan and Budget Formulation Plan Process

ORNL is in the process of developing an Integrated Safety Management System (ISMS) which has established milestone dates for implementation. An ISMS Steering Committee has been appointed and chartered by the ORNL Executive Committee to provide guidance and oversight of implementation. The ISMS Steering Committee membership is comprised of senior management

from each ORNL directorate and the DOE-ORNL Site Office. In support of the establishment of an ISMS, a single ESHQ&I Management Plan process has been developed and implemented to provide a means for ORNL to document, prioritize, and report ESHQ&I budget information.

The integrated ESHQ&I Management Plan provides the capability to identify and track ESHQ&I projects and activities and their associated milestones and accomplishments. The Plan documents identified risks, their impacts, and/or benefits. These risks and impacts provide the basis for the evaluation of projects and activities for resource allocation decisions. The Plan is in a database format which provides essential data reporting capabilities.

Request for projects and activities with their estimated resource requirements, justifications based on risk and/or benefits, and proposed milestones are documented in the following systems for input into the ESHQ&I Management Plan Information System.

A. Laboratory Overhead Budget Request

The Laboratory Overhead Budget request is submitted annually by overhead offices and divisions through the Program Management Tracking System (PMTS) and is currently processed through the Corporate Information System. These requests are for funding which is allocated from an assessed overhead rate from programmatic funds (DOE Projects) and work-for-others projects. The PMTS entries are designated as either requests for ESH&Q funding, infrastructure funding, both ESH&Q and infrastructure, or not applicable. Although all projects are processed though the ORNL Risk Ranking Board, only those requests which were identified as ESH&Q, infrastructure, or both are transferred to the ESHQ&I Management Plan Information System.

B. Capital Assets Funding Request

ORNL divisions/offices/programs request Landlord Capital Asset funds by submitting an ADS through the WEB-based ESHQ&I Management Plan Information System. These requests are for general purpose equipment (GPE), general plant projects (GPP), and line item projects (LI). Each request is designated as “infrastructure” or “both” if the activity is ESH&Q related. The ORNL Risk Ranking Board evaluates each ADS and determines a risk ranking for funding allocation decisions. Landlord Capital Asset requests are submitted through two Field Work Proposals (ERKCL01, “General Purpose Equipment,” and ERKCL02, “General Plant Projects”) and Line Item Construction Project Data Sheets (CPDSs). Allocated funding (funded projects) is identified in the execution years with backlog projects identified as unfunded in either execution years or out-years.

C. ESHQ&I Field Work Proposals

ORNL divisions/offices/programs may request direct funding from the DOE ORNL Landlord (Office of Basic Energy Sciences) for noncapital-related ESH&Q expense funding requirements. These requests are submitted on Field Work Proposals in the PMTS, designated as

ESHQ&IH&Q related, and are transferred to the ESHQ&I Management Plan Information System. Each request is risk ranked by the ORNL Risk Ranking Board for resource allocation decisions. Alternative funding bases are considered in the event of situations where noncapital-related compliance requests are identified on a Field Work Proposal.

IV. Risk Ranking and Funding Allocation Process

A formal process has recently been established to evaluate risk associated with all Laboratory overhead, landlord capital requirements, line items, and other landlord FWP expense projects/ activities. Each project/activity receives a risk score which is then submitted to management for further evaluation and adjustment, if required, of risk scores. These scores are used as a factor in determining the allocation of available resources.

The risk ranking process flow includes:
- submittal of funding request documents,
- preliminary risk and scoring verification,
- prioritization by the Risk Ranking Board,
- funding and prioritization analysis,
- management review and adjustments,
- ORNL Operating Committee review and concurrence,
- ORNL Executive Committee approval, and
- DOE review and adjustments.

V. Summary of Important Risk Management Conclusions

A. Major Planning Assumptions

Organizational structure and business planning processes are now undergoing review and change at ORNL as a result of reengineering activities. However, this Plan is based on the continuing operation of ORNL with the focus on integrating ESHQ&I within the core competencies of ORNL. The following core competencies are the planned future building blocks of ORNL:

- Energy Production and End-Use Technologies,
- Biological and Environmental Sciences and Technologies,
- Advanced Materials Synthesis Processing and Characterization,
- Neutron-Based Science and Technology,
- Emerging Competency of Oak Ridge Manufacturing Technologies,
- Emerging Competency of Computer Science and Advanced Computerization,
- Institutional Competency of Development and Operation of a National Research Facility,
- Institutional Competency of R&D Integration and Partnership,
- Institutional Competency of Technology Transfer, and
- Institutional Competency of Science Education.

A significant effort has been made during the past year to "reengineer" ORNL's operations and services to enhance operational efficiency and promote the mission of ORNL. A list of specific standards for operation of ORNL facilities was developed as a function of "Work Smart Standards" identified under the necessary and sufficient (N&S) closure process. The N&S process was based on the process defined in Chapters I and II of the Department of Energy Closure Process for Necessary and Sufficient Sets of Standards (DOE M 450.3-1). The standards developed for ORNL facilities are referenced in the DOE-LMER contract, Section H.15(c).

B. Core ADS Milestones and Success Indicators

Currently performed ESHQ&I activities considered necessary by ORNL management to maintain current levels of ESHQ&I compliance or to prevent increases in current levels of ESHQ&I risks have been identified as "core" activities. Two primary sets of core activities have been identified. The first set include core activities within the ORNL ESHQ&I overhead divisions with a Pool Identification (ID) of OH. The second set include core activities within ORNL programmatic organizations (e.g., R&D divisions) directly funded by programmatic sponsors. All core activities are targeted functions at ORNL and have received funding within this Plan to maintain their current level of compliance.

Overhead core functions have been identified either as functional area ADSs or specific ADSs for overhead functions. The following is a summary of the core ADSs.

ADS-C97D0014, Functional Area Health - funded activities for medical health include emergency health, physical/mental evaluations, medical treatment and triage, rehabilitation, medical records, and activities required by contract standards at ORNL.

ADS-C97D0013, Functional Area Environmental - funded activities provide environmental compliance and environmental sampling. ORNL is obligated to comply with all applicable federal, state, and local environmental laws and regulations, and selected DOE Orders. This functional area has specific environmental oversight responsibilities for the site-wide DOE Oak Ridge Reservation.

ADS-C97D0018, Functional Area Radiation Protection - funded activities protect the ORNL site population from radiation and related contamination hazards that exist in the work environment. Major responsibilities include operation of an effective and efficient dose assessment program; health physics support for overhead divisions during off-shift hours and in emergencies; and oversight of health physics instruments, sealed sources, and X-ray–generating devices.

ADS-C97D0016, Functional Area Industrial Safety Programs - funded activities are specifically for the Office of Safety and Health Protection to conduct periodic Occupational Safety and Health Administration (OSHA)-type inspections and provide consultation and guidance to all divisions in meeting OSHA regulations while maintaining a focus group knowledgeable in highly visible OSHA programs, provide direct day-to-day contact with research and service division personnel

for hazard evaluation and planning, provide project-specific site characterization and support for construction and service contract activities, provide technical service support such as instrumentation and reporting, and provide hazardous materials management support.

ADS-C97D0015, Functional Area Emergency Preparedness and Fire Protection - funded activities are specifically for the Office of Laboratory Protection to provide shift operations management support, emergency management, fire protection, nuclear materials control and accountability, and visitor services.

ADS-P98D0255 and A98D0003, Functional Area Transportation - funded activities are to provide a central point for interpretation and application of federal, state, and local regulations, and DOE Orders concerning transportation of radioactive and hazardous materials.

ADS-C97D0051, Functional Area Nuclear Safety - funded activities are specifically for the Office of Nuclear Safety to provide oversight of ORNL nuclear facility activities and operations and to ensure that requirements of federal laws and applicable DOE Orders are complied with to protect the public, the workers, and the environment.

ADS-C97D0017, Functional Area Quality Services - funded activities are to provide quality assurance, quality engineering, and inspection services to support the overall mission of ORNL in accordance with the direction provided in DOE Order 5700.6C and 10 CFR 830.120 for Quality Assurance.

Other ongoing overhead-funded activities include administration of the agreement-in-principles between the state of Tennessee and DOE (e.g., Tennessee Oversight Agreement/Health Studies Agreement), administration of the ESHQ&I overhead division services for engineering and maintenance, waste management operations, and infrastructure-based maintenance operations.

The “Core” ADS identified as being funded from Pool DA identifies and documents division administration ESHQ&I functions and services within programmatic-funded organizations. The FY 1999 ESHQ&I Budget Formulation Plan identifies those programmatic organizations where pooled internal division overhead is used to provide ESHQ&I services for the divisions. Examples include the activities of a Division Safety Officer, Environmental Protection Officer, Waste Certification Officer, etc. Internal division administration may also include activities such as maintenance functions for general, division-"owned" facilities. Additionally, an ADS is submitted to provide accounting of funding and ESHQ&I services for the High Flux Isotope Reactor and is listed under Research Reactors (RR) as a Pool ID. The purpose of the ESHQ&I support from internal division pooled resources is to provide (1) a safe environment for the public and employees and (2) division resource control to ensure compliance with regulatory requirements.

