DOE/RL-99-78
Revision 0

Hanford Site Environment, Safety and Health Fiscal Year 1999/2000 Execution Commitment Summary

United States
Department of Energy
Richland, Washington

Approved for Public Release

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Hanford Site Environment, Safety and Health Fiscal Year 1999/2000 Execution Commitment Summary

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Date Published
December 1999

United States
Department of Energy
Richland, Washington

Approved for Public Release

RELEASE AUTHORIZATION

Document Number:	DOE/RL-99-78, Rev. 0
Document Title:	Hanford Site Environment, Safety and Health Fiscal Year 1999/2000 Execution Commitment Summary

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EXECUTIVE SUMMARY

E1.0 INTRODUCTION

All sites in the U.S. Department of Energy (DOE) Complex prepare this report annually for the DOE Office of Environment, Safety and Health (EH). The purpose of this report is to provide a summary of the previous and current year's Environment, Safety and Health (ES&H) execution commitments and the S&H resources that support these activities. The fiscal year (FY) 1999 and 2000 information (Sieracki 1999) and data contained in the *Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget-Risk Management Summary* (RL 1999) were the basis for preparing this report. Fiscal year 2000 funding of Office of Environmental Management (EM) and Office of Nuclear Energy, Science and Technology (NE) activities is based on the President's budget of $1,065.1 million and $28.0 million, plus $2.7 million carryover funding, respectively, as of October 31, 1999. Any funding changes as a result of the Congressional appropriation process will be reflected in the Fiscal Year 2002 ES&H Budget-Risk Management Summary to be issued in May 2000.

This report provides the end-of-year status of FY 1999 ES&H execution commitments, including actual S&H expenditures, and describes planned FY 2000 ES&H execution commitments and the S&H resources needed to support those activities. This requirement is included in the ES&H *Guidance for FY 2001 Budget Formulations and Execution* (DOE 1999).

The scope of this report includes all ES&H activities performed at the Hanford Site under the management of the following DOE Secretarial Offices:

- DOE EM activities associated with environmental cleanup. This office accounts for most of the resources expended at the Hanford Site and includes:
  - The DOE Office of River Protection, which oversees the River Protection Project that is responsible for management and disposal of tank waste and ancillary facilities. The River Protection Project is managed by the Lockheed Martin Hanford Corporation (LMHC).
  - Oversight of the remainder of EM cleanup activities is provided by the DOE, Richland Operations Office (RL). These activities are conducted under the Project Hanford Management Contract (PHMC) managed by Fluor Hanford, Inc. (FHI), the Environmental Restoration Contract (ERC) managed by Bechtel Hanford, Inc., and the Science and Technology (S&T) Project managed by the Pacific Northwest National Laboratory (Pacific Northwest).
- DOE Office of Science (SC) activities associated with environmental science and technology programs that are managed by Pacific Northwest. An ES&H commitment affirmation response for SC-funded activities is presented in Appendix A.

- DOE Office of Nuclear Energy, Science and Technology (NE) activities associated with maintaining the Fast Flux Test Facility complex as an option for accomplishing expanded civilian nuclear energy research and development and isotope production missions. These activities are managed by FHI.

Activities that support the privatization of tank waste disposal are included in this report, but funding of the private contractors is not included.

E2.0 SUMMARY ANALYSIS OF FISCAL YEAR 1999 COMMITMENTS

A total of 110 ES&H execution commitments were planned for completion at the Hanford Site by the EM and NE projects in FY 1999. No reportable ES&H execution commitments were assigned to SC projects. Included in ES&H execution commitments are major and interim *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) milestones (Ecology et al.1990), Defense Nuclear Facilities Safety Board (DNFSB) Recommendation commitments, and Regulatory milestones. These commitments are reportable to DOE Headquarters (HQ) as DOE-HQ controlled and/or Field Office milestones. The overall year-end status of these milestones and commitments is summarized in Table ES-1 by project mission. Year-end status of the 110 FY 1999 ES&H execution commitment milestones is summarized below. Included in the total are seven milestones carried over from FY 1998 to FY 1999.

Table ES-1. Summary Year-End Status of Fiscal Year 1999 Environment, Safety and Health Execution Commitments by Hanford Site Mission.[a]

Site Project Mission	Number of Milestones[b]					
	A/S	O/S	B/S	C/O	Revise[c]	Total
River Protection	14	9	2	2	5	32
Waste Management	6	1	0	0	0	7
Spent Nuclear Fuel	1	0	0	0	1	2
Facility Stabilization	5	8	1	1	5	20
Environmental Restoration	10	1	0	0	0	11
Science and Technology	0	0	0	0	0	0
Mission Support and Other Projects	27	7	0	0	2	36
Advanced Reactor Transition	0	0	0	0	2	2
Total	**63**	**26**	**3**	**3**	**15**	**110**

NOTES:

[a] Execution commitments are for Office of Environmental Management projects except for the two assigned to the Office of Nuclear Energy, Science and Technology (NE)-funded Advanced Reactors Transition Project.

[b] A/S = Completed ahead of schedule; O/S = completed on schedule; B/S = completed behind schedule; and C/O = carried over from FY 1999 for completion in FY 2000.

[c] Schedule revised by change control to defer or delete milestone from the FY 1999 baseline.

- 89 (81%) milestones were completed on or ahead of schedule.
- 3 (3%) milestones were completed behind schedule.
- 3 (3%) milestones were carried over from FY 1999 to FY 2000.
- 15 (13%) milestones were deferred or deleted by change control from the FY 1999 baseline.

E3.0 SUMMARY OF FISCAL YEAR 2000 COMMITMENTS

A total of 76 ES&H execution commitments are planned for completion in FY 2000 as shown in Table ES-2. These commitments include 46 Tri-Party Agreement milestones, 5 DNFSB commitments, and 25 Regulatory milestones.

Table ES-2. Summary of Planned Fiscal Year 2000 Environment, Safety and Health Execution Commitments by Milestone Type.

Site Project Mission	Number of Milestones			
	TPA	DNFSB	REG	Total
River Protection Project[a,b]	19[a]	3[b]	0	22[a,b]
Waste Management Project	2	0	0	2
Spent Nuclear Fuel Project	2	0	0	2
Facility Stabilization Project[c]	3	2[c]	0	5[c]
Environmental Restoration Project[d]	19[d]	0	0	19[d]
Science and Technology Project	0	0	0	0
Mission Support and Other Projects	1	0	25	26
Advanced Reactors Transition[e]	0[e]	0	0	0[e]
Total	**46**	**5**	**25**	**76**

NOTES:

[a] One River Protection Project Tri-Party Agreement Milestone was deleted by Change Request M-41-99-01, approved on October 14, 1999.

[b] These River Protection Project DNFSB milestones were completed in FY 1999.

[c] One of these Facility Stabilization Project DNFSB milestones is carried over from FY 1999. Both of these milestones will be deleted when the DNFSB approves Revision 2 of the Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex.

[d] Three Environmental Restoration Project Tri-Party Agreement milestones are to be modified by change control to address the schedule impacts associated with discovery of additional plume/waste in the waste sites scheduled for remediation.

[e] Advanced Reactors Transition Project Tri-Party Agreement milestones were placed in abeyance by Change Request M-81-98-01, approved on August 24, 1999.

E4.0 SUMMARY ASSESSMENT OF FISCAL YEAR 2000 ENVIRONMENTAL MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES

Impacts of the FY 2000 President's budget of $1,065.1 million for achieving the EM-funded FY 2000 ES&H commitments identified in this report (Tri-Party Agreement, Regulatory and DNFSB milestones) were prepared as of October 31, 1999. These impacts are based on the $106.5 million shortfall needed to fully fund the EM FY 2000 Compliance Baseline of $1,171.1 million identified in the April 15, 1999 PBS submittal and shown in Table ES-3 as Subtotal Compliance.

As of October 31, 1999, the compliance vulnerabilities and impacts identified in this report included missing FY 2000 and out year milestones. Since then, significant progress has been made in reducing or mitigating these impacts to the extent that all FY 2000 ES&H execution commitments, including the November 2000 Tri-Party Agreement milestone for B Cell cleanout, can be met. This has been made possible through settlement of an issue on state

Table ES-3. Fiscal Year 2000 Summary Funding of Hanford Site Office of Environmental Management Project Missions by Priority Category (dollars in millions).[a]

Priority Category	Site Project Mission[b]							TOTAL
	TW	WM	SF	TP	ER	ST	MS	
Essential Safety	111.2	83.5	32.6	124.0	24.2	3.3	13.7	394.5
Essential Services	46.9	36.5	43.4	15.9	45.5	10.6	56.4	255.1
Urgent Risks	172.9	0	112.9	60.1	10.6	0	0	356.5
Regulatory Compliance (Inc. 1)	4.1	0	0	0	54.9	0	0	59.0
President's Budget[c]	**335.0**	**120.0**	**191.0**	**200.0**	**135.1**	**14.0**	**70.1**	**1,065.1**
Regulatory Compliance (Inc. 2)	51.4	14.3	0	6.1	22.2	3.0	9.5	106.5
Subtotal Compliance[d]	**386.4**	**134.3**	**191.0**	**206.1**	**157.3**	**17.0**	**79.6**	**1,171.6**
Additional Requirements	66.8	12.9	0	16.9	0	0	33.7	130.3
Total Requirements[e]	**453.2**	**147.2**	**191.0**	**223.0**	**157.3**	**17.0**	**113.2**	**1,301.9**

NOTES:

[a] Based on the President's Budget of $1,065.1 million for Environmental Management as of October 31, 1999. Any changes in funding resulting from the Congressional appropriation process will be reflected in the Hanford Site 2002 ES&H budget-Risk Management Summary to be issued in May 2000.

[b] TW = River Protection Project; WM = Waste Management Project; SF = Spent Nuclear Fuel Project; TP = Facility Stabilization Project; ER = Environmental Restoration Project; ST = Science and Technology Project; and MS = Mission Support and Other Projects.

[c] Includes funding for Hazardous Materials Management and Emergency Response (RL-HM01; Mission Support (RL-OT01); RL Directed Support (RL-OT04; Office of Safety Regulation of the TWRS-P Contractors (RL-RG01; Advanced Reactors Transition (RL-TP11); and Landlord Project (RL-TP13).

[d] These values refer to the FY 2000 Compliance Baseline funding requirements as identified in the April 15, 1999 Project Baseline Summary submittal.

[e] These values refer to the FY 2000 Total Requirements as identified in the April 15, 1999 Project Baseline Summary submittal.

and local taxes, implementing efficiencies, and deleting low value work scope. There still remains a shortfall of approximately $20 million related to completing FY 2000 work scope by RL programs (PHMC, ERC and S&T Projects) in support of Tri-Party Agreement milestones beyond FY 2000. Additionally, a significant shortfall exists in FY 2000 funding of the River Protection Project to support out-year Tri-Party Agreement milestones. The following is a summary of the major impacts of the FY 2000 President's budget.

- **River Protection Project.** Funding to support all identified requirements is insufficient. This is a continuing trend that is resulting in a bow-wave of funding needs to meet existing and planned Tri-Party Agreement and regulatory requirements. Although funding is most likely adequate to meet FY 2000 milestones, some out-year milestones will require renegotiations based on decisions to rebaseline the vitrification schedule and proceed with the Phase I Privatization contract. As a result, the FY 2000 President's budget increases the risk that these revised milestones will not be met. In addition, funding shortfalls could impact testing, repair and replacement of tank instrumentation and equipment thus impacting out-year milestones. Funding shortfalls for single-shell tank Program Development and alternate retrieval methods could also impact out-year retrieval milestones.

- **Waste Management Project.** Submittal of the Hanford Site transuranic/transuranic mixed (waste) (TRU/TRUM) project management plan by June 2000 may be impacted. Completion of this Tri-Party Agreement Milestone on schedule is important for alleviating any ripple effect on out-year Tri-Party Agreement Milestones (Tri-Party Agreement Milestone M-91-03).

- **Facility Stabilization Project.** Removal of 324 Building B-Cell waste and equipment by November 2000 may be impacted (Tri-Party Agreement Milestone M-89-02).

- **Environmental Restoration Project.** Potential schedule impacts to a number of out-year Tri-Party Agreement Milestones will result if full Regulatory Compliance funding is not received in FY 2000. These potential impacts include schedule delays for completion of remediation of 51 liquid waste sites by February 2001, F-Reactor surveillance and maintenance plan by July 2003, 105-F Reactor interim safe storage by September 2003, 200 Area Record of Decision by December 2008, and other Tri-Party Agreement Milestones (M-16-26B, M-93-10, M-93-11, M-15-00C and additional M-15 and M-24 series Milestones that are to be set through negotiations).

E5.0 SAFETY AND HEALTH EXPENDITURES FOR FISCAL YEARS 1999 AND 2000

Table ES-4 provides a comparison of total (direct plus indirect) Hanford Site FY 1999 planned-to-actual expenditures for S&H activities performed by the DOE Secretarial Offices. Actual total Hanford Site expenditures on S&H activities exceeded planned expenditures by $5.6 million (2.8%) in FY 1999. Total Hanford Site direct S&H expenditures exceeded planned expenditures by $2.9 million (2.3%), and indirect S&H expenditures exceeded planned

expenditures by $2.7 million (3.8%) in FY 1999. Safety and Health expenditures for direct-funded EM Projects and indirect-funded EM activities, which were $4.1 million and $3.6 million higher than planned, respectively, had the largest cost differences. Reasons for cost differences between planned and actual FY 1999 expenditures on S&H activities are provided below.

Table ES-4. Comparison of Planned to Actual Expenditures for Fiscal Year 1999 Hanford Site Safety and Health Activities by Secretarial Office (dollars in thousands)[a].

DOE Secretarial Office	FY 1999 Planned	FY 1999 Actual	Change	Percent Change
EM Direct Project S&H Costs	$110,000	$114,083	$+4,083	+3.7
EM-10, EM Program Direction	12,642	12,538	-104	0.8
Total Direct EM S&H Costs	**$122,642**	**$126,621**	**$+3,979**	**+3.2**
Fast Flux Test Facility Complex	2,327	2,327	0	0
Total Direct NE S&H Costs	**$2,327**	**$2,327**	**0**	**0**
Pacific Northwest National Laboratory	1,916	815	-1,101	57.4
Total Direct SC S&H Costs	**1,916**	**815**	**-1,101**	**-57.4**
Total Hanford Site Direct S&H Costs	**$126,885**	**$129,763**	**$+2,878**	**+2.3**
Indirect EM S&H Costs	56,466	60,091	+3,625	+6.4
Indirect SC S&H Costs	14,561	13,643	-918	-6.3
Total Hanford Site Indirect S&H Costs	**$71,027**	**$73,733**	**$+2,706**	**+3.8**
Total Hanford Site S&H Costs	**$197,912**	**$203,496**	**$+5,584**	**+2.8**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

- **River Protection Project.** Additional S&H resources were expended to accelerate closure of the Tank 241-SY-101 surface-level-growth Unreviewed Safety Question (USQ) and remediation of the tank safety issue. In addition, activities were increased to support RCRA compliance, Air Operating Permit implementation, and resolution of the tank pH issue.

- **Waste Management Project.** Additional S&H expenditures were used for Radiation protection support to implement 10CFR835; enhancing Emergency Preparedness capabilities based on site and project lessons learned; and increased emphasis on Integrated Environment, Safety and Health Management System (ISMS) implementation.

- **Spent Nuclear Fuel Project.** Increased S&H expenditures were used for updating plans for preparing safety analyses, conducting technical reviews, and resolving comments on the draft analyses. In addition, a Chemical Management System was implemented for the project.

- **Environmental Restoration Project.** The decrease in S&H expenditures was caused primarily by delay in remediation of waste sites because of the discovery of waste plumes, later than planned transition of facilities, and lower than planned requirements to support pump and treat extraction activities.

- **Indirect-Funded Environmental Management Activities.** Additional S&H resources were expended for completion of Project Hanford Management Contract (PHMC) compliance activities in response to DOE Office of Enforcement and Investigation (EH-10) findings and preparation of the PHMC Quality Improvement Plan (QIP). Additional S&H resources were also expended on preparations for ISMS Phase I verification.

Table ES-5 provides a comparison of total Hanford Site (direct plus indirect) actual FY 1999 to planned FY 2000 expenditures for S&H activities, summarized by Secretarial Office. Planned FY 2000 expenditures on Hanford Site S&H activities is forecast to be $8.9 million (4.4%) lower than FY 1999 actual expenditures. The reason for the reduction in total S&H expenditures from FY 1999 to FY 2000 is attributed to the $9.8 million (16.3%) reduction in EM-funded indirect S&H activities as explained below. Some decreases in EM-funded project S&H expenditures were partially offset by increases in the EM-funded projects as noted below.

Table ES-5. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Safety and Health Expenditures at the Hanford Site by Secretarial Office (dollars in thousands)[a].

DOE Secretarial Office	FY 1999 Actual	FY 2000 Planned	Change	Percent Change
EM Direct Project S&H Costs	114,083	114,336	+253	+0.2
EM-10, EM Program Direction	12,538	11,958	-670	-5.3
Total Direct EM S&H Costs	**$126,725**	**$127,433**	**$+708**	**+0.6**
Fast Flux Test Facility Complex	2,327	2,487	+160	+6.9
Total Direct NE S&H Costs	**$2,327**	**$2,487**	**$+160**	**+6.9**
Pacific Northwest National Laboratory	815	1,115	+300	+36.8
Total Direct SC S&H Costs	**$815**	**$1,115**	**$+300**	**$+36.8**
Total Hanford Site Direct S&H Costs	**$129,763**	**$129,896**	**$+133**	**$+0.1**
Indirect EM S&H Costs	60,091	50,308	-9,783	-16.3
Indirect SC S&H Costs	13,643	14,400	+758	+5.6
Total Hanford Site Indirect S&H Costs	**$73,734**	**$64,708**	**$-9,025**	**-12.2**
Total Hanford Site S&H Costs	**$203,496**	**$194,604**	**$-8,892**	**-4.4**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

- **Indirect-Funded Environmental Management Activities.** The significant decrease in planned S&H expenditures from FY 1999 to FY 2000 is the result of: (1) reduced support needed in FY 2000 for PHMC compliance activities in response to DOE Office of Enforcement and Investigation (EH-10) findings; (2) completion of the PHMC QIP in FY 1999; (3) transfer of costs in the shared services pool from Fire Protection to the direct-funded EM Projects in FY 2000; (4) completion of indirect safety analysis support to the Spent Nuclear Fuel Project in FY 1999; and, (5) transfer of some S&H staff to the direct-funded EM Projects in FY 2000.

- **River Protection Project.** Reduction of S&H expenditures in FY 2000 is the result of early completion of tank core sampling, completion of the Final Safety Analysis Report (FSAR) preparation, and resolution of the high-heat tank safety issue in FY 1999

- **Spent Nuclear Fuel Project.** Reduction in S&H expenditures in FY 2000 is the result of a sizeable reduction in the need for Nuclear Safety analyses and studies due to the significant effort employed to complete safety and technical studies in FY 1999

- **Facility Stabilization Project.** An increase in S&H expenditures is the result of an increase in Plutonium Finishing Plant (PFP) stabilization activities. The increase in S&H expenditures was partially offset by a decrease due to completion of B Plant deactivation and transitioning the plant to the surveillance and maintenance phase

- **Environmental Restoration Project.** An increase in S&H expenditures is the result of the increased surveillance and maintenance and ground water management activities in FY 2000. In addition, S&H resources have been allocated to the Site-Wide Groundwater/Vadose Zone Integration Project starting in FY 2000

- **Mission Support and Other Projects.** The increase in S&H expenditures results from increased expenditures by the Landlord Project to: renovate the existing 200 Areas fire station (Fire Protection); dispose of contaminated mobile heavy equipment, replace the 200 West Area sanitary water chorination system with a safer treatment system, and partial roof replacement of the 325 Building (Industrial Safety), and road safety improvements (Transportation Safety).

E6.0 REFERENCES

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CONTENTS

APPENDIX

TABLES

TERMS

BIO	Basis for Interim Operation
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CSB	Canister Storage Building
CVD	Cold Vacuum Drying
D&D	Decontamination and Decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy, Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
EH	DOE Office of Environment, Safety and Health
EM	DOE Office of Environmental Management
EPA	U.S. Environmental Protection Agency
EPCRA	*Emergency Planning and Community Right-to-Know Act of 1986*
ER	environmental restoration
ERDF	Environmental Restoration Disposal Facility
ES&H	Environment, Safety and Health
ETF	Effluent Treatment Facility
FHI	Fluor Hanford, Inc.
FFTF	Fast Flux Test Facility
FSAR	Final Safety Analysis Report
FY	fiscal year
HAMMER	Hazardous Materials Management and Emergency Response
HLW	high-level waste
HTI	Hanford Tank Initiative
IPL	Integrated Priority List
ISMS	Integrated Environment, Safety and Health Management System
ISS	Interim Safe Storage
LLMW	low-level mixed waste
LLW	low-level waste
MCO	Multiple Canister Overpack
MYWP	multiyear workplan
NDA	nondestructive assay
NE	DOE Office of Nuclear Energy, Science and Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
ORR	Operational Readiness Review
Pacific Northwest	Pacific Northwest National Laboratory
PBS	Project Baseline Summary
PFP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
Pu	Plutonium
QIP	Quality Improvement Plan

TERMS (cont'd)

RARA	Radiation Area Remedial Action
RCRA	*Resource Conservation and Recovery Act of 1976*
RL	DOE, Richland Operations Office
ROD	Record of Decision
SC	DOE Office of Science
RPL	Radiochemical Processing Laboratory
S&H	Safety and Health
SST	single-shell tank
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TP	Facility Stabilization Project
TRU	transuranic (waste)
TRUM	transuranic mixed (waste)
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
WAC	*Washington Administrative Code*
WESF	Waste Encapsulation and Storage Facility
WIPP	Waste Isolation Pilot Plant
WIRD	Waste Information Requirements Document
WM	Waste Management
WMA	Waste Management Area
WRAP	Waste Receiving and Processing (Facility)
WSCF	Waste Sampling and Characterization Facility

HANFORD SITE FISCAL YEAR 1999/2000 ENVIRONMENT, SAFETY AND HEALTH EXECUTION COMMITMENT SUMMARY

1.0 INTRODUCTION

1.1 BACKGROUND

All sites in the U.S. Department of Energy (DOE) Complex prepare this report annually for the DOE Office of Environment, Safety and Health (EH). The purpose of this report is to provide a summary of the previous and current year's Environment, Safety and Health (ES&H) execution commitments and the Safety and Health (S&H) resources that support these activities. The fiscal year (FY) 1999 and 2000 information (Sieracki 1999) and data contained in the *Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget-Risk Management Summary* (RL 1999b) was used as a basis in preparing this report. FY 2000 funding of DOE Office of Environmental Management (EM) and DOE Office of Nuclear Energy, Science and Technology (NE) activities is based on the President's budget of $1,065.1 million and $28.0 million, plus $2.7 million carryover funding, respectively, as of October 31, 1999. Any funding changes as a result of the Congressional appropriation process will be reflected in the FY 2002 ES&H Budget-Risk Management Summary to be issued in May 2000.