C. Target Compliance Milestones and Success Indicators (FY 1998 Commitments Progress)

Funded compliance ADSs are those that identify additional corrective actions, activities, or programs over and above the current Core ESHQ&I programs and that are required to improve facilities' state of compliance with all applicable ESHQ&I laws, regulations, agreements, and DOE Orders. After compliance has been achieved by activities identified in the funded compliance ADSs, continuing activities and resources to maintain compliance will then be included in core ESHQ&I functions at ORNL.

The current Secretarial Office responsible for Landlord activities at ORNL is Energy Research (ER), Office of Basic Energy Sciences (Budget and Reporting Code KC00000/Resource Structure Code YA0801). Prior to FY 1996, the Office of Multiprogram Energy Laboratories - Facilities Support (Budget and Reporting Code KG00000/Resource Structure Code YA091) was responsible for Landlord activities. This Plan includes carry-over activities funded through previous KG allocations. KG continues to fund Line Item Landlord projects for ORNL. However, requests for FY 1998 and out-years years for Landlord programmatic operating expense, capital equipment, and general plant projects are being submitted for KC funding allocations. The following is a summary of the funded compliance ADSs for milestone accomplishments, listed in total, adjusted, descending score order with a current status assessment.

A98D0004 Low-Value Equipment
This project provides overhead funding for landlord/infrastructure equipment under $25,000 in value. Items included in the scope of this project are vehicles, heating/ventilating and air conditioning units, forklifts, mowers, computer equipment, etc.

STATUS: $40K has been allocated for the replacement of HVAC units with once-through cooling water discharges.

C97D0142 OSHA Compliance Activities
This project provides overhead funding for the following activities:
OSHA Compliance, Machine Guarding project to correct 15 inadequately guarded machines identified through OSHA inspections. OSHA Compliance, RAC 3 Electrical to correct current electrical noncompliances by the end of 1998. Funds received will be spent to assist the Laboratory divisions in abating their RAC 3 noncompliances in the most cost-effective and efficient manner. The greatest number of RAC 3 findings are electrical. Lead Shop Upgrade will provide a burner/saw upgrade for lead shop. OSHA Compliance, RAC 3 Nonelectrical to complete the replacement of the deteriorated pedestrian bridge at Building 9201-3. Miscellaneous ESHQ&I tasks which includes procurement of fire extinguishers.

STATUS: Machine guarding corrections are approximately 10% complete. Work on electrical corrections will commence in April 1998. Lead Shop burner/saw upgrade is approximately 10% complete. A bid package for the 9201-3 pedestrian bridge replacement has been completed.

Procurement of 500 fire extinguishers has been completed.

C97D0005 Dechlorination System
This project will provides general purpose equipment funding to the chlorine system presently being used at the ORNL Sewage Treatment Plant (STP) to disinfect the effluent. As originally scoped, a dechlorination system was going to be installed; however, after some investigation, it was learned that an ozonation system could be purchased and installed for little more cost than the dechlorination system. The ozone system disinfects equally as well as chlorine, eliminates the use of a hazardous chemical (chlorine), has no residual in the effluent after a short time, and requires less operational and maintenance time than a chlorination/dechlorination system. The project was required after ORNL learned from the state of Tennessee that the new ORNL National Pollutant Discharge Elimination System (NPDES) permit would include chlorine limits (less than 0.012 g/L) that could not be met under current operating conditions at the STP.

STATUS: Procurement of the ozonation system is approximately 50% complete.

P98D0035 ORNL Subtitle I Underground Storage Tank (UST) Compliance
The purpose of the UST Management Program is to provide activities to ensure ORNL's compliance with RCRA Subtitle I requirements by FY 1998. The program costs reflect the minimum regulatory requirements to implement UST tightness testing, inventory management, monitoring, upgrade/replacement or closure, and site remediation. All USTs within the scope of this project have been remediated and/or replaced. The remaining activities include aeration of soils, disposal of rinsate, and site monitoring. Carryover KG funding is being utilized for project management, soils and rinsate disposal, and site monitoring. Landlord general purpose equipment funding was utilized for the replacement of USTs. The program is scheduled to be complete in FY 2000.

STATUS: Field work is complete, and closure of all sites is currently pending with the state of Tennessee.

P98D0034 Electrical OSHA Noncompliances (KG)
This project provides carryover KG funding for correction of current RAC 3 electrical noncompliances.

STATUS: This project is approximately 80% complete.

P98D0248 Uninterruptible Power System for Laboratory Emergency Response Center (LERC)
This project provides general purpose equipment funding to replace the Uninterruptible Power System (UPS) for the LERC which is not operative and cannot be repaired. The purpose of this system is to provide a continuous power supply to critical systems in the LERC, including the Enhanced 911 System, Emergency Public Address, Data Acquisition System for Laboratory Operations, radio networks, and other dedicated equipment for off-site agency notifications of operational incidents.

STATUS: Funding has been allocated for the procurement of this equipment.

C98D0020 Replacement Valve Test Stand
This project provides general purpose equipment funding to replace existing equipment (approximately 30 years or older) at ORNL. The Safety Surveillance Inspection function is funded by Laboratory overhead. ASME (NBIC) code requires periodic testing of safety valves to ensure their operability. Current practice does not allow testing liquid service valves with liquid as specified by the code. The demand for these testing services will remain with the Laboratory and will not diminish with time. The existing machine has only pneumatic capabilities and is frequently down for repair.

STATUS: Funding has been allocated for the procurement of this equipment.

D. Unfunded Compliance Liabilities with Identified Mitigated Actions

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

C97D0071 Fire Protection systems Upgrade (KC-GPP)
The following projects/tasks are in support of the ORNL fire protection systems.
(1) Upgrade fire sprinklers in the Central Research and Administration Building (4500S). The upgrade will include the extension of fire sprinklers into some areas not currently protected and interface modifications between the sprinkler systems and fire alarm systems in this 275,000-sq-ft building. (2) Replace two aged and failure-prone automatic preaction sprinkler system deluge valves with highly reliable automatic wet-pipe sprinkler system alarm valves in the High Voltage Accelerator Laboratory (5500). Interface modifications between the sprinkler systems and fire alarm system in this 52,000-sq-ft building will also be conducted. (3) Replace one aged and failure-prone automatic preaction sprinkler system deluge valve with a highly reliable automatic wet-pipe sprinkler system alarm valve that protects portions of the High-Level Radiochemical Laboratory Building (4501) and the Experimental Engineering Building (4505). (4) Improve protection of the vital Cooling Tower (7902) for the High Flux Isotope Reactor by replacing the corroded automatic dry-pipe sprinkler system that provides inadequate protection with state-of-the-art automatic pilot deluge sprinkler system. (5) Replace three aged and maintenance-intensive automatic dry-pipe sprinkler systems with more reliable/effective automatic wet-pipe sprinkler systems in the 45,000-sq-ft General Stores/Shipping and Receiving Complex (7001). (6) Replace the antiquated fire alarm system at the High Flux Isotope Reactor (HFIR); upgrade various antiquated fire alarm system components in ORNL research and support facilities; install early warning fire detection equipment in high-value research equipment areas; and replace the ORNL Central Fire Alarm Receiving Station. The HFIR fire alarm system is over 30 years old and is not capable of being further modified to perform all monitoring functions necessary to support continuing changes at the HFIR complex. Replacement parts are no longer available for many critical components. Additionally, fire alarm control and announcement equipment is located

deep inside the HFIR complex and may not be accessible to Fire Department personnel during a fire event. This project would replace the HFIR fire alarm system with state-of-the-art equipment capable of performing all necessary alarm and supervisory monitoring functions, alarm zone annunciation at the building entrance and in the control room, and be expandable to accept future changes at the complex. (7) Correct fire protection engineering assessment deficiencies in Building 7035B. (8) Install code-approved fire barriers and upgrade electrical wiring and fixtures in the paint storage and mixing areas of 7035. (9) HFIR Fire Protection Upgrade. FY 1999 (Accelerator Improvement Program/HFIR).

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

P98D0019 ORNL S&H - Building Electrical System Upgrade (KC-OE)
ORNL facilities' Condition Assessment Survey identified legacy vulnerabilities from fire and electrical shock hazards principally due to aging facilities and installations which do not meet the National Electrical Code. Many of these were categorized as Urgency Repair Code #1 - asset condition critical, Urgency Repair Code #2 - asset condition serious, or Urgency Repair Code #3 - asset condition degrades. Money is not available to address large electrical safety infrastructure issues under current funding programs. Therefore, a building electrical system upgrade proposal is logical and cost effective. It is essential that these needs be identified within the budgeting process. The primary areas requiring this enhanced support are: (1) wiring and panelboard replacement, (2) circuit identification and removal of abandoned services, (3) upgrade of wiring to meet the National Electrical Code, and (4) motor control center upgrades.