1.2 PURPOSE

The purpose of this report is to provide the end-of-year status of FY 1999 ES&H execution commitments, including actual S&H expenditures, and to describe planned FY 2000 ES&H execution commitments and the S&H resources needed to support those activities. It will identify any significant ES&H risks, the highest ranking unfunded activities, and any unfunded or under-funded activities that address emerging ES&H issues in FY 2000. This report also will provide a basis for the ES&H commitment affirmation letter prepared by each Operations/Field Office Manager as confirmation that sufficient resources (funding and staff) are available to meet the established commitments in the current FY, as required by the ES&H guidance for FY 2000 budget formulation and execution (DOE 1999b).

1.3 SCOPE

The scope of this report includes all ES&H activities performed by the Hanford Site contractors and subcontractors. The following information is included in this report:

- A summary status of FY 1999 performance with respect to the ES&H execution commitments negotiated for FY 1999
- Actual expenditures for FY 1999 by each of the nine S&H functional areas

- Description of major ES&H execution commitments planned for FY 2000
- Identification of significant ES&H risks that are not or will not be adequately addressed in the FY 2000 work plans
- Identification of the highest ranking unfunded activities that would be candidates for funding in the FY 2000 work plans
- Identification of unfunded (or under-funded) activities in the FY 2000 work plan that address emerging ES&H issues.

The scope of this report includes all ES&H activities performed at the Hanford Site under the management of the following DOE Secretarial Offices:

- DOE EM activities associated with environmental cleanup. This office accounts for most of the resources expended at the Hanford Site and includes:
  - The DOE Office of River Protection, which oversees the River Protection Project, is responsible for management and disposal of tank waste and ancillary facilities. The River Protection Project is managed by the Lockheed Martin Hanford Corporation
  - Oversight of the remainder of environmental cleanup activities is provided by the DOE, Richland Operations Office. These activities are conducted under the Project Hanford Management Contract managed by Fluor Hanford, Inc. (FHI), the Environmental Restoration Contract managed by Bechtel Hanford, Inc., and the Science and Technology Project managed by the Pacific Northwest National Laboratory (Pacific Northwest)
- DOE Office of Science (SC) activities associated with environmental science and technology programs that are managed by Pacific Northwest. An ES&H commitment affirmation response for SC-funded activities is presented in Appendix A
- NE activities associated with maintaining the Fast Flux Test Facility complex as an option for accomplishing expanded civilian nuclear energy research and development and isotope production missions. These activities also are managed by FHI.

This report includes activities that support the privatization of tank waste disposal, but it does not include funding of the private vendors.

2.0 YEAR-END STATUS OF FISCAL YEAR 1999 ENVIRONMENT, SAFETY AND HEALTH EXECUTION COMMITMENTS

Section 2.0 summarizes the year-end status of FY 1999 ES&H execution commitments for the Hanford Site project missions. All but two of the commitments are assigned to EM-funded projects. Two *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1990) milestones assigned to the NE-funded FFTF complex were placed in abeyance by change control in August 1999. Included in ES&H execution commitments are major and interim Tri-Party Agreement milestones including Tri-Party Agreement Consent Order and Consent Decree Milestones (Ecology et al.1990), Defense Nuclear Facilities Safety Board (DNFSB) Recommendation commitments, and Regulatory milestones. These commitments are reportable to DOE Headquarters (HQ) as DOE-HQ controlled and/or Field Office (FO) milestones.

The following sections provide a summary analysis of FY 1999 Hanford Site ES&H execution commitments, the year-end status of FY 1999 ES&H commitments, a summary of major accomplishments, and cost and schedule performance as of September 30, 1999. The status information provided in the following sections is summarized from the *Hanford Site Performance Report - September 1999* (RL 1999a).

2.1 SUMMARY ANALYSIS OF FISCAL YEAR 1999 EXECUTION COMMITMENTS

A total of 108 EM-funded and 2 NE-funded ES&H execution commitments were planned for completion in FY 1999. The overall year-end status of these milestones and commitments is summarized in Table 2-1 by project mission. Of the total FY 1999 ES&H execution commitment milestones, 89 were completed on or ahead of schedule, 3 were completed behind schedule, 3 were carried over from FY 1999 to FY 2000, and 15 were deferred or deleted by change control from the FY 1999 baseline.

The year-end status of FY 1999 ES&H execution commitments is summarized in Table 2-2 by milestone type, (i.e., Tri-Party Agreement, DNFSB, or Regulatory). Included are 51 Tri-Party Agreement milestones 24 DNFSB commitments and 35 Regulatory milestones (the total of 110 milestones includes one DNFSB and one Regulatory milestone that are also Tri-Party Agreement milestones).

Table 2-1. Summary Year-End Status of Fiscal Year 1999 Environment, Safety and Health Execution Commitments by Hanford Site Mission.

Site Project Mission	Number of Milestones[a]					
	A/S	O/S	B/S	C/O	Revise[b]	Total
River Protection	14	9	2	2	5	32
Waste Management	6	1	0	0	0	7
Spent Nuclear Fuel	1	0	0	0	1	2
Facility Stabilization	5	8	1	1	5	20
Environmental Restoration	10	1	0	0	0	11
Science and Technology	0	0	0	0	0	0
Mission Support and Other Projects	27	7	0	0	2	36
Advanced Reactor Transition	0	0	0	0	2	2
Total	**63**	**26**	**3**	**3**	**15**	**110**

NOTES:
[a] A/S = Completed ahead of schedule; O/S = completed on schedule; B/S = completed behind schedule; and C/O = carried over from FY 1999 for completion in FY 2000.
[b] Schedule revised by change control to defer or delete milestone from the FY 1999 baseline. See Table 2-3 for details.

Table 2-2. Summary Year-End Status of Fiscal Year 1999 Environment, Safety and Health Execution Commitments by Milestone Type.

Milestone Type	Number of Milestones[a]					
	A/S	O/S	B/S	C/O	Revise[b]	Total
Tri-Party Agreement	32	10	0	1	8	51
DNFSB Commitment	5	9	3	2	5	24
Regulatory	26	7	0	0	2	35
Total	**63[c]**	**26**	**3**	**3[d]**	**15**	**110[c,d]**

NOTES:
[a] A/S = Completed ahead of schedule; O/S = completed on schedule; B/S = completed behind schedule; and C/O = carried over from FY 1999 for completion in FY 2000.
[b] Schedule revised by change control to defer or delete milestone from the FY 1999 baseline. See Table 2-3 for details.
[c] One milestone is identified as both Tri-Party Agreement and Regulatory.
[d] One milestone is identified as both Tri-Party Agreement and DNFSB.

The status of milestones carried over, not completed or modified in FY 1999 is summarized in Table 2-3. Additional detail on the status of ES&H execution commitments is available from the *Hanford Site Performance Report - September 1999* (RL 1999a). Detailed listings and year- end status of all FY 1999 ES&H execution commitments for the Hanford Site project missions are discussed in the remainder of Section 2 and presented in Tables 2-5 through 2-11. The ES&H execution commitment assigned to the NE-funded FFTF complex is included in Table 2-11. Also included are milestone description, commitment identification number, due date, and completion status (completed ahead of schedule [A/S], completed on schedule [O/S], or completed behind schedule [B/S].

Table 2-3. Status of Hanford Site Fiscal Year 1999 Environment, Safety and Health Execution Commitments Not Completed, Modified or Carried Over From Previous Fiscal Years. (2 sheets)

Milestone description/Status	Commit. ID number	Due date
River Protection Project		
Approved final safety analysis report for managing tank waste (I.P.5.4.3.1.d) **Status: Complete March 31, 1999, DOE approved the FSAR in letter 99-ORP-002, dated March 31, 1999. Letter 99-TSD-028 to DNFSB dated April 6, 1999, reported completion of this milestone.**	93-05	06/30/97
Complete topical report to resolve the high-heat safety issue (I.P.5.4.3.6.d) **Status: ORP Letter 99-TSD-088 dated September 24, 1999, submitted a topical report to the DNFSB. The report demonstrating that sufficient waste had been removed from Tank 241-C-106 as of August 30, 1999, to reduce the heat generation rate to safe levels without regular water additions.**	93-05	05/31/98
Start interim stabilization of 6 SSTs **Status: Milestone was deleted by the Hanford High-Level Radioactive Tank Interim Stabilization Consent Decree filed on September 30, 1999. The milestone was deleted from the FY 1999 baseline by Tri-Party Agreement Change Request M-41-99-01 which was approved on October 14, 1999.**	M-41-22	09/30/97
Start interim stabilization of 8 SSTs **Status: See above status for Tri-Party Agreement milestone M-41-22.**	M-41-23	03/31/98
Start interim stabilization of 9 SSTs **Status: See above status for Tri-Party Agreement milestone M-41-22.**	M-41-24	09/30/98
Start interim stabilization of 3 SSTs **Status: See above status for Tri-Party Agreement milestone M-41-22.**	M-41-25	03/31/99
Start interim stabilization of 2 SSTs **Status: See above status for Tri-Party Agreement milestone M-41-22.**	M-41-26	09/30/99
Initiate sluicing retrieval of C-106 (I.P. 5.4.3.6.c) **Status: Waste retrieval was initiated on November 25, 1998 per DOE Richland Operations Office (RL) letter 99-WSD-004 to DNFSB.**	M-45-03A 93-05	10/31/97

Table 2-3. Status of Hanford Site Fiscal Year 1999 Environment, Safety and Health Execution Commitments Not Completed, Modified or Carried Over From Previous Fiscal Years. (2 sheets)