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

P98D0028 Chlorine Removal From Storm Drains (KC-OE)
Current NPDES permits require monitoring of each outfall for chlorine and where amounts above 1.2 grams per day are found, remediation is required. The source of chlorine is once through cooling of processes, water-cooled condensers, and underground water leaks. Funds from this project will be used to identify sources and eliminate them from the storm drain system.

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

C97D0097 Water System Upgrade (KG-LI)
This project will provide a needed infrastructure upgrade for the fire protection and potable water systems in the 6000 Area, 7600 Area, and west end of the Bethel Valley area of the ORNL. The project will install new lines to replace major feed lines installed during the early 1940s that have undergone structural degradation with age. The project will also provide improved fire protection capabilities and more reliable potable water supply to three locations in the Bethel Valley area that have been impacted the most by growth during the past 50 years. The upgrade will consist basically of the installation of approximately 19,000 feet of new 16-inch/12-inch water mains, isolation valves and motor controllers, and pressure-reducing valves and valve pits.

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

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

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

C97D0147 Fire Protection Systems Upgrade (KG-LI)
The following projects/tasks are in support of the ORNL fire protection systems.

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

suppression systems protecting these areas cannot be fully tested/maintained and show signs of water spray nozzles plugged with pipe scale/rust. (3) Replace numerous fire alarm control panels with modern fire alarm equipment and modify alarm device/evacuation horn circuits to utilize the full capability of the new control panels. Many fire alarm control panels and annunciators at ORNL are 30 to 40 years old and operate via antiquated technology (springs and shunts) which do not permit interface with modern fire detection and fire alarm initiation devices. These older panels also do not perform self-monitoring of fire alarm and evacuation horn circuits as required by mandated National Fire Codes, and replacement parts are not available to facilitate timely maintenance/repairs. (4) Install early warning smoke detectors to provide area protection in this lab and give early indication of an incipient fire to fire-response forces. High-value robotics research is conducted at the CESAR Lab in Building 6010. High-value, one-of-a-kind robotics equipment and work stations in this densely populated laboratory create the potential for a fire loss exceeding $1 million. (5) Upgrade the Central Fire Alarm Receiving Station at ORNL Fire Department Headquarters to replace antiquated equipment currently performing this vital function. This 20-year-old equipment monitors the condition of fire alarm systems and provides notification of fire alarm system activation for 200+ buildings at the X-10 site. It is imperative that this equipment remain highly reliable and that replacement parts be readily available. As the equipment ages, replacement parts are more difficult to procure and maintenance costs increase, resulting in questionable reliability. (6) Upgrade the engine driver and water pump in Pumphouse 7953. The manually operated gasoline engine driver and water pump in Pumphouse Number 7953 were installed in the early 1960s. This pump supplies fire protection and potable water to the DOSAR Site, which includes the Radiation Calibration Laboratory (7735), laboratories handling radioactive material in Building 7710, and Building 7709, the Health Physics Research Reactor Building currently being utilized for storage of one-of-a-kind replacement parts for the High Flux Isotopes Reactor. Recent tests of the aged pump and pump driver resulted in a failure to operate. This project will replace the manually operated pumping system with an automatic starting pump along with updating the aged maintenance-intensive equipment with modern equipment. (7) Upgrade fire barriers in ORNL facilities. National Fire Codes and regional/DOE adopted building codes contain requirements to limit the spread of fire to a certain square foot area. The Life Safety Code requires physical separation in protected means of egress. Both code requirements must be met by installed fire barriers, which are rated by Underwriters Laboratory (UL) to withstand a fire for a time period (e.g., one-hour rated, two-hour rated, etc.). These two old, very large administrative and research facilities do not currently have required fire barriers in place. (8) Install sprinklers in Room C110 and fire detection equipment in Rooms C109 and C111 of Building 6000. Recommendation from Fire Protection Engineering Assessment Building 6000 and Tiger Team Assessment ORNL-6657/VI/R3 of 10/90 (FP.4-1). (9) Upgrade fire alarm and sprinkler system for Building 4505. The fire alarm upgrade includes the following: replace the shunt-trip-type fire alarm annunciator panel; eliminate heat-actuated devices throughout the facility and replace with water flow switches for zone annunciation; add above/below sprinkler lines and heads as deemed necessary; and replace the horn panel in the east stairwell controlling all evacuation horns in the building. (10) Upgrade fire alarm and sprinkler systems for Building 4501. The fire alarm and sprinkler upgrades include the following: eliminate one of two master fire alarm boxes (MFAB) which serve 4501; replace two shunt-trip-type fire alarm annunciator panels adjacent to the two existing MFABs and an auxiliary annunciator panel near the sprinkler

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

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

7920 Hot Cells and Cubicles - Compensatory measures include the following.
- All spray nozzles in the cubicles were replaced with an improved type.
- Bypass valves were installed to flow test to the cell face.
- Regular pneumatic test and electrical circuit tests are conducted for leaks and continuity.
- Full-scale tests by Lawrence Livermore National Laboratory (LLNL) determined a high likelihood of confinement to a single cell and self extinguishment based on fuel available.

A95D0037 Facility Safety Documentation - Safety Analysis Reports Update Program (SARUP) (KC-OE)
Facility safety documentation upgrade for AMLD purview nuclear facilities to comply with LMER Work Smart Standards - DOE Orders 5480.22 and 5480.23 (and the associated pending Price-Anderson rules 10 CFR 830.110 and 830.320). This activity will produce compliant Safety Analysis Reports and Technical Safety Requirements. This work is being accomplished under the SARUP. Those nuclear facilities in this scope under AMLD purview are facilities 2026, 3019, 3025E, 3027, 3047, 5505, 7900, 7920, and 7930.

Mitigating Actions: This ADS covers preparation of Safety Analysis Reports (SARs) and

Technical Safety Requirements (TSRs) for the LMER nuclear facilities. The funding for the individual facilities varies from funded (e.g., facility 3019) to no funding (e.g., 2026, 3025E, and 5505). For the unfunded or partially funded facilities, the money to conduct the required work is taken from operational accounts and user fees. In the interim, while the SAR/TSR analysis work is ongoing, the risk of operation is managed by DOE-approved Basis of Interim Operation (BIO) safety documents and administrative controls identified in DOE-approved Operational Safety Requirement (OSR) documents for each facility.

C97D0080 Asbestos Abatement, ORNL at Y-12 - ERKCL51 (KC-OE)
Asbestos abatement includes removing asbestos from piping and equipment, as well as replacing asbestos ceiling panels, deteriorated asbestos ceiling plaster, etc. All these items increase the cost of maintenance if repairs are required. Some rooms/areas where asbestos lines or ceiling panels have fallen (steam/water leaks) are totally closed off where HVAC units and controls are located. Mitigating Actions: As maintenance jobs are worked that require removal of asbestos insulation and ceiling tiles, the repairs include going back with nonasbestos material. Several major problem areas are being administratively controlled with tagging and sealing off to limit access.

P98D0013 Remove Asbestos from Controlled Areas (KC-OE)

Asbestos controlled areas are areas where friable asbestos-containing insulation has become deteriorated and presents a potential health hazard (employee exposure) to employees entering these areas. Personal protective equipment is required to enter these area. Work includes the removal of friable asbestos-containing insulation via high-powered vacuum system (super sucker) and via insulation encapsulation. The targeted controlled areas are as follows: (1) Building 2000 attic, (2) Building 2001 attic, (3) Building 3550 attic, and (4) Building 2517 crawl space. Mitigating Actions: Presently, these controlled areas have limited access from the general plant population. Workers entering these areas are required to have asbestos awareness training prior to preforming any work in the area. A periodic walk-through, by a representative of the Asbestos Management Group, identifies areas needing additional attention.

P98D0007 ORNL H&S-Radiological/Toxicological Sabotage (KC-OE)
DOE Notice 5630.3A, "Protection of Departmental Facilities Against Radiological and Toxicological Sabotage," dated 6-28-93, was made applicable to ORNL by inclusion of Oak Ridge Order 151.1 Rev. 1, dated 9-30-96, into the baseline. It requires contractors to perform graded assessments of the risk due to sabotage with the level of hazards present in their facilities.

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

P98D0005 Compliance with Revised NPDES Limits (KC-OE)
NPDES Permit renewal includes effluent limits that may be met best by physically combining

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

Mitigating Actions: To mitigate NPDES permit compliance risks associated with the unfunded ADS P98D005, "Compliance with Revised NPDES Limits," the following actions have been taken: (1) ORNL is engaged in a project to install a new ozone disinfection system at the ORNL Sewage Treatment Plant. This system is expected to facilitate compliance with new NPDES limits on chlorine and on fecal coliform bacteria; (2) ORNL recently completed a toxicity-reduction evaluation at the STP, which has helped STP staff optimize operating parameters to minimize effluent toxicity; (3) DOE/ORNL has appealed certain limits imposed in the new NPDES permit, including fecal coliform at STP and arsenic and selenium at CYRTF. Until the appeal is resolved by the state of Tennessee, compliance with the new permit limits for those parameters is not required.

C98D0167 Cooling Tower Maintenance - ERKCL30 (KC-OE)
Cooling Towers 2026, 3525, 4511, and 6001 are critically degraded due to age and inadequate maintenance. GPP Funding is being requested to replace 4511 and 6001 towers; however, until the towers are replaced, extensive maintenance is required to preserve their operability and ensure the safety of personnel required to periodically clean the towers and maintain fans and gearboxes. (1) Building 4511 is currently unusable and cannot be placed in operation until underground crosstie valves (connecting its basin to 4510 tower) are replaced. The wooden structure is deteriorating at a rapid rate under dry conditions and becomes increasingly hazardous to maintain. The stagnant basin provides fertile conditions for legionella bacteria. (2) Building 6001 has undergone numerous structural repairs in the last two years and currently is in need of fan control upgrades along with system and basin cleaning to improve bacteria control and operating efficiency. (3) Building 3525 is operated for a potentially surplus facility, but is unsafe to access. Tower basin and piping leaks are also creating risk for unpermitted chlorine discharges to nearby storm drains. (4) Building 2026 requires a redesign of piping to eliminate overflows to the roof drain during bypass operation. Overflows increase risks for NPDES permit violations and frequently shut down building cooling operations.

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

C98D0169 Supplemental Roof Maintenance and Emergency Repairs - ERKCL30 (KC-OE)
Currently, leaks in roofing are causing structural failures and unsafe working conditions for the

general plant population and visitors. Additional funding would permit the reduction of roof repair backlog and would permit predictive and programmed maintenance of ORNL roofing.

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

C98D0181 Fire Systems Upgrade, ORNL at Y-12 - ERKCL51 (KC-OE)
Fire systems upgrade includes replacing and repairing identified fire protection issues: exit and emergency lights for egress, stairwell fire wall penetration repairs, fire doors replacement or repair, sprinkler systems installed, replacement of ceiling panels to comply with fire protection standards, etc. All facilities have identified findings currently in the ORNL LIDS System that require addressing.

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

S97D0058 Lockheed Martin Transportation and Packaging Management Facility (KC-GPP)
The new Lockheed Martin Transportation and Packaging Management (LMTPM) Organization facility is to be utilized by all LMTPM employees at ORNL. LMTPM personnel are located in three facilities: Building 3036 in Isotope Circle houses packaging engineers, chemical operators, and a material assistant; Building 7001 houses primarily traffic and shipping personnel, but also has packaging and Quality Assurance employees; and Building 6026G houses transportation management, packaging engineers, and compliance personnel. Besides improving the effectiveness and efficiency of the entire LMTPM operation at ORNL, the primary need for the new LMTPM facility is to relocate LMTPM personnel in Building 3036 and return Building 3036 to the Chemical Technology Division (CTD).

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

P98D0021 ORNL Safety and Health - OSHA Regulatory Compliance (KC-OE)
LMER's 1998 goal of identifying and correcting all serious OSHA noncompliances (RAC 1's and 2's), and 100% of all previous other-than-serious noncompliances (RAC 3's) has resulted in compliance funding requirements beyond that which current programs can fund. Money is not available to address large OSHA noncompliance issues that meet the above demands. Therefore, an OSHA Regulatory Compliance proposal is logical and cost effective. It is essential that these needs be identified within the budgeting process. This activity is proposed to upgrade ORNL facilities and programs to achieve compliance with OSHA standards. The primary areas requiring this enhanced support are (1) continued assessment of OSHA noncompliances to evaluate and select compliance alternatives and define and prioritize abatement plans and (2) corrective actions for noncompliances with emphasis on serious- and medium-risk noncompliances (RAC 1's, 2's, 3's). Continued inspections have been made to identify industrial hygiene and industrial safety noncompliances. The results of these inspections and recent surveys have specifically identified and quantified many noncompliances by sub-part. Additional out-year expense and capital funding will be required to provide for upgrades of ORNL facilities and programs to a level of worker health and safety equivalent to OSHA requirements. In addition, programs will be established to ensure the maintenance of this level of worker safety and health protection.

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

P98D0026 ORNL Facility Asbestos Survey (KC-OE)
Approximately 60 percent of the facilities located at ORNL have been surveyed for the identification of asbestos. This program will provide funding to complete the asbestos survey for the remaining 40 percent of the buildings within the ORNL facility.

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

C97D0069 Upgrade Electrical systems, 3019, 3025, 3500 (KC-GPP)
This project will replace obsolete and inadequate switchgear and transformers at the main electrical service entrances to these buildings. These electrical devices are the control points for the main electrical systems in each of these facilities. Much of this equipment has been in service for 50 years and must be replaced to ensure reliable electrical service to the customers and provide a safe environment for building occupants, system operators, and maintenance personnel.

Mitigating Actions: Electrical service is provided to these facilities through 50-year-old service entrances and other aged equipment. In most facilities, this equipment is serviceable and will

remain reliable as long as it is properly maintained. All new loads on facility electrical systems are reviewed for possible impacts on these older services. Facility maintenance personnel recognize that many of the electrical systems are old and require a higher level of care.

C97D0070 Upgrade Electrical Systems, 6000 and 7000 Areas (KC-GPP)
This project will replace obsolete and inadequate switchgear, transformers, and motor control centers at the main electrical service entrances to these buildings. These electrical devices are the control points for the main electrical systems in each of these facilities. Much of this equipment has been in service for 50 years and must be replaced to ensure reliable electrical service to the customers and provide a safe environment for building occupants, system operators, and maintenance personnel.

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

S97D0036 Electrical Upgrade, ORNL at Y-12 - ERKCL51 (KC-OE)
Electrical upgrades include (1) replacing lighting center, (2) restoring 480-V electrical systems, (3) replacing crane feed rails, (4) upgrading switchgear areas, and (5) upgrading intercom/radio system.

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

C97D0081 Water System Upgrade in ORNL Facilities (KC-GPP)
The scope of this activity includes the upgrade of water supply systems and encompasses the following.

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

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

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

P98D0003 Nuclear Criticality Safety Program: 0 420.1 Upgrade (KC-OE)
Section 4.3 of DOE Order O 420.1 has been adopted as the principal Nuclear Criticality Safety (NCS) Work Smart Standard requirement for LMER. While bringing needed flexibility in the application of ANS 8 NCS requirements and recommendations, O 420.1 does increase the number of NCS requirements that must be addressed by Nuclear Criticality Safety Evaluations (NCSEs) and Approvals (NCSAs). This proposal requests the additional funding, above that provided to overhead-funded LMER NCS Program, that is required to bring LMER into compliance with O 420.1. This includes completing the upgrade of NSRs to NCSAs/NCSEs per the approved implementation plan for 5480.24 (the predecessor to O 420.1 Section 4.3).

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

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

E. Activity Data Sheets Summary of Improvement Activities (FY 1998 Commitments Progress)

Improvement ADSs have been identified and included in this Plan for those new or ongoing activities beyond Core and Compliance activities, that will raise the level of ESHQ&I performance, lower the level of ESHQ&I risks at a site or facility, and help the facility move toward excellence in ESHQ&I performance. Improvement activities do not affect the minimum level of ESHQ&I compliance. Improvement activities encompass best management practices for improved efficiency and effectiveness. The following planned ES&H abatement activities for improvement projects in FY 1998 were listed in the *FY 1998 ES&H Management Plan for ORNL* issued in January 1998:

C97D0125 CFC Phaseout - Clean Air Act Compliance (GPE)
This activity will replace air-conditioning equipment using Class I ozone-depleting refrigerants (CFCs). Production of CFCs is being phased out in compliance with the requirements of the Clean

Air Act. Failure to implement this activity would have resulted in the shutdown of some research facilities due to the unavailability of replacement CFC refrigerants, which would impact ORNL's ability to accomplish site missions. Replacement of chillers at Buildings 7900 and 7930 will be completed during FY 1998. Direct digital controls will be installed on chillers previously replaced at 6000N and 6000S. Additionally, smaller HVAC systems utilizing CFC-1 will be replaced in Buildings 2001, 2013, 2018, 3017, 3025E, 3550, and 4500N. Work on the chiller at Building 3025, originally planned for FY 1997, is being deferred until FY 1999 due to changes in the proposed method of accomplishment. This chiller will be procured in FY 1998 and installed early in FY 1999 after the cooling season is over. This deferral will not adversely impact the compliance status of ORNL since adequate CFC refrigerant is available to support operation of this chiller through FY 1999.

Status: Installation of the new chiller at 7930 is 90% complete. The chiller for building 7900 has been delivered, but installation has been delayed until October 1998 due to operational considerations. A replacement for Chiller #6, Building 4509, has been delivered. Installation should be completed by July 1998.

C97D0004 HVAC Upgrades, ORNL at Y-12 (GPP)
This activity will replace HVAC Unit #4 in Building 9210 at Y-12. The existing equipment has exceeded its life expectancy and is unreliable and expensive to maintain. Due to the live animal research in these buildings, replacement of this equipment has significant H&S and mission impacts.