Facility Stabilization Project		
Begin processing solution at PFP (Commitment 022) **Status: Milestone was deleted by the *Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex*, Revision 1, dated December 22, 1998 and approved on January 28, 1999, U.S. Department of Energy Office of Environmental Management, Washington, D.C..**	R94-01	06/30/97
Complete design, procurement and installation of new repackaging (Commitment 003) **Status: See above status for DNFSB Commitment 022, R94-01.**	R94-01	12/31/98
Start restabilizing high assay oxides at the PFP (Commitment 004) **Status: See above status for DNFSB Commitment 022, R94-01.**	R94-01	07/31/99
Start stabilization of polycubes (Commitment 011) **Status: See above status for DNFSB Commitment 022, R94-01.**	R94-01	07/31/99
Perform operational readiness testing of new repackaging system (Commitment 005) **Status: See above status for DNFSB Commitment 022, R94-01.**	R94-01	09/30/99
Complete installation of the production vertical denitration calciner (Commitment 105) **Status: Milestone will deleted by the Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex, Revision 2, which is currently in the approval process at DOE-HQ. The milestone will not be completed due the change in path forward from vertical denitration calciner to magnesium hydroxide precipitation for solution stabilization.**	R94-01	09/30/99
Spent Nuclear Fuel Project		
Complete K West cask facility modifications **Status: Tri-Party Agreement Change Request M-34-99-01A, which was approved on August 11, 1999, delayed completion until February 29, 2000.**	M-34-14A	09/30/99
Mission Support Project		
Integrated air operating permit **Status: Milestone was deleted by Baseline Change Request ECP-99-009, which was approved August 30, 1999.**	ECP-99-417	09/30/99
Complete identified dangerous waste tank corrective actions **Status: Milestone was deleted by Baseline Change Request ECP-99-008, which was approved August 30, 1999.**	ECP-99-022	09/30/99
Advanced Reactor Transition Project		
Submit Hanford Site sodium project management plan to Ecology **Status: Milestone was placed in abeyance by Tri-Party Agreement Change Request M-92-98-01, which was approved on October 2, 1999.**	M-92-10	10/31/98
Submit FFTF end point criteria document **Status: Milestone was placed in abeyance by Tri-Party Agreement Change Request M-81-98-01, which was approved on August 24, 1999.**	M-81-03	12/31/98

A number of DNFSB commitments are assigned to RL by DNFSB Recommendations 93-03, Improving DOE Technical Capability and 97-02, Criticality Safety Management. The status of these commitments is given in Table 2-4. DNFSB Recommendation 93-02 was formally closed on November 9, 1999.

Table 2-4. Year-End Status of Fiscal Year 1999 Department of Energy, Richland Operations Office Environment, Safety and Health Execution Commitments.

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
DNFSB Recommendation 93-03, Improving DOE Technical Capability[a]					
Staff plans provided to the Chair of the Federal Technical Capability Panel (I.P. 5.3.1)	93-03	12/16/98	C		
Updated technical qualifications program plans (I.P. 5.4.3)	93-03	12/16/98		C	
Report commitment status to the Chair of the Federal Technical Capability Panel (I.P. 5.4.4)	93-03	09/30/99	C		
DNFSB Recommendation 97-02, Criticality Safety Management					
Survey existing contractor site-specific qualification programs (I.P. 6.6.3)	97-02	03/31/99			X[b]
AMF Federal staff directly performing criticality safety oversight will be qualified (I.P. 6.6.4)	97-02	12/31/99			X[c]

NOTES:

[a] DNFSB Recommendation 93-3, Improving DOE Technical Capability was formally closed on November 9, 1999.

[b] A recovery plan for this commitment will be submitted to the DNFSB once DOE Order 420.1 is revised and issued.

[c] There has been a delay in developing the criticality safety qualification standard. Estimated completion date is December 2000.

2.2 STATUS OF RIVER PROTECTION PROJECT

2.2.1 Status of Execution Commitments

A detailed year-end status of River Protection Project FY 1999 ES&H execution commitments is provided in Table 2-5. The project had 32 ES&H commitments in FY 1999. Of these commitments, 23 were completed on or ahead of schedule, 2 were completed behind schedule, 2 were carried over from FY 1999 to FY 2000, and 5 were deleted by change request. Details on the status of milestones deleted and carried are provided in Table 2-3.

Table 2-5. Year-End Status of Fiscal Year 1999 River Protection Project Environment, Safety and Health Commitments. (2 sheets)

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
RL-TW01, Tank Waste Characterization					
Update tank contents models or define limitation of the models (I.P. 5.6.3.1.i)	93-05	12/31/98		C	
Letter reporting completion of vapor sampling of all SSTs (I.P. 5.4.3.4.d)	93-05	12/31/99	C		
Letter reporting adequate vent path in all SSTs suspected of containing organic materials (I.P. 5.4.3.4.e)	93-05	04/30/00	C		
Letter reporting completion of vapor sampling of all double-shell tanks (DST) (I.P. 5.4.3.4.f)	93-05	12/31/00	C		
Letter reporting completion of core sampling of all tanks (assumes no repeat sampling) (I.P. 5.6.3.1j)	93-05	12/31/02	C		
Submit draft Waste Information Requirements Document (WIRD) for FY 2000 to Ecology	M-44-13C	06/30/99	C		
Submit final WIRD for FY 2000	M-44-14C	08/31/99	C		
Issue characterization deliverables consistent with FY 1999 WIRD	M-44-15C	09/30/99	C		
Complete input of characterization information for high-level waste (HLW) tanks for which sampling and analysis were completed per WIRD	M-44-16C	09/30/99	C		
RL-TW02, Tank Safety Issue Resolution					
Approved final safety analysis report for managing tank waste (I.P. 5.4.3.1.d)	93-05	06/30/97			C[a]
Letter reporting completion of topical report to resolve the High Heat Safety Issue (I.P. 5.4.3.6.d)	93-05	05/31/98			C[b]
Letter reporting results of testing completion to confirm safe storage criteria and organic solubility, etc. (I.P. 5.4.3.3.b)	93-05	11/30/98		C	
Resolve nuclear criticality safety issue	M-40-12	09/30/99	C		
RL-TW03, Tank Farm Operations					
Start interim stabilization of 6 SSTs	M-41-22	09/30/97	Deleted per Change[c] Request M-41-99-01		
Start interim stabilization of 8 SSTs	M-41-23	03/31/98	Deleted per Change[c] Request M-41-99-01		
Start interim stabilization of 9 SSTs	M-41-24	09/30/98	Deleted per Change[c] Request M-41-99-01		
Start interim stabilization of 3 SSTs	M-41-25	03/31/99	Deleted per Change[c] Request M-41-99-01		
Start interim stabilization of 2 SSTs	M-41-26	09/30/99	Deleted per Change[c] Request M-41-99-01		
Initiate pumping of Tanks 241-T-104, -T-110, -SX-104, and -SX-106	D-01-01	03/03/99		C[d]	

Table 2-5. Year-End Status of Fiscal Year 1999 River Protection Project Environment, Safety and Health Commitments. (2 sheets)

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
Initiate pumping to Tanks 241-S-102, -S-106, and -S-103	D-01-02	07/30/99	C[d]		
Submit a quarterly report to Ecology documenting tank stabilization activities	D-01-00-R01	07/30/99		C[d]	
Start construction for upgrades in the first tank farm	M-43-12	06/30/99	C		
Concurrence of additional tank acquisition	M-46-01E	11/30/98		C	
Double-shell tank space evaluation	M-46-00F	09/30/99		C	
The percentage of pumpable liquid remaining to be removed will be equal to or less than 93% of total liquid	D-01-03V	09/30/99		C[d]	
RL-TW04, Retrieval					
Initiate retrieval of Tank 241-C-106 waste (I.P. 5.4.3.6.c)	M-45-03A 93-05	10/31/97			X[e]
Complete upgrading of leak-tight caps on monitoring drywells around SSTs	P-45-57[f]	06/30/99	C		
Submit to Ecology for review and approval Phase 1 RFI/CMS work plan for SST waste management areas (WMA)	P-45-51[f]	08/31/99	C		
Submit annual update SST retrieval sequence document	M-45-02D	09/30/99		C	
Submit annual progress on waste tank leak monitor	M-45-09D	09/30/99		C	
RL-TW09, Immobilized Tank Storage and Disposal					
Submit Revised Canister Storage Facility Part A Dangerous Waste Permit Application to Ecology	M-90-12	06/30/99	C		

NOTES:

[a]RL Letter 99-ORP-002, dated 03/31/99, transmitted approved FSAR. Letter 99-TSD-028 to DNFSB reporting completion of this milestone was signed April 6, 1999.

[b]ORP Letter 99-TSD-088 dated September 24, 1999, submitted a topical report to the DNFSB. The report demonstrates that sufficient waste had been removed from Tank 241-C-106 as of August 30, 1999, to reduce the heat generation rate to safe levels without regular water additions.

[c]M-41 Interim Milestones were deleted by Tri-Party Agreement Change Request M-41-99-01, which was approved on October 14, 1999. These milestones were replaced by the schedule in the Hanford High-Level Radioactive Tank Interim Stabilization Consent Decree filed on September 30, 1999.

[d]This milestone was established in support of the Hanford High-Level Radioactive Tank Interim Stabilization Consent Decree filed on September 30, 1999.

[e]RL Letter 99-WSD-004 dated November 25, 1998, notified the DNFSB of initiation of Tank 241-C-106 waste retrieval.

[f]These milestones were proposed by Change Request M-45-98-03 and will be added to the Tri-Party Agreement when approved.

2.2.2 Major Accomplishments

Major FY 1999 ES&H-related accomplishments are listed below:

- Sluiced over 95% of sludge from Tank 241-C-106, resolving the high-heat safety issue, and removing the tank from the Watch List (Tri-Party Agreement Milestone M-45-03A, M-45-03B and DNFSB Recommendation 93-05)
- Pumped approximately 482,000 gallons of waste from single-shell tanks (SSTs) exceeding the Consent Decree target of 432,650 gallons (Consent Decree D-01-03V)
- Initiated pumping of SSTs 241-S-102, -106 and -103, removed 7% of total remaining pumpable liquid in SSTs, and initiated pumping of Tank 241-U-103 (Consent Decree milestones D-01-02, D-01-03V, and D-01-04, respectively)
- Installed a mechanical arm in Tank 241-SY-101 for releasing gas trapped within the crust. Prepared Tank 241-SY-101 for waste transfer, including all hardware and instrumentation (transfer pump, transfer line, drop leg in Tank 241-SY-102)
- Reached 1,000,000 safe work hours without a lost workday injury or illness
- Conducted two cross-site transfers, moving approximately1.65 million gallons of waste to DST 241-AP-107
- Completed Integrated Safety Management System Phase (ISMS) II Readiness
- Closed the organic complexant safety issue, resulting in removal of 18 organic tanks from the Watch List
- Submitted a report resolving the high-heat safety issue for Tank 241-C-106 and provides the basis for removal of Tank 241-C-106 from the Watch List (DNFSB Recommendation 95-05).

2.2.3 Cost and Schedule Performance

The River Protection Project had a favorable cost variance of 5.6% and an unfavorable schedule variance of 1.7% for FY 1999, which are within established thresholds for variance reporting.

2.3 STATUS OF WASTE MANAGEMENT PROJECT

2.3.1 Status of Execution Commitments

A detailed year-end status of Waste Management Project FY 1999 ES&H execution commitments is provided in Table 2-6. The project had 7 ES&H commitments in FY 1999, all of which were completed on or ahead of schedule.

Table 2-6. Year-End Status of Fiscal Year 1999 Waste Management Project Environment, Safety and Health Execution Commitments.