Status: This project is 90% complete with startup projected for May 1998.

C98D0013 ORNL External Dosimetry Program (OH)
A significant radiological issue abated in FY 1997 was the recertification of the ORNL External Dosimetry Program by the DOELAP. The original program was a centralized system comanaged by LMES. The recertification due this year was the first time that ORNL had the opportunity to gain certification as a separate entity. Certification was granted with no findings and only minor concerns. All activities for recertification were completed in FY 1997 with existing Laboratory overhead funding allocation. A dosimetry system upgrade project was approved for FY 1998 for $170K in GPE funding. The upgrade will procure new dosimetry readers to assure that state-of-the-art equipment is used for personnel safety.

Status: Funding has been allocated for this system. A specification is being prepared for bid.

C98D0183 Replace Primary Transformers, 7901 Area (KC and KG-GPE)
This project will provide for the replacement of four transformers serving the HFIR facilities. These electrical devices provide electrical power to the HFIR facilities. Despite excellent preventive maintenance, problems related to age, safety, and system operability and reliability have developed. The system replacements will provide a safer, more modern, reliable electrical distribution and supply system for the HFIR facilities.

Status: The transformers have been delivered, and a specification for installation of transformers has been prepared for bids.

C97D0090 3000 Area Water Isolation Valves (KG-GPP)
This funding provides for the completion of the project initiated in FY 1995. Remotely operated valves are being installed in seven locations in the 3000 Area of ORNL to permit rapid response to waterline leaks to minimize any potential environmental impacts.

Status: This project is complete.

C97D0149 Rubb Tent for the Coal Yard Treatment Facility (KC-GPP)
This project will provide a Rubb tent structure to enclose the Coal Yard Runoff Treatment Facility, which will permit uninterrupted operations during extremely cold weather, decreasing the likelihood of unpermitted NPDES excursions.

Status: This project is complete.

S97D0010 3000-SCFM Compressor, Building 2519 (KC-GPP)
This project will provide for the purchase and installation of a new 3000-scfm rotary screw turbine-type oil-less air compressor to replace two aging units at Building 2519. Clean, oil-free compressed air is used throughout the Laboratory to control equipment, systems, and processes and is a critical utility in the operation and maintenance of the Laboratory.

Status: A specification for procurement and installation of this compressor is being prepared.

VI. FY 1999 ESHQ&I Key Management Issues

The purpose of an ES&H issues management process is to ensure that potentially significant issues are recognized, that summary-level information is communicated to the decision-making level, that expectations are established and assigned for resolution, and that issues are resolved in a complete and timely manner. A set of high-level issues that represent strategic or high-level tactical concerns have been identified as key risk management issues. They are as follows:

- Integrated safety management system,
- ORNL self-assessment of programs and activities against the Brookhaven National Laboratory report,
- implementation of management and integration (M&I) contract,
- responsibility for waste management of newly generated waste,

- infrastructure improvements and associated funding requirements,
- Safety Analysis Report Update Program (SARUP), and
- issues management process.

A. Integrated Safety Management System (ISMS)

The Department of Energy issued DOE P 450.4, *Safety Management System Policy*, which requires both DOE and its contractors to systematically integrate ES&H protection into work planning and execution at all levels. The requirement for implementation of this policy is specified in the DEAR clause. This clause requires that contractors establish and document for DOE approval an ISMS consistent with the policy.

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

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

The following are scheduled for completion by the date specified.

- Initiate division-level ISMS plans in January 1998, with completion by August 1, 1998.

- Implement LMER-wide ISMS by September 30, 1998.

B. ORNL Self-Assessment of Programs and Activities Against the BNL Report

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

action plan.

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

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

C. Responsibility for Waste Management of Newly Generated Waste

Responsibility for waste management of newly generated, as well as legacy, waste is currently being transitioned to the new management and integration contractor. The generation and management of wastes are inherent elements of many operations at ORNL. The insertion of an outside contractor into these operations is certain to have economic and operational impacts. A more logical, and cost-effective, approach would be to leave the responsibility for waste management of newly generated wastes with ORNL as the operating contractor. It is proposed to transition waste management responsibilities for ORNL's newly generated waste from EM 30 to DOE-ER by FY 2000 or 2001. While this transition provides an opportunity to recover the physical facilities and fiscal responsibility for this critical component of ORNL's research-supporting infrastructure, several near- and long-term issues must be resolved. They include the following.

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

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

- Development of a thorough understanding of the long-term DOE-ER vulnerabilities associated with these responsibilities, including inventories of orphan wastes, waste management facilities decontamination and decommissioning (D&D) and closure costs, and regulatory commitments under permits and/or Federal Facilities Agreements.

Each of these issues could have significant impacts on research funding levels at ORNL and on the Laboratory's mission success.

D. Implementation of the Management and Integration Contract

The Oak Ridge Environmental Restoration program is entering a new phase as the management and integration (M&I) contractor assumes responsibility for Environmental Management and Waste Management at ORNL effective April 1, 1998. This will affect ORNL in three primary areas: (1) reduction in ORNL direct scientific and support labor in project implementation; (2) increased ORNL vulnerability as outside remediation firms conduct remedial actions near active research and administrative support areas; and (3) regulatory decision-making on long-term land use plans for major portions of the ORNL site. Near-term impacts on research and support divisions are already being felt as DOE steps up its strategy for outsourcing major components of the remediation program. Proactive marketing to existing EM 40 sponsors, teaming with local commercial firms, and seeking new environmental business clients are all part of the emerging ORNL strategy for managing the first issue. Both the ES&H concerns related to increasing site presence of new contractors and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) decision-making process related to long-term land use designation for ORNL property need close scrutiny as the new M&I contractor assumes ownership of these issues.

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

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

E. Infrastructure Improvements and Associated Funding Requirements

The Oak Ridge National Laboratory has one of the oldest physical plants in the DOE complex. Adequate funding for, and management of, infrastructure are critical to the success of the DOE and ORNL missions. The success of missions, the health and safety of workers, and the protection of the environment are all dependent upon adequate infrastructure. At a time of mission uncertainty, decreasing program budgets, and pressures to reduce facility overhead, investments in infrastructure are often increasingly difficult to make. However, underfunded infrastructure does not save cost in the long term. Deferred maintenance and infrastructure improvements soon

result in increased construction needs, make operations less efficient, and increase ES&H risks. Funding levels for general plant projects (GPP) and general purpose equipment (GPE) have declined significantly, compared to pre-1996 levels. The current GPP budget is less than half of the pre-1996 budget. The current level of GPP funds, $3.1M, remains considerably less than needed or requested. This level of funding is sufficient to meet a only small portion of the Laboratory's most critical needs. The recent increase in the GPP funding level from $2.0M to $5.0M further exacerbates this situation by placing an even larger scope of work, previously funded as line item projects, within the GPP funding program. To most effectively meet the future needs of ORNL programs, future GPP funding levels need to be consistent with pre-1996 levels. Although GPE funding levels have not decreased as severely as GPP over the last four years, over 70 percent of the Laboratory's GPE funds have been committed to two compliance projects: replacement of underground storage tanks and replacement of CFC chillers. To most effectively meet the future needs of ORNL programs, a substantial increase in funding will be required for future years.

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

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

F. Safety Analysis Report Update Program

The Safety Analysis Report Update Program (SARUP) is an unfunded compliance activity identified in this Plan submittal. The SARUP for AMLD purview nuclear facilities would comply with LMER Work Smart Standards (DOE Orders 5480.22, 5480.23, and the associated pending Price-Anderson rules 10 CFR 830.110 and 830.320). Nuclear facilities under the AMLD purview are facilities 2026, 3019, 3025E, 3027, 3047, 5505, 7900, 7920, and 7930.

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

G. Issues Management Process

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

and timely manner.

An issues management process should provide an organizational focus on the most important issues and concerns facing ORNL. It should provide an easily understood management focus on activities intended to introduce needed major changes and ensure that resolution activities remain focused on addressing the issue by satisfying the agreed-upon characteristics of the solution.

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

VII. Budget Analysis Support Information

A. Major Planning Assumptions

Planning assumptions are based on direct guidance from the Secretarial Office funding programmatic activities at ORNL. In addition, DOE-ORO funding guidance is followed to ensure consistency of Field Work Proposals (FWPs), ADSs, Capital Equipment Requests, General Plant Project Requests, and Line Item Requests. All overhead planning assumptions are based on a prioritization of risks to the mission of ORNL, personnel safety and health, environmental issues, and public issues. ORNL is dedicated to ensuring that all regulatory requirements are met or exceeded. Reductions in funding may impact some of the requirements of DOE Orders and may severely impact best management practices (BMPs).