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM04, Solid Waste Treatment					
Initiate processing of contact-handled TRU/TRUM waste at Waste Receiving and Processing Facility (WRAP 1)	M-91-02	12/31/98	C		
Submit Hanford Site low-level mixed waste greater than Class C Waste Project Management Plan to Ecology	M-91-02	06/30/99	C		
Initiate treatment of Contact-Handled low-level mixed wastes	M-19-01	09/30/99	C		
Complete T Plant actions	M-32-03	09/30/99	C		
Complete identified dangerous waste tank corrective actions	M-32-00	09/30/99		C	
RL-WM05, Liquid Effluents Project					
Submit to U.S. Environmental Protection Agency (EPA) and Ecology an evaluation of development status of tritium treatment technology	M-26-05F	08/31/99	C		
RL-WM06, Analytical Services					
Complete Tank 241-S-219 interim status actions	M-32-02	06/30/99	C		

2.3.2 Major Accomplishments

Major FY 1999 ES&H-related accomplishments are listed below:

- Initiated onsite low-level mixed waste (LLMW) disposal (first in the DOE Complex) in the Mixed Waste Trench over a year and a half before the due date of the Tri-Party Agreement Milestone, M-91-13
- Disposed of 6,440 ft^3 (182 m^3) of LLMW
- Initiated transfer of LLMW from storage at the Central Waste Complex to disposal in the Mixed Waste Trench
- Disposed of 209,000 ft^3 (5,919 m^3) of low-level waste (LLW) in the Low-Level Burial Grounds in support of the Hanford Site and DOE Complex cleanup missions
- Demonstrated in-trench encasement of contact-handled Category 3 LLW that improves trench utilization by a factor of 3
- Supported protection of the Columbia River by receipt of ion-exchange module columns from K Basins
- Disposed of 9 defueled naval reactor compartments
- Supported mortgage reduction through the transfer of the Transuranic Waste Storage and Assay Facility to the Facilities Stabilization Project

- Issued the FY 1999 Hanford Waste Management Project Strategic Plan. The Plan supports both the DOE-HQ and the RL Strategic Plans

- The closure plan for the 616 Non-Radioactive Dangerous Waste Storage Facility was submitted to the Washington Department of Ecology on June 1, 1999

- Retrieval of suspect TRU waste was initiated 14 months ahead of the Tri-Party Agreement milestone (M-91-04). Nondestructive assay (NDA) to segregate TRU and LLW drums was performed on a fixed-price contract, reducing costs for the first 200 drums by about $85,000. A total of 269 drums from onsite and offsite generators were assayed

- Completed Backlog Soils Project supporting Tri-Party Agreement milestone M-19-01. A total of 123 drums were processed; sampling and analysis work on the drums was completed in three weeks

- Completed secondary containment upgrades and startup of the 2706-T facility (M-32-03 and M-32-03-T06)

- The Idaho National Engineering and Environmental Laboratory completed incineration of 96 drums of Hanford LLMW debris at the Waste Experimental Reduction Facility

- LLMW debris was shipped to Applied Technology Group for non-thermal treatment

- Initiated processing at WRAP to inspect, treat, and repackage contact-handled TRU waste to ensure that it meets WIPP acceptance criteria (M-91-02)

- Completed nondestructive examination on 463 drums and 34 boxes, and NDA on 253 drums at WRAP

- Quality Assurance Project Plan and Certification Plan were approved by the Carlsbad Area Office

- Conducted one campaign by the 242-A Evaporator to concentrate tank wastes. A waste volume reduction of 84% was achieved

- Operated the Effluent Treatment Facility (ETF) to treat and disposed of 25 million gallons of radioactive, hazardous liquid waste

- Disposed of 138 million gallons of unregulated liquid effluents via the 200 Area Treated Effluent Disposal Facility (TEDF)

- Treated and disposed of 60 million gallons of industrial wastewater at the 300 Area TEDF

- Submitted a petition to revise the ETF delisting to allow treating the leachate from the mixed waste trenches

- The Waste Sampling and Characterization Facility (WSCF) achieved over 2,000 accident-free days

- Completed 14 analytical equivalency units at the 222-S Laboratory as requested by the Office of River Protection

- Prepared and packaged Office of River Protection tank samples for shipment to BNFL Inc. laboratories. The samples are being used for waste treatability studies that support the BNFL vitrification plant design. Ten PAS-1 Casks (Type B), 65 Hedgehogs (Type A), and 4 Pigs (Type B onsite) were shipped

- Analyzed over 10,500 environmental samples at WSCF while receiving highly positive responses to customer surveys

- Completed Tank 241-S-219 interim status actions and completed construction on Project W-178 (M-32-02 and M-32-02-T03). These secondary containment upgrades bring the 222-S Laboratory high-level liquid waste system into compliance with *Washington Administration Code* (WAC) 173-303 requirements

- Completed headspace gas sampling on 107 TRU waste drums at the 2706-T Facility and analysis at the Waste Management Laboratories.

2.3.3 Cost and Schedule Performance

The Waste Management Project had a favorable cost variance of 4.5% and an unfavorable schedule variance of 2.8% for FY 1999, which are within established thresholds for variance reporting.

2.4 STATUS OF SPENT NUCLEAR FUEL PROJECT

2.4.1 Status of Execution Commitments

A detailed status of the Spent Nuclear Fuel Project's FY 1999 ES&H execution commitments is provided in Table 2-7. The project had two ES&H commitments in FY 1999. One commitment was completed ahead of schedule and the other was rescheduled by change control.

Table 2-7. Status of Fiscal Year 1999 Spent Nuclear Fuel Project Environment, Safety and Health Execution Commitments.

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM01, Spent Nuclear Fuel Project					
Submit a proposed plan and feasibility study for remedial action for the K Basins	M-34-03	11/30/99	C		
Complete K West cask facility modifications	M-34-14A	09/30/99	Rescheduled by Change Request M-34-99-01A[a]		

NOTE:
[a] Change request M-34-99-01A was approved on August 11, 1999, to delay completion until February 29, 2000.

2.4.2 Major Accomplishments

Major FY 1999 ES&H-related accomplishments are listed below:

- Submitted a proposed plan and feasibility study for remedial action for the K Basin ahead of schedule (Tri-Party Agreement Milestone M-34-03)
- Submitted DOE-approved report on quantities, character, and management of K Basins debris to EPA and Ecology (Tri-Party Agreement Milestone M-34-05-T1A)
- The Canister Storage Building (CSB) is 92.5 percent complete
- The Cold Vacuum Drying (CVD) Facility is 90.5 percent complete
- Completed construction and installation of K West Basin Spent Nuclear Fuel Retrieval System (Tri-Party Agreement Milestone M-34-13A-T01)
- Formally closed the final key technical issue for implementation of interim storage of N Reactor spent nuclear fuel
- Completed construction of K West Basin integrated water treatment system to support spent nuclear fuel removal (Tri-Party Agreement Milestone M-34-11-T01).

2.4.3 Cost and Schedule Performance

The Spent Nuclear Fuel Project had an unfavorable cost variance of 0.8% and an unfavorable schedule variance of 2.8% for FY 1999, which are within established thresholds for variance reporting.

2.5 STATUS OF FACILITY STABILIZATION PROJECT

2.5.1 Status of Execution Commitments

A detailed status of the Facility Stabilization Project's FY 1999 ES&H execution commitments is provided in Table 2-8. The project had a total of 20 ES&H commitments. Of these commitments, 13 were completed on or ahead of schedule, 1 was completed behind schedule, 1 was carried over to FY 2000, and 5 were deleted by change control.

Table 2-8. Year-End Status of Fiscal Year 1999 Facility Stabilization Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
Complete decoupling of Waste Encapsulation and Storage Facility (WESF) from B Plant	M-82-09	12/31/98	C		
Submit B Plant preclosure work plan to Ecology	M-20-21A	03/31/99	C		
Complete deactivation of the B Plant Canyon	M-82-10	09/30/99	C		
Complete B Plant facility transition phase and initiate surveillance and maintenance phase	M-82-00	09/30/99		C	
RL-TP05, PFP Deactivation					
Begin processing solutions at PFP (Comm. 022)	R94-01	06/30/97	Deleted Per DNFSB I.P., Revision 1[a]		
Complete design, procurement, and installation of new repackaging (Commit. 003)	R94-01	12/31/98	Deleted Per DNFSB I.P., Revision 1[a]		
Documented technical approach for disposition of ash residues (Commit. 112)	R94-01	01/31/99		C	
Initial thermal stabilization of plutonium (Pu) oxides and mixed oxides > 50 wt% Pu and/or Pu plus uranium (Commit. 107)	R94-01	01/31/99		C	
Documented analysis and decision for processing of the inventory of unalloyed plutonium (Comm. 109)	R94-01	02/28/99		C	
Documented approach to establish an interim capability to meet long-term storage standard for plutonium (Comm. 108)	R94-01	02/28/99		C	
Decision of process selection for solutions that cannot be processed untreated in production ... calciner (Comm. 103)	R94-01	02/28/99		C	
Documented categorization plan for plutonium solutions (Comm. 102)	R94-01	02/28/99		C	
Decision on shipping and/or processing approach for select Recommendation 94-1 material at alternate sites (Comm. 101)	R94-01	02/28/99		C	
Initiate operation of the prototype vertical denitration calciner (Comm. 104)	R94-01	05/31/99			C
Start restabilizing high-assay oxides at the Plutonium Finishing Plant (Comm. 004)	R94-01	07/31/99	C		

Table 2-8. Year-End Status of Fiscal Year 1999 Facility Stabilization Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
Start stabilization of polycubes (Comm. 011)	R94-01	07/31/99	Deleted Per DNFSB I.P., Revision 1[a]		
Perform operational readiness testing of new repackaging system (Comm. 005)	R94-01	09/30/99	Deleted Per DNFSB I.P., Revision 1[a]		
Complete metal repackaging at PFP (Comm. 007)	R94-01	09/30/99	Deleted Per DNFSB I.P., Revision 1[a]		
Complete installation of the production vertical denitration calciner (Comm. 105)	R94-01	09/30/99			X[b]
RL-TP08, 324/327 Facility Stabilization Project					
Complete transfer of all 300 Area Cs/Sr to WESF and/or an approved storage location	M-92-04	12/31/98	C		

NOTES:

[a]Milestones were deleted by the *Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex*, Revision 1, dated December 22, 1998 and approved on January 28, 1999, U.S. Department of Energy Office of Environmental Management, Washington, D.C.

[b]Letter dated July 22, 1999, from DOE EM-60 to the DNFSB states that this commitment "will not be completed due to the change in path forward from vertical denitration calciner to magnesium hydroxide precipitation for solution stabilization." This will be officially changed when the DNFSB approves Revision 2 of the Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex.

2.5.2 *Major Accomplishments*

Major 1999 FY ES&H accomplishments are listed below:

- Safety performance significantly improved during the last seven months of the FY
- Resumed thermal stabilization activities at PFP in January 1999 with more than 0.1 metric ton of Plutonium (Pu) oxides and sludge being stabilized. In addition, the chemically reactive material in glovebox 636 and Pu-bearing sludge in glovebox HC-23S was dispositioned
- Declared readiness and initiated stabilization of Pu-bearing solutions utilizing the prototype vertical denitration calciner (DNFSB Recommendation 94-1/104)
- Successfully transferred the N-Reactor fuel from the 327 Building to the K Basin without incident and removed spent-fuel test equipment from the 327 Building's F & G Cells
- Transferred the B Plant Facility to the Environmental Restoration Contractor (Tri-Party Agreement Milestone M-82-00)
- Successfully vented and obtained two core samples for mitigating Tank 241-Z-361 vulnerability concerns

- Prepared and issued an Integrated Project Management Plan at PFP. The revised plan reduced the overall PFP schedule baseline by 12 years and the cost baseline by approximately $1.05 billion
- Revised Project W-460, Plutonium Stabilization and Handling (PUSH) to incorporate the proven technology of the bagless transfer system coupled with a redesigned outer can welder instead of the Plutonium Stabilization and Packaging (PUSAP) system
- The largest and most highly contaminated equipment rack in 324 Building's B-Cell was dismantled and packaged for shipment to compliant storage
- Completed repairs to the 309 Building Containment Dome
- Removed tank waste sludge equipment from C-Cell, 324 Building
- Removed 2 tons of low level waste and 1 ton of mixed waste from WBSF without incident
- Eliminated all outdoor contamination areas at WESF
- Completed Phase III field work for 300 Area Fuel Supply Waste Acid Treatment System (WATS) on schedule.

2.5.3 Cost and Schedule Performance

The Facility Stabilization Project had a favorable cost variance of 3.0% and an unfavorable schedule variance of 2.5% for FY 1999, which are within established thresholds for variance reporting.

2.6 STATUS OF ENVIRONMENTAL RESTORATION PROJECT

2.6.1 Status of Execution Commitments

A detailed year-end status of the Environmental Restoration Project's FY 1999 ES&H execution commitments is provided in Table 2-9. All 11 of the FY 1999 ES&H commitments were completed on or ahead of schedule.

Table 2-9. Year-End Status of Fiscal Year 1999 Environmental Restoration Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
RL-ER01, 100 Area Remedial Action					
Initiate remedial action, 100-HR-1 Operable Unit	M-16-26A	03/31/99	C		
RL-ER02, 200 Area Remedial Action					
Submit 200 North Pond and Trenches cooling water work plan	M-13-19	02/28/99	C		
Submit 200 Gable Mountain/B Pond and Ditch cooling water group work plan	M-13-20	04/30/99	C		
Submit 200 Chemical Sewer group work plan	M-13-21	08/31/99	C		
RL-ER06, Decontamination and Decommissioning					
Submit 105-B Reactor Building hazards assessment and characterization report to EPA	M-93-04	06/30/99		C	
RL-ER08, Groundwater Management					
Install RCRA groundwater monitoring wells around RCRA land disposal units and SSTs at a rate of up to 50 in CY 98	M-24-00J	12/31/98	C		
Install one replacement RCRA well for the 216-U-12 Crib	M-24-36	12/31/98	C		
Install two replacement RCRA wells for SST waste management area T	M-24-37	12/31/98	C		
Install four replacement RCRA wells for the SST waste management areas TX and TY	M-24-38	12/31/98	C		
Install two RCRA wells (one new/one replacement) for SST waste management area U	M-24-39	12/31/98	C		
Install one additional RCRA well for the SST waste management areas B, BX, and BY	M-24-40	12/31/98	C		

2.6.2 Major Accomplishments

Major FY 1999 ES&H-related accomplishments are listed below:

- Completed excavation of 16 waste sites, nine ahead of schedule. (Fifteen waste sites were not excavated because of contract award deferral and additional plume/waste discoveries)
- Removed and disposed of 636,728 metric tons (701,876 tons) of contaminated waste material in FY 1999. This is 30% above the original planned amount of 490,363 metric tons (540,535 tons)
- Completed soil excavation activities at the B/C Area waste site, next to the Columbia River, in May 1999 as scheduled. Remediation work at this site was initiated in FY 1996

- Operated five ER groundwater pump and treat systems at or above planned availability (96% actual; 90% planned). These systems remove contaminants such as chromium and carbon tetrachloride from the groundwater and mitigate further movement of the contaminants to the Columbia River

- Completed successful explosive demolition of the 116-D and 116-DR exhaust stacks located in the 100 D Area on August 14, one month ahead of the already accelerated schedule from FY 2000. Efficiency savings from other ER Project activities allowed for acceleration of stack demolition from FY 2000

- Completed above-grade demolition of the 108-F Biology Laboratory on August 5, nearly two months ahead of schedule. All FY 1999 108-F Biology Laboratory workscope was completed five months ahead of the original schedule

- Completed all FY 1999 structural demolition activities for the F Reactor Interim Safe Storage (ISS) project ("cocooning") three weeks ahead of schedule

- Completed all FY 1999 structural demolition activities for the DR Reactor ISS project ("cocooning") five weeks ahead of schedule

- Completed all FY 1999 surveillance and maintenance activities on inactive facilities in the 100, 200, and 300 Areas as scheduled

- Completed Radiation Area Remedial Action (RARA) surveillance, monitoring, and herbicide application activities as scheduled. Significant cost savings were achieved from efficiencies in RARA remediation and herbicide applications

- Planted over five acres of seeds at the Confederated Tribes of the Umatilla Indian Reservation Native Plant Nursery to help meet Site needs for native vegetation

- Accomplished 4 waste-minimization efforts

- Completed all 11 planned Tri-Party Agreement milestones; 10 ahead of schedule and 1 on schedule

- Achieved one million hours worked without a lost workday injury on July 19, 1999. This was the third time within the past five years of the ER Project contract that this significant milestone has been reached.

2.6.3 Cost and Schedule Performance

The Environmental Restoration Project had a favorable cost variance of 6.0% and an unfavorable schedule variance of 9.4% for FY 1999. The cost variance is within established thresholds for variance reporting. The unfavorable schedule variance is the result of: (1) 100 DR waste site pipeline remedial action contract delays, (2) lead-contaminated soil disposal activities that are awaiting regulator variance documentation, (3) delays in groundwater well routine maintenance activities because of contractual issues, (4) deferral of 100-HR-3 groundwater resin shipments because of higher chromium concentrations and delays in vender selection, (5) delay

in 105-KE roof foaming completion, (6) delay in awarding contract for Water Treatment Plant replacement system, and (7) late billings for Sitewide assessments.

2.7 STATUS OF SCIENCE AND TECHNOLOGY PROJECT

The Science and Technology Project had no ES&H execution commitments in FY 1999.

2.7.1 Major Accomplishments

Major 1999 FY ES&H-related accomplishments are listed below:

- A total of 16,194 radiological surveys were completed, all preventive maintenance checks were performed, 7,214 air samples were collected and counted, 675 nuclear material inspections were conducted, 11,771 access entries into radiological control areas were supervised, 168 ES&H drawings were completed, the Safety Analysis Report/Technical Safety Requirements (TSR) document for the Radiochemical Radiation Processing Laboratory (RPL) Category II Nuclear Facility was updated, and routine inspections for 35 other smaller facilities were completed

- Construction activities and internal Pacific Northwest Readiness Assessment were completed for the RPL Radioactive Liquid Waste System replacement project

- Over 45,000 kg of hazardous waste, 258,000 kg of nonregulated waste, 1,480 kg of asbestos waste, 181.5 cubic meters of low-level waste, 28.4 cubic meters of mixed waste, and 7 drums of TRU waste were dispositioned. Over 600 radioactive material shipments and 100 hazardous material shipments were successfully completed

- Staff managed and operated the 305 B Facility with no regulatory violations or concerns. In an inspection conducted jointly by two different Ecology offices and EPA, complementary comments concerning the facility and staff were made by the inspectors

- Results from all air and water samples confirmed that routine effluent discharges from all Pacific Northwest facilities are below historic release levels and compliant with existing state and Federal permits

- The 329 Building Neutron Multiplier Facility highly enriched uranium fuel was disassembled and shipped in 11 type 6L 55-gallon drums to the Savannah River Site Legacy wastes contained in the RPL Facility storage tank were dispositioned and the tank and associated piping to the building were removed.

2.7.2 Cost and Schedule Variance

The Science and Technology Project had a favorable cost variance of 9.0% and an unfavorable schedule variance of 3.0% for FY 1999. The schedule variance is within established thresholds for variance reporting. The favorable cost variance is the result of less than expected costs on planned activities and increased efficiencies.

2.8 STATUS OF MISSION SUPPORT AND OTHER PROJECTS

2.8.1 Status of Execution Commitments

Mission Support and Other Projects consists of five Project Baseline Summaries (PBS). One PBS, RL-OT01, Mission Support, had FY 1999 ES&H execution commitments as listed in Table 2-10. Of the 36 ES&H commitments, 34 were completed on or ahead of schedule and 2 were deleted by change control.

Table 2-10. Status of Fiscal Year 1999 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commitment ID Number	Due Date	Status		
			A/S	O/S	B/S
RL-OT01, Mission Support					
Hanford Facility RCRA permit Class 1 modification notification – Quarter 1	ECP-99-302	10/01/98	C		
Issue CY 1998 third quarter National Emission Standards for Hazardous Air Pollutants (NESHAP) status to EPA	ECP-99-901	10/23/99	C		
Update estimate of closure and post-closure costs	ECP-99-702	10/23/98		C	
Annual asbestos notification of intent	ECP-99-306	12/31/99	C		
Hanford Facility RCRA permit Class 1 modification notification – Quarter 2	ECP-99-303	01/01/99	C		
Issue CY 1998 fourth quarter NESHAP status to EPA	ECP-99-902	01/22/99		C	
Annual portable and temporary radioactive air emissions report to RL	ECP-99-410	01/31/99		C	
Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) 312 Tier Two emergency and hazardous chemical inventory report	ECP-99-501	02/22/99		C	
1998 Hanford Site annual dangerous waste report	ECP-99-503	02/22/99		C	
Annual report of Hanford Facility RCRA permit non-compliance	ECP-99-701	02/24/99	C		
Complete stack reassessments for the B-28 and P-16 stacks	ECP-99-903	02/28/99	C		
Issue CY 1998 nonradioactive airborne emissions report to Ecology	ECP-99-802	04/01/99	C		
Transmit EIS Onsite Discharge Information System data to INEEL	ECP-99-801	04/01/99		C	
Hanford Facility RCRA permit Class 1 modification notification – Quarter 3	ECP-99-304	04/02/99	C		
Issue CY 1999 first quarter NESHAP status to EPA	ECP-99-904	04/23/99	C		
Submit annual Hanford land-disposal restrictions report LDR Plan in accordance with the Land-Disposal Restrictions Plan	M-26-01I ECP-99-507	04/23/99	C		

Table 2-10. Status of Fiscal Year 1999 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commitment ID Number	Due Date	Status		
			A/S	O/S	B/S
Deliver final risk management plan to DOE-RL	ECP-99-419	06/07/99	C		
Issue annual radionuclide air emissions report	ECP-99-803	06/15/99	C		
EPCRA 313 toxic chemical release inventory report	ECP-99-502	06/24/99	C		
1998 Hanford Site annual polychlorinated biphenyl document log	ECP-99-504	06/24/99	C		
Concrete pad for Stack 296-T-18 (244-TX DCRT)	ECP-99-116	06/30/99	C		
Concrete pad for Stack 296-S-22 (244-S DCRT)	ECP-99-115	06/30/99	C		
Concrete pad for Stack 296-C-5 (244-CR Vault)	ECP-99-113	06/30/99	C		
Concrete pad for Stack 296-A-25 (244-A DCRT)	ECP-99-111	06/30/99	C		
Submit letter on Project W-420 start of construction	ECP-99-905	06/30/99	C		
Concrete pad for Stack 296-B-28 (244-BX DCRT)	ECP-99-112	06/30/99	C		
Concrete pad for Stack 296-P-16 (244-C Tank Farm)	ECP-99-114	06/30/99	C		
Hanford Facility RCRA permit Class 1 modification notification – Quarter 4	ECP-99-305	07/02/99	C		
1998 Hanford Site annual polychlorinated biphenyl report	ECP-99-505	07/08/99	C		
Issue CY 1998 second quarter NESHAP status report to EPA	ECP-99-906	07/23/99	C		
Coordinate RCRA pipe mapping and marking	ECP-99-703	09/21/99	C		
Integrated air operating permit semiannual report	ECP-99-417	09/30/99	Deleted by Change Request ECP-99-009[a]		
Complete identified dangerous waste tank corrective actions	ECP-99-022	09/30/99	Deleted by Change Request ECP-99-008[b]		
RCRA general facility inspections	ECP-99-301	09/30/99		C	
Complete shoreline inspections	ECP-99-409	09/30/99	C		

NOTE:

[a]Milestone deleted by Baseline Change Request ECP-99-009 approved on August 30, 1999.
[b]Milestone deleted by Baseline Change Request ECP-99-008 approved on August 30, 1999.