B. Funding Bases

The Secretarial Office responsible for landlord activities at ORNL is Energy Research (ER), Office of Basic Energy Sciences (BES). 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 ER and other programs as a result of the ESHQ&I Management Planning efforts are recognized through ADS submittals. Where cost is escalated on an ADS included in this Plan, a cost escalation rate of approximately 3.2 percent for labor and materials is used.

ORNL ESHQ&I activities are either direct (Program) funded or 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), division-specific overhead pools (DA), 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 Compliance and Documentation) recognize their cost of operation through Target ADSs for which costs correspond directly with ORNL overhead budget documents. Unfunded activities which should appropriately be funded through the ORNL overhead budget are recognized as "Supplemental." Direct programmatic funding requests by the ORNL ESHQ&I organizations are submitted through FWPs. The FWP submittals working in concert with the ADS submittals allow both overhead and programmatic organizations to request landlord direct funding for ESHQ&I activities.

ESHQ&I overhead funding targets were developed as part of the FY 1998 ORNL Site overhead budgeting process. Following risk prioritization of activities, recommendations are made to ORNL management for funding of targets and consideration for funding of supplemental requests. ORNL management then allocates available target funding to ESHQ&I organizations for their activities. Overhead funding is reviewed by the DOE Site personnel for concurrence. Following adjustments, ESHQ&I organizations are 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.

C. FY 1998 ESHQ&I Indirect Budget Summary

ESH&I Indirect	FY 1998 Indirect Budget
Office of Environmental Protection	$4,781K
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	
Health Division	
MS - Occupational Medical Services	2,685K
Office of Laboratory Protection	5,786K
EP - Emergency Preparedness	
FP - Fire Protection	

Office of Safety and Health Protection & Office of Nuclear Safety IS- Industrial Safety IH - Industrial Safety NS - Nuclear Safety TS - Transportation Safety MO - Management and Oversight	5,775K
Office of Quality Services MR - Environmental Management, Oversight, and Reporting MO - Safety Management and Oversight	1,992K
Office of Radiation Protection RP - Radiation Protection	4,227K
Sanitary/Industrial Waste Management Operations Other Overhead	608K
Transportation Operations	763K
Plant and Equipment Division	14,597K
Low Value Equipment (LVE)	450K
Hazardous Materials Management	476K
Other Overhead - OSHA Compliance, RAC3 Nonelectrical - OSHA Compliance, RAC 3 Electrical - Lead Shop Upgrade - General ES&H - Division Administration	425K
Total	$42,565K

D. ESHQ&I Direct Budget

1. Summary Direct Budget

The following is a listing of planned FY 1998 direct costs and revised funding targets following reconciliation of FWPs and ADSs.

DA Activities[1]	$ 6,291K
DI Activities[2]	12,847K
HFIR Safety[3]	12,196K
KG Program[4]	7,642K
KC Program[5]	9,875K
Total	$48,851K

[1]From the direct target ADSs in the FY 2000 Budget Formulation Plan submittal, DA is designated spending by R&D divisions and programs from their division programmatic funds in support of ES&H needs. These activities included support for internal division personnel with dedicated ES&H roles (e.g., division safety officer) and other expense activities such as the correction of safety shower and eyewash station deficiencies. In addition, direct target funds reported were from expected funding to support projects and activities with an identifiable percentage for ES&H support as well as infrastructure support Direct unfunded ADSs will be identified in the FY2000 ES&H Management Plan (Execution). Unfunded items are continually being reviewed to determine if funding allocations need to be adjusted to allow for completion of these activities.

[2]From the direct target ADS C97D0148 in the FY 1999 Budget Formulation Plan submittal, DI is designated as planned distributed cost incurred for ES&H services procured by other ORNL divisions/offices/programs.

[3]HFIR operating cost is the total operating cost of $12,196K on ADS E93D0021, "High Flux Isotope Reactor Operation." This funding recognizes costs for ES&H-related activities which are funded through the Basic Energy Sciences Program activities.

2. Line Item Summary (ERKG)[4]

FY 1998 Funded Items

Net Score	ADS No.	ADS Title	FY 1998 Budget
168.43	C97D0005	Dechlorination System (GPE)	$ 25K
163.35	S97D0017	Steam Plant Upgrade (LI)	3,400K
149.85	P98D0035	ORNL Subtitle I UST Compliance (OE)	135K
27.90	C98D0003	Aerial Work Platform/Boom Lift (GPE)	52K
27.90	C98D0010	Electric Personnel Lift (GPE)	30K
22.05	P98D0034	Electrical OSHA Noncompliances (OE)	11K
17.10	S97D0029	Roofing Replacement (LI)	3,921K
17.10	C98D0006	Thermography Technology (GPE)	68K
			$7,642K

FY 1999 Funded Items

Net Score	ADS No.	ADS Title	FY 1999 Budget

163	S97D0017	Steam Plant Upgrade	$1,900K
17	S97D0029	Roofing Replacement	4,908K
			$6,808K

FY2000 Planned Items

Net Score	ADS No.	ADS Title	FY 2000 Budget
212	C97D0106	Electrical Systems Upgrade	$2,000K
172	C97D0097	Water Systems Upgrade	3,200K
17	S97D0029	Roofing Replacement, ORNL	1,749K
			$6,949K

3. General Plant Equipment Summary (ERKC) [5]

FY 1998 Detailed List of Acquisitions

Net Score	ADS No.	ADS Title	FY 1998 Budget
189.09	C98D0004	Computing Systems & Supporting Modules for SAP	$ 641K
26.23	C98D0185	Boot Shop Spray Booth Automation	120K
20.79	P98D0248	Uninterruptible Power System (UPS) for LERC	56K
19.80	C98D0020	Replacement Valve Test Stand	123K
17.25	C98D0099	Bucket Truck	160K
16.65	C97D0125	CFC Phaseout - Clean Air Act Compliance (KC)	1900K
14.85	C98D0179	Replace Steam Plant Economizers	300K
13.95	C98D0009	LERC Data Acquisition System Upgrade, Bldg. 4512	40K
13.59	C98D0021	Particulate Counter for Filter Testing	49K
10.89	C97D0083	HVAC Upgrades - GPE - Target	229K
9.90	P98D0250	Replace Emergency Response Vehicle	110K
9.13	C98D0121	Replace Fleet Vehicles (GPE)	330K
9.09	C98D0182	LDRD - General Purpose Equipment	260K
9.00	C98D0012	480/240 Volt Standby Generator, Trailer Mounted	65K
8.10	C98D0001	Trash Truck Compactor, Front Loading	170K
8.10	C98D0005	Distill Water Makers, 4500N and 4500S	65K
8.10	C98D0007	CNC Engraver	32K
8.10	C98D0014	Upgrades for Mass Spectrometers	75K
8.10	C98D0035	Crane Replacement	125K
7.02	C98D0015	Network Appliance F230	125K
6.88	C98D0011	Microwave Network Analyzer	70K
1.48	C98D0034	Forklift Replacement	83K
1.12	C98D0068	Replace Drill Press in Ironworker Shop	47K
0.99	C98D0017	Ultraspec Model 890940 Diagnostic System	38K
0.99	C98D0018	Wet Magnetic Particle Inspection System	68K

0.99	C98D0026	Remote Visual Inspection System	88K
0.99	C98C0183	Replace Transformers, Building 7901 (HFIR)	325K
0.89	C98D0019	Sullair 1600Q Portable Rotary	100K
0.22	C98D0013	Dosimetry System Upgrade	170K
0.13	C98D0008	Falcon 400 CNC Lathe	200K
0.13	P98D0252	Pipe, Angle, Channel Bending Machine	72K
		TOTAL FY 1998	$6,235K

FY 1999 Proposed Acquisitions

Net Score	ADS No.	ADS Title	FY 1999 Budget
189.09	C98D0004	Computing Systems & Supporting Modules for SAP	$592K
150.60	C98D0053	Automatic Film Processor	45K
75.12	C98D0063	Electronic Heat Sealer	33K
20.79	C98D0044	Oil/Grease Separator	113K
18.09	C98D0094	Road Grader	130K
16.65	C97D0125	CFC Phaseout - Clean Air Act Compliance (KC)	1,000K
14.85	C98D0179	Replace Steam Plant Economizers	300K
13.63	C98D0060	Alpha 2100 Computer System	60K
10.93	C98D0078	Manlift, Hydraulic Operated	27K
10.89	C97D0083	HVAC Upgrades - GPE - Target	411K
10.44	C98D0109	Radioactive Materials Shipping Cask	750K
9.13	C98D0121	Replace Fleet Vehicles (GPE)	330K
9.09	C98D0182	LDRD - General Purpose Equipment	260K
8.10	S97D0018	Replacement of Air Compressors - Bldg. 7603	275K
3.24	C98D0045	Colmac High-Production Shirt Press	63K
3.15	C97D0082	Elevator Upgrades	1,000K
2.97	C98D0025	Advanced Network Communications Analyzer	45K
2.02	C98D0079	Pants Press, Colmac High-Production Automated Unit	70K
1.80	C98D0027	ATI-TDA-100A Automatic Tester	60K
1.48	C98D0034	Forklift Replacement	25K
1.03	C98D0082	100 kW Electric Generator	70K
0.22	C98D0013	Dosimetry System Upgrade	170K
0.13	C98D0052	Retrofit Packages for Leblond Lathes	300K
0.00	C98D0029	Portable Time-Frequency Vibration Diagnostic System	100K
		TOTAL FY 1999	$6,229K