2.8.2 Major Accomplishments

Major 1999 FY ES&H-related accomplishments for the five PBSs included in Mission Support and Other Projects are listed below:

- **Hazardous Materials Management and Emergency Response (HAMMER) (RL-HM01) Accomplishments**
  - Conducted approximately 1,691 classes for a total of 29,218 student days. This represents a 26% increase (target was 10%) over the FY 1998 total of 23,250 student days
  - Conducted two highly successful performance-based exercises (rehearsals) in conjunction with PFP and Tank Farms, which resulted in enhanced safety and reduced costs for these projects
  - Responded to the K Basin's need for a significant increase in the number of people receiving Hazardous Waste Operations HAZWOPER and respiratory training. Support to Site emergency preparedness training resulted in a greatly improved program
  - Forty new non-Hanford customers utilized the facility, compared to 25 in FY 1998, reflecting a significant growth in offsite business from FY 1998, as well as a doubling of the revenues. Approximately $160,000 of revenue was generated from non-DOE customers, versus $62,000 in FY 1998, assisting in reducing costs to DOE of providing site health and safety training
- **Mission Support (RL-OT01) Accomplishments**
  - The CY 1998 Hanford Site Environmental Report was issued to the public
  - Submitted quarterly reports for Hanford Facility *Resource Conservation and Recovery Act of 1976* (RCRA) permit Class 1 modification notifications and annual permit noncompliance
  - Submitted annual Hanford land disposal restrictions report (Tri-Party Agreement Milestone M-2-01I)
  - Completed construction of concrete pads for Stacks 296-T-18, S-22, C-5, A-25, B-28, and P-16
  - Issued quarterly status reports to the EPA in accordance with NESHAP
  - Completed stack reassessments for the B-28 and P-16 stacks
  - Completed annual asbestos notification of intent
  - Issued annual portable and temporary radioactive air emissions report
  - Issued EPCRA 312 tier-two emergency and hazardous chemical inventory report

- Issued 1998 Hanford Site annual dangerous waste report
- Supported preparations for EPA multimedia inspection, including preparations of regulatory interpretations and analyses for use in the hearing process
- Established a centralized Biological Control Program

- **Office of Safety Regulation of the TWRS-P Contractor (RL-RG01)**
  - Issued review guidance to the TWRS-P Contractor, British Nuclear Fuels, Limited (BNFL), for their information and use in submitting the Standards Approval Package for Construction Authorization, the Limited Construction Authorization Request, and the Construction Authorization Request
  - Completed a review of BNFL's generic design safety features
  - Reviewed and approved BNFL's Integrated Safety Management Plan (ISMP)
  - Conducted inspections and topical meetings and observed design reviews at BNFL

- **Landlord Program (RL-TP13) Accomplishments**
  - Shipped a 177,000-pound radioactive well car to Tennessee where it will be recycled, reducing contamination on Site
  - Reconfiguration of the Emergency Preparedness Control Station was upgraded, allowing for integration of the notification siren system on Site
  - Upgrades to the Emergency Operations Center were completed to allow for improvements to Hanford Site emergency-response events
  - Route 4S at the entrance of the 2704 HV facility was refurbished and now provides acceleration and deceleration lanes and lighting. Employee safety was at risk and completion of this project answers a safety concern.

2.8.3 Cost and Schedule Variance

The PBSs making up Mission Support and Other Projects had a collective favorable cost variance of 4.9% and a collective unfavorable schedule variance of 7.9% for FY 1999. The cost variance is within established thresholds for variance reporting. The unfavorable schedule variance is caused by postponement of Westinghouse closeout work scope to FY 2000 for PBS RL-OT01, Mission Support, and delay of long-lead procurement for emergency service replacements for PBS RL-TP13, Landlord Project.

2.9 ADVANCED REACTORS TRANSISTION PROJECT

Advanced Reactors Transition Project consists of EM-funded PBS RL-TP11, Plutonium Test Reactor/309 Facility, and NE-funded PBS RL-MS01, Fast Flux Test Facility (FFTF) complex.

2.9.1 Status of Execution Commitments

Table 2-11 provides the status of Advanced Reactors Transition Project's FY 1999 ES&H execution commitments. The project had two FY 1999 ES&H commitments that were modified by Tri-Party Agreement change requests to place the milestones in abeyance.

Table 2-11. Status of Fiscal Year 1999 Advanced Reactors Transition Project Environment, Safety and Health Execution Commitments.

Milestone description	Commitment ID number	Due date	Status		
			A/S	O/S	B/S
RL-TP11, Plutonium Recycle Test Reactor/309 Facility					
Submit Hanford Site sodium management plan to Ecology	M-92-10	10/31/98	Modified by Change Request M-92-98-01[a]		
RL-MS01, Fast Flux Test Facility Complex					
Submit FFTF end-point-criteria document	M-81-03	12/31/98	Modified by Change Request M-81-98-01[a]		

NOTES:

[a]This milestone was modified by Tri-Party Agreement Change Request M-92-98-01, which was approved on October 2, 1999, to place the milestone in abeyance. As a consequence of FFTF being placed in standby, facility stabilization work has been limited to activities that would not inhibit reactor restart, and Tri-Party Agreement work schedules are no longer achievable or appropriate.

2.9.2 Major Accomplishments

Major 1999 FY ES&H-related accomplishments are listed below:

- FFTF exceeded 1.2 million work hours since the last employee lost workday and the period without an OSHA recordable injury record exceeded one year in September 1999
- Completed hardware installation for the Closed Loop Ex-vessel Machine control system

- Completed PEP work phase 99-3 "Health of the Facility" work scope September 30, 1999 on schedule

- Completed the conceptual design for the modification of the Solid Waste Cask Closure valve assembly.

2.9.3 Cost and Schedule Performance

The Advanced Reactors Transition Project had a favorable cost variance of 7.9% and an unfavorable schedule variance of 0.5% for FY 1999, which are within established thresholds for variance reporting.

3.0 FISCAL YEAR 2000 ENVIRONMENT, SAFETY AND HEALTH EXECUTION COMMITMENTS

The ES&H commitments planned for execution at the Hanford Site in FY 2000 are presented in this section. Following a summary of FY 2000 ES&H execution commitments, the ES&H-related actions planned for FY 2000 are presented for each of the EM-funded Hanford Site project missions. The planned actions are based on the FY 2000 President's budget of $1,065.1 million for EM-funded cleanup activities and $31.7 million for NE funded activities, as of October 31, 1999. Impacts of any change resulting from the Congressional appropriation process will be reflected in the *Hanford Site Fiscal Year 2002 Budget-Risk Management Summary* scheduled to be issued in May 2000.

DOE NE-funded activities associated with maintaining the FFTF complex, as an option for accomplishing expanded civilian nuclear energy research and development and isotope production missions, are included in Section 3.9. Tri-Party Agreement milestones associated with the FFTF, were placed in abeyance by change control in August 1999.

An ES&H commitment affirmation response for SC-funded activities is presented in Appendix A. No ES&H execution commitments are assigned to SC-funded activities.

3.1 SUMMARY OF FISCAL YEAR 2000 EXECUTION COMMITMENTS

A total of 76 ES&H execution commitments are planned for completion in FY 2000 as shown in Table 3-1. Included are 46 major and interim Tri-Party Agreement milestones, 5 DNFSB Recommendation commitments, and 25 Regulatory milestones. These execution commitments are reportable to HQ as HQ-controlled and/or Field Office milestones.

The following sections use project titles and descriptions based on the reporting structure used in FY 1999 for the EM-funded projects. Starting in FY 2000, the Facility Stabilization Project is restructured into the Nuclear Material Stabilization Project and the River Corridor Project as described below.

- The Nuclear Material Stabilization Project includes deactivation of the PFP, stabilization of the plutonium stored in various containers, and safe and secure management of nuclear materials while awaiting final disposition.

- The River Corridor Project includes deactivation of former N Reactor fuel fabrication facilities and contaminated research and development facilities that are ready for transition to an industrially safe, low cost, condition pending D&D or return to beneficial use. Also included is deactivation of miscellaneous facilities in the 200 Area.

Table 3-1. Summary of Planned Fiscal Year 2000 Environment, Safety and Health Execution Commitments by Milestone Type.

Site Project Mission	Number of Milestones			
	Tri-Party Agreement	DNFSB	REG	Total
River Protection Project[a,b]	19[a]	3[b]	0	22[a,b]
Waste Management Project	2	0	0	2
Spent Nuclear Fuel Project	2	0	0	2
Facility Stabilization Project[c]	3	2[c]	0	5[c]
Environmental Restoration Project[d]	19[d]	0	0	19[d]
Science and Technology Project	0	0	0	0
Mission Support and Other Projects	1	0	25	26
Advanced Reactors Transition[e]	0[e]	0	0	0[e]
Total	**46**	**5**	**25**	**76**

NOTES:

[a] One River Protection Project Tri-Party Agreement Milestone was deleted by Change Request M-41-99-01, approved on October 14, 1999.

[b] These River Protection Project DNFSB milestones were completed in FY 1999.

[c] One of these Facility Stabilization Project DNFSB milestones is carried over from FY 1999. Both of these milestones will be deleted when the DNFSB approves Revision 2 of the Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex.

[d] Three Environmental Restoration Project Tri-Party Agreement milestones are to be modified by change control to address the schedule impacts associated with discovery of additional plume/waste in the waste sites scheduled for remediation. Includes one milestone (M-93-07) completed in FY 1998.

[e] Advanced Reactors Transition Project Tri-Party Agreement milestones were placed in abeyance by Change Request M-81-98-01, approved on August 24, 1999.

3.2 RIVER PROTECTION PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.2.1 River Protection Project Description

The River Protection Project provides for the safe, continued storage of waste in the existing SSTs and DSTs including interim stabilization of tanks, resolution of tank safety issues, and characterization of the waste. The scope of this project also includes eliminating the urgent storage risks associated with tank waste by the removal and treatment of the waste and ultimate onsite disposal of the resulting immobilized low-activity waste and offsite disposal of the immobilized high-level waste.