FY 2000 Proposed Acquisitions

Net Score	ADS No.	ADS Title	FY 2000 Budget
16.65	C97D0125	CFC Phaseout - Clean Air Act Compliance (KC)	$1,000K
10.89	C97D0083	HVAC Upgrades - GPE - Target	460K
9.13	C98D0121	Replace Fleet Vehicles (GPE)	330K
9.09	C98D0182	LDRD - General Purpose Equipment	260K
3.15	C97D0082	Elevator Upgrades	1000K
1.48	C98D0102	Gauge Block Comparator	34K
1.44	C98D0105	Compactor Trailer	100K
0.13	C98D0056	25 Inch CNC Lathe	350K
0.09	C98D0106	Eddy Current Equipment	40K
0.00	C98D0032	Portable Data Acquisition and Analysis System	150K
0.00	C98D0036	Inductively Coupled Plasma/Atomic Emission Spectro	80K
0.00	C98D0038	Capillary Electrophoresis Analyzer	55K
0.00	C98D0039	Miniature Portable Field Gas Chromatograph	32K
0.00	C98D0040	Portable Photoacoustic Infrared Analyzer	65K
0.00	C98D0041	FTIR Microscope	60K
0.00	C98D0042	Laboratory Fume Hoods (2)	40K
0.00	C98D0043	Variable Pressure Scanning Electron Microscope	175K
0.00	C98D0048	Fast Digitizing Oscilloscope	32K
0.00	C98D0051	Fluke 5700A Tester	42K
0.00	C98D0076	Rapid Multilayer PCB Prototyping System	40K
0.00	C98D0080	100 Ton Crane	953K
0.00	C98D0093	300 kW 480VAC Diesel Driven Electric Generator	147K
0.00	C98D0101	Microwave Signal Generator	38K
0.00	C98D0103	ORNL HP Instrument Upgrade	610K
0.00	C98D0166	Install Dry Cleaners at HFIR	400K
0.00	P98D0249	Replace 1966 Fire Truck	325K
0.00	P98D0251	CNC 5-Axis Milling Machine	550K
		TOTAL FY 2000	$7,368K

4. General Plant Projects (ERKC)[5]

FY 1998 Detailed List of Projects

Net Score	ADS No.	ADS Title	FY 1998 Budget
311.85	C98D0120	Environmental and Life Sciences Laboratory	$200K
150.43	S97D0001	Neutron Sciences Support Building	1,775K
149.98	P98D0253	HFIR Users Facility	265K
6.88	S97D0032	West End Steam Upgrade Completion	200K
1.80	S97D0010	3000 SCFM Air Compressor - Building 2519	1,000K
1.35	C98D0177	Upgrade the Condensate Return System	200K

		TOTAL GPP FOR FY 1998	$3,640K

FY 1999 Proposed Projects

Net Score	ADS No.	ADS Title	FY 1999 Budget
315.45	S97D0021	Repair #1 Reservoir	$1,600K
311.85	C98D0120	Environmental and Life Sciences Laboratory	1,750K
163.35	S97D0055	500,000-Gallon Steel Fuel Oil Storage Tank	1,500K
57.44	C97D0089	Maintenance Shop Addition 4509	910K
14.85	C98D0145	Replace East End Water Softeners - B 2519	750K
2.38	S97D0012	Building 7002 Changehouse Upgrade	500K
1.35	C98D0177	Upgrade the Condensate Return System	300K
		TOTAL GPP FOR FY 1999	$7,310K

FY 2000 Proposed Projects

Net Score	ADS No.	ADS Title	FY 2000 Budget
199.90	C97D0071	Fire Protection Systems Upgrade (KC)	$1,500K
32.67	S97D0058	LM Transportation & Packaging Management Facility	1,900K
20.70	C97D0069	Upgrade Electrical Systems, 3019, 3025, 3500	475K
20.70	C97D0070	Upgrade Electrical Systems, 6000 and 7000 Areas	400K
20.70	S97D0056	#5 Boiler Upgrade, ORNL Steam Plant	500K
19.80	C97D0081	Water System Upgrade in ORNL Facilities	1,900K
14.85	S97D0052	HFIR Entrance Addition/Expansion	1,000K
11.70	C97D0059	Replace Liner - East Aeration Pond	1,500K
11.70	S97D0051	HVAC Upgrades - GPP - Supplemental	2,300K
6.88	C98D0123	Child Care and Fitness Center	1,000K
4.45	S97D0059	Security Perimeter Configuration	600K
2.34	C97D0057	Upgrade Condensate Removal, ORNL Steam Dist. Sys.	1,100K
0.90	C97D0104	Road and Parking Lot Paving - ORNL	420K
0.00	C98D0110	Demolish and Replace Building 6003	1,900K
		TOTAL GPP FOR FY 2000	$16,495K

5. ESHQ&I Field Work Proposals for Expense Funding

Net Score	ADS No.	ADS Title	FY1999	FY2000
188	P98D0019	ORNL S&H - Bldg. Electrical System Upgrade	2,318K	2,000K
176	P98D0028	Chlorine Removal from Storm Drains	660K	490K
163	P98D0027	Rehabilitate ORNL Potable/fire Protection Water	1,159K	421K
85	P98D0013	Remove Asbestos from Controlled Areas	522K	243K
75	P98D0025	Energy Research Surplus/Inactive Facility Program	449K	2,382K
74	P98D0007	ORNL H&S-Radiological/Toxicological Sabotage	452K	328K

47	P98D0005	Compliance with Revised NPDES Limits	459K	407K
30	P98D0008	ORNL Maintenance Training Job and Task Analysis	693K	0K
22	P98D0021	ORNL Safety & Health-OSHA Regulatory Compliance	2,726K	2,201K
21	P98D0026	ORNL Facility Asbestos Survey	407K	349K
19	P98D0003	Nuclear Criticality Safety Program 0 420.1 Upgrade	365K	325K
18	P98D0010	ORNL Industrial Safety Training Upgrades	539K	479K
17	P98D0023	Upgrade Backflow Preventer Valve Stations	211K	0K
14	P98D0017	Lead Shop Pilot Project	191K	0K
10	P98D0011	ORNL Maintenance - LCAM Compliance/facilities CAS	1,104K	982K
8	P98D0004	Waste Management Strategic Planning	942K	890K
2	P98D0015	Road and Parking Lot Repair - ORNL	817K	247K
1	P98D0018	Mobile Self-Contained Decontamination Unit	1,167K	0K
1	P98D0009	ORNL Asbestos Survey Data Retrieval System	70K	0K
0	P98D0016	Heavy Metal Survey and Assessment	289K	208K
0	P98D0022	Fire Sprinkler Piping Maintenance - OE	20K	0K
0	P98D0014	Grounds Improvements at ORNL	235K	171K
0	P98D0247	Pollution Prevention Implementation	229K	283K
		Total ESHQ&I FWP	$16,024K	$12,406K

6. Programmatic Infrastructure Improvements

The following ADS descriptions identify major programmatic requirements at ORNL.

S97D0043 Laboratory for Comparative and Functional Genomics
The Laboratory for Comparative and Functional Genomics (LCFG) will provide a modern gene function research facility and protection for the genetic mutant muse lines created during the past 50 years and will support the Department of Energy's research programs. Replacing the deteriorated facility at the Y-12 Weapons Plant on the ORNL Life Sciences Complex will meet these programmatic needs. This line item funding request is for the animal facility.
(FY00 - $8,000K, FY01 - $4,000K)

S97D0044 HFIR Thermal Neutron Guide Hall
The scope of this project is to provide a facility with as many as five shielded neutron guides and an initial complement of neutron-scattering instruments. The Guide Hall would be attached to the HFIR building by interconnecting doors and vestibules to maintain confinement; neutron beams pass from the HB-2 position in the HFIR biological shield through shielded guides to the Guide Hall and then to the neutron instruments.
(FY98 - $370K, FY00 - $8,000K, FY01 - $15,600K)

S97D0045 Computational Sciences Building
This project would construct a new multistory computer laboratory and office building of approximately 20,000 sq ft. It would be located north of the Central Research Complex and would house the Center for Computational Sciences research and support staff along with their

collaborators.
(FY01 - $50K, FY02 - $2,000K, FY03 - $3,000K)

S97D0046 Spallation Neutron Source
The Spallation Neutron Source is a new experimental facility planned to meet the national need for neutron scattering and related research. The facility will be available to scientist from universities, from industry, and from other federal laboratories. The facility will be equipped with an initial complement of advanced instruments for neutron beam research. The facility will be built around a spallation neutron source. Combining the higher source power with improved experimental facilities will create a useful neutron flux significantly higher than is now available at any facility in the world. There will be beam lines for neutron scattering instruments or other neutron research equipment in the experimental hall. The potential also exists for the development of entirely new lines of scientific research based on the enhanced capabilities that will be available in the facilities.
(FY98 - $23,000K, FY99 - $128,400K, FY00 - $196,000K, FY01 - $254,900, FY02 - $253,000, FY03 - $184,900, FY04 - $78,300)

S97D0047 Advanced Materials Characterization Laboratory
The Advanced Materials characterization Laboratory is a new facility planned to provide the high-quality environment required to optimize performance of sophisticated characterization equipment essential for the next generation of advanced materials R&D and the centralization of advanced materials structural characterization equipment.
(FY02 - $12,000K, FY03 - $15,000)

S97D0053 HFIR Remote Handling Facility
This project will provide remote handling capability at the HFIR in the form of a new hot cell and telemanipulators over or near the reactor pool. Availability of hot cells in ORNL to new scientific endeavors has become limited.
(FY98 - $100K, FY99 - 10,010K)

S97D0054 ORNL Power Electronics Laboratory Facility Upgrade
The Engineering Technology Division is in the process of establishing a digital and power electronics laboratory on the first floor of Building 9201-3 at the Y-12 plant. The digital and power electronics laboratory will be used to perform advanced state-of-the-art research on axial and radial gap electrical machines (motors), multilevel inverters for high-voltage power control, and resonant snubber inverters for variable speed drives and other applications.
(FY98 - $300K, FY01 - $200K)

S97D0057 Building 3144 Addition
This activity will increase floor space in the Building Technology Center by 30 percent to accommodate two new program areas and improve productivity of the existing building equipment and envelop test facilities. The facility is the premier national user facility devoted to the development of technologies that improve the energy efficiency and environmental compatibility of residential and commercial buildings.

(FY01 - $1,500K)

S97D0061 HFIR Cold Source
This project will provide a liquid hydrogen cold neutron source in HB-4.
(FY96 - $2,500, FY97 - $2,500K)
S97D0063 Building 7601 and 7603 Local Area Network Upgrade
This project will replace the outdated local area network (LAN) in Buildings 7601 and 7603. The new network will be a twisted pair star configuration similar to that used for network services in other areas of ORNL. The work consists of purchasing the necessary wiring and equipment, removing the old LAN, and installing the new LAN and associated switches and hubs.
(FY99 -$250K)

S97D0009 Metrology Laboratory
This project would upgrade Building 3500, A27 high-bay area. Consisting of the creation of a second floor in the high-bay and high-quality laboratory modules on both the first and second floors, this facility upgrade will result in the addition of 3040 sq. ft of needed laboratory space.
(FY99 0 $20K, FY00 - $1,000K)

A95D0007 Building 4501 Rooms 227 A&B, Exhaust System
Chemistry laboratories 227A and 227B in Building 4501 contain no laboratory fume hoods to allow complete utilization of space as a fully functioning radiochemcal laboratory. The present exhaust system is minimal and unfiltered. Basic Energy Sciences R&D utilizes this space. New exhaust fan, ducts, hoods, and EPA compliant stack are needed for compliance to regulations. Currently laser R&D are in place.
(FY00 - $500K)

C97D0053 Renovate the High Bay Area, Building 4505
The work, equipment, and installation activities in the facility high bay will include decontamination of floors and walls, demolition of process equipment and existing offices, installation of modular offices in the east end of the high bay, partial upgrade of piping utilities in the north side of the hot cells, and installation of a split-unit HVAC system to heat/cool the modular offices.
(FY00 - $100K, FY01 - $1370K)

S97D0008 Construct Office Building for Chemical Technology Division Relocation
This project would provide a two-story building of approximately 7,000 sq ft to house about forty permanent staff and support members of the Engineering Coordination and Analysis Section of the Chemical Technology Division.
(FY01 - $1,700K)

P98D0032 HFIR Accelerator/Reactor Improvement Modification (KC03)
This project is for the continuing need for Accelerator and Reactor Improvement and Modification (ARIMs) funds to replace outdated reactor systems and equipment to help ensure continued safe and reliable operation.
(FY99 - $2,370K, FFY00 - $1,345K)

P98D0256 HFIR Accelerator/Reactor Improvement Modifications (KC02)
This project is for the continuing need for Accelerator and Reactor Improvement and Modification (ARIMs) funds to replace outdated reactor systems and equipment to help ensure continued safe and reliable operation.
(FY98 - $3,972K, FY00 - $1,600K)

C97D0150 Waste Operations Control Center Replacement
This project is for the replacement of the current Waste Operations Control Center. This activity may be an M&I contractor decision and budget formulation concern at sometime in the future. The facility presently is Environment Management responsibility. This request is submitted to address the proposed transfer to waste management responsibility from Environment Management to Energy Research by the time field work is initiated on this project.
(FY99 - $40K, FY00 - $260K, FY01 - $3,020K, FY02 - $4,020K)

A96D0021 HEPA Filtration of 3039 Fume Hoods in Building 4501
Building 4501, Radiochemical Laboratory, was constructed in the early 1950s with hot cells and supporting fume hoods being ventilated by the 3039 stack system. The fume hoods need to have HEPA filtration installed locally, as mandated, to prevent serious duct contamination past building boundaries.
((FY00 - $150K, FY01 - $850K)

S97D0002 Addition to Building 6012
The addition to Building 6012, the Mathematical Sciences Research Facility will provide space for additional computational science research staff members and a ground-level laboratory that will provide direct access and adequate overhead clearance for several robot systems studied at the Center for Engineering Systems Advanced Research. The total area of 6500 sq ft will be divided into laboratory, office, and control room spaces.
(FY99 - $1,700K)

S97D0004 Power Line Upgrade to Walker Branch Watershed
This project will install several power poles along the roadway and extend existing power lines approximately 1,400 feet from the Rain Gauge #2 to the Walker Branch Throughfall Displacement Experiment. To allow easier access to the area, the project will also widen and straighten the existing road from the Rain Gauge #2 to the experiment. To provide phone service, lines will be extended from the Katy's kitchen area to the experiment along existing power poles.
(FY99 - $20K, FY00 - $600K)

S97D0006 Renovate Chemical Makeup Area, 4505
Complete renovation of the Building 4505 second floor chemical makeup area. All utility and physical structures will be replaced.
(FY99 - $25K, FY00 - $1,200K)

S97D0007 Construct Facility Expansion on Building 7920
This project will add a manipulator storage addition to Building 7920.
(FY00 - $20K, FY01 - $1,200K)

E. Impact of Potential Budget Reductions

Significant reductions in funding for labor, materials, and services affecting ORNL ESHQ&I programs have occurred during the past several years. Further reductions are likely and could result in the elimination or reduction in scope of various ES&H programs and activities. The most significant impacts will likely be on the ADSs associated with the lowest ranked activities and programs to which target overhead funding has been allocated in the plan.

It is anticipated that potential initial budget reductions would likely result in deferral or reduction in the scope of activities. More significant budget reductions would begin to affect core ES&H programs (indirect funded) necessary to accomplish ORNL's missions and maintain current levels of regulatory compliance.

The following programs were risk ranked lowest of funded indirect projects which could be impacted:

Environmental Program Management Oversight - Activities in this function provide regulatory analysis and interpretation of environmental issues. They further provide for the development and maintenance of environmental information systems.

Data Transfer to Oak Ridge Operations Office Environmental Information System (OREIS) Database - Activities in this function compile and prepare environmental sampling data for transfer to the OREIS database.

Intercomparison Studies - These programs have been implemented as a recommendation of ANSI N13.30, "Performance Criteria for Radiobioassay": in vitro urinalysis program, the external QC program for in Vitro bioassay (urinalysis); in vitro fecal program, the external QC program for in Vitro bioassay (fecal analysis); in vivo program, the external QC program for in vivo bioassay.

Assessment Program Functional Support - This activity facilitates implementation of the Laboratory Assessment Program Plan through the functional disciplines embodied in three groups: the Technical Audit Group (TAG), the Corrective Action Support Staff (CASS), and the Audit Logistics Group.

ORNL Assessment Program - This activity provides for the development of a coordinated and integrated system of continuous improvement that encompasses all activities at ORNL.

ORNL Audit Center - This activity facilitates implementation of the Laboratory Assessment Program Plan through operation of an audit center. All logistics details pertaining to support of an external or internal assessment team are within the purview of the audit center manager.

VIII. Conclusions

ORNL strives for ESHQ&I excellence by properly planning and performing work activities so that ESHQ&I considerations are integrally a part of the R&D mission. Involvement of workers in

a positive environment ensures adequate input for work planning, hazard recognition and minimization, development of clear lines of ownership and responsibility, and establishment of a balanced understanding of goals and requirements for the allocation of limited resources.

This Plan reflects activities pursued at ORNL to identify and balance on-going activities against requirements. The ISMS is structured to systematically integrate ESH&Q objectives and infrastructure needs into management and work practices.