3.2.2 River Protection Project Fiscal Year 2000 Planned Actions

Major ES&H-related actions planned for FY 2000 are listed below. A total of 22 ES&H execution commitments are planned for FY 2000, as shown in Table 3-2:

- Initiate Tank 241-SY-101 waste transfer/back dilution remediation sequence for surface-level-growth Unreviewed Safety Question (USQ) closure in FY 2001

- Complete FSAR Phase I Implementation. Initiate FSAR Phase II Implementation
- Complete preparation of documentation to declare Readiness to Proceed in support of Phase I Privatization. This declaration will result from the successful completion of a number of activities, including a baseline update to ensure integration between the River Protection Project and the Phase I Privatization Contractor. The declaration is expected to be a major factor in gaining congressional appropriation of the required funding for Phase 1B2
- Pumping will be initiated in the following SSTs: U-103, U-105, U-102, U-109, A-101, SX-105, and AX-101 (Consent Decree D-01-04, D-01-06, D-01-06)
- Complete the removal of 62% of the organically complexed pumpable liquid from SSTs by 9/30/2000 (Consent Decree D-01-05V)
- Conduct Tank 241-AZ-101 Process Test. This test is critical to demonstrating that the technology for sludge-mobilization mixer pumps is viable for delivering sufficient high-level waste (HLW) feed to the Phase I Privatization Contractor.

Table 3-2. Planned Fiscal Year 2000 River Protection Project Environment, Safety and Health Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-TW01, Tank Waste Characterization					
Letter reporting completion of vapor sampling of all SSTs (I.P. 5.4.3.4.d)	R93-05	12/31/99	C		
Submit draft WIRD to Ecology for FY 2001	M-44-13D	06/30/00		X	
Submit final WIRD to Ecology for FY 2001	M-44-14D	08/31/00		X	
Issue characterization deliverables consistent with WIRD developed for FY 2000	M-44-15D	09/30/00		X	
Complete input of characterization information for high-level waste (HLW) tanks per WIRD into an electronic database	M-44-16D	09/30/00		X	
Letter reporting completion of vapor sampling of all DSTs (I.P. 5.4.3.4.f)	R93-05	12/31/00	C		
RL-TW02, Tank Safety Issue Resolution					
Letter reporting adequate vent path in all SSTs suspected of containing organic solvents (I.P.5.4.3.4e)	R93-05	04/30/00	C		
RL-TW03, Tank Farm Operations					
Submit a quarterly report to Ecology documenting tank stabilization activities	D01-00-R02	10/31/99	C		
Concurrence of additional tank acquisition	M-46-01F	11/30/99		C	
Submit a quarterly report to Ecology documenting tank stabilization activities	D01-00-R03	01/31/00		X	

Table 3-2. Planned Fiscal Year 2000 River Protection Project Environment, Safety and Health Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
Submit a quarterly report to Ecology documenting tank stabilization activities	D01-00-R04	04/30/00		X	
Start construction for upgrades in the second Tank Farm	M-43-13	06/30/00		X	
Initiate pumping of tanks U-103, U-105, U-102, and U-109	D-01-04	06/15/00		X	
Submit a quarterly report to Ecology documenting tank stabilization activities	D01-00-R05	07/31/00		X	
The percentage of pumpable liquid remaining to be removed will be equal to or less than 38% of organic complexed pumpable liquids	D01-05V	09/30/00		X	
Double-shell tank space evaluation	M-46-00G	09/30/00		X	
Complete saltwell pumping of single-shell tanks	M-41-27	09/30/00	Deleted per Change Request M-41-99-01[a]		
RL-TW04, Retrieval					
Submit to Ecology for review and approval as an agreement primary document a site-specific SST WMA Phase 1 RFI/CMS work plan addenda for WMA S-SX	P-45-52	10/31/99	C[b]		
Complete sluicing retrieval of Tank 241-C-106 sludge (at least 95% of the estimated total sludge has been removed)	M-45-03B	12/31/99	C[c]		
Submit to Ecology for review and approval as an agreement primary document a site-specific SST WMA Phase 1 RFI/CMS work plan addenda for WMA B-BX-BY	P-45-53	05/31/00		X[b]	
Submit annual update of SST retrieval sequence document for Ecology approval	M-45-02E	09/30/00		X	
Submit annual progress reports on the development of waste tank leak monitoring/detection/mitigation activities	M-45-09E	09/30/00		X	

NOTE:

[a]M-41 Major and Interim Milestones were deleted by Tri-Party Agreement Change Request M-41-99-01, which was approved on October 14, 1999. These milestones were replaced by the schedule in the Hanford High-Level Radioactive Tank Interim Stabilization Consent Decree filed on September 30, 1999.

[b]These milestones were proposed by Change Request M-45-98-03 and will be added to the Tri-Party Agreement when approved.

[c]The milestone was completed by the project. A mutual determination is required by the Inter Agency Management Integration Team before the milestone can be considered complete by the regulators.

3.3 WASTE MANAGEMENT PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.3.1 Waste Management Project Description

The Solid Waste, Liquid Effluents, and Analytical Services activities provide for the safe storage, treatment, and disposal of solid and liquid effluents, both legacy and newly generated, in accordance with applicable Federal and state laws and regulations. Some solid wastes are directly disposed of without treatment, whereas others (e.g., TRU) are stored and treated before

disposal. Processing of contact-handled TRU/TRUM waste at the WRAP Facility Module 1 was initiated in September 1998 (Tri-Party Agreement Milestone M-91-02).

3.3.2 Waste Management Project Fiscal Year 2000 Planned Actions

Major ES&H-related actions planned for FY 2000 are listed below. A total of two ES&H execution commitments are planned for FY 2000, as shown in Table 3-3:

- Continue to receive LLW, LLMW, and TRU wastes for treatment, storage, and disposal in support of Hanford and DOE Complex cleanup missions
- Support the transport, receipt, and disposal of defueled naval reactor compartments in FY 2000
- Dispose of LDR-compliant LLMW in the Mixed Waste Disposal Trench
- Support retrieval of suspect TRU waste and commercial treatment of LLMW
- Retrieve approximately 400 drums of suspect-TRU waste from the low-level burial ground (currently unfunded but expected to be achieved through carryover and cost savings)
- Begin commercial treatment of LLMW
- Obtain WIPP certification and ship TRU waste to WIPP
- Clean off a section of T Plant canyon deck in preparation to receive K Basin sludge (currently unfunded but expected to be achieved through carryover and cost savings)
- Complete TRU Project Management Plan to define a path forward for large box and remote-handled TRU waste streams (currently unfunded but expected to be achieved through carryover and cost savings)
- Operate the 242-A Evaporator to reduce the volume of tank wastes
- Operate the ETF to treat and dispose of contaminated groundwater and process condensate from the 242-A Evaporator
- Operate the 200 Area TEDF to dispose of unregulated liquid effluents from facilities and site support services in the 200 Area
- Operate the 300 Area TEDF to treat and dispose of industrial wastewater from laboratories and research facilities in the 300 Area
- Operate the 222-S Laboratory to support the Office of River Protection, Spent Nuclear Fuels, Solid Waste, and other projects in support of the Hanford Site clean-up mission

- Operate WSCF to support the Liquid Effluents, Environmental Restoration, and other projects in support of the Hanford Site clean-up mission.

Table 3-3. Planned Fiscal Year 2000 Waste Management Project Environment, Safety and Health Execution Commitments.

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM04, Solid Waste Treatment					
Submit Hanford Site TRU/TRUM waste project management plan to Ecology	M-91-03	06/30/00		X	
Complete construction of small-container contact-handled TRU/TRUM retrieval facility(s) and initiate retrieval	M-91-04	09/30/00		X	

3.4 SPENT NUCLEAR FUEL PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.4.1 Spent Nuclear Fuel Project Description

The Spent Nuclear Fuel Project is a major ongoing effort to remove approximately 2,100 metric tons (2,320 tons) of spent fuel from water storage basins along the Columbia River and place them in interim dry storage on the 200 Areas Plateau. The project was formed in 1994 to address the urgent need to move metallic spent nuclear fuel from the present degrading storage conditions in basins along the banks of the Columbia River to safe, interim storage on the Hanford Site Central Plateau.

3.4.2 Spent Nuclear Fuel Project Fiscal Year 2000 Planned Actions

Major ES&H-related actions planned for FY 2000 are listed below. A total of two ES&H execution commitments are planned for FY 2000, as shown in Table 3-4

- Submit a Remedial Design Report/Remedial Action Work Plan for the K Basins Interim Action to EPA and Ecology for approval (Tri-Party Agreement Milestone M-34-04)

- Submit DOE-approved annual report on quantities, character, and management of K Basins debris to EPA and Ecology (Tri-Party Agreement Milestone M-34-05-T01A)

- Complete K West Cask Facility modifications (Tri-Party Agreement Milestone M-34-14A)

- Complete the first two bays of the Cold Vacuum Drying Facility construction and installation (Tri-Party Agreement Milestone M-34-15A-T01)

- Complete remaining bay(s) of the Cold Vacuum Drying Facility construction and installation (Tri-Party Agreement Milestone M-34-15B-T01)

- Complete fabrication and installation of plugs, impact absorbers, weld station, and pre-operational testing in the CSB
- Complete procurement and construction of K East Basin integrated water treatment system
- Complete approval of safety analyses for fuel removal
- Complete Phased Startup Initiative to demonstrate operational readiness of fuel removal system
- Complete management self-assessment and operational readiness review (ORR) for start of fuel removal from K West Basin
- Perform initial transition planning
- Initiate procurement of multiple canister overpacks and baskets
- Prepare light-water reactor fuel move/compliance readiness.

Table 3-4. Planned Fiscal Year 2000 Spent Nuclear Fuel Project Environment, Safety and Health Execution Commitments.

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-WM01, Spent Nuclear Fuel Project					
Complete K West cask facility modifications	M-34-14A	02/29/00		X	
Submit a remedial design report/remedial action work plan for the K Basins interim action to EPA and Ecology	M-34-04	03/31/00		X	

3.5 FACILITY STABILIZATION PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.5.1 Facility Stabilization Project Description

The Facility Stabilization Project transitions nuclear facilities from costly maintenance conditions to a surveillance and maintenance state that is safe and cost effective ("cheap to keep") while awaiting final disposition. Included in the scope is the stabilization of the 4.4 metric tons (4.9 tons) of plutonium stored in more than 8,000 separate containers, glove boxes, tanks, and piping in the PFP and the safe and secure management of nuclear materials while awaiting final disposition. Specific ongoing projects include cleaning and deactivating facilities that are no longer operating and no longer have a mission. Completion of these projects and their transition to the Environmental Restoration Project, commonly called "mortgage reduction," makes funds available for additional Site cleanup efforts.

3.5.2 Facility Stabilization Project Fiscal Year 2000 Planned Actions

Major ES&H-related actions planned for FY 2000 are listed below. A total of 5 ES&H execution commitments were planned for FY 2000 as shown in Table 3-5:

- Submit the WESF Safety Analysis Report (SAR) to RL for review
- Begin Design Basis Reconstitution at WESF
- Complete the WESF Canyon Cleanout
- Submit Waste Acid Treatment System (WATS) RCRA documentation to reflect field work completion
- Restart PFP cementation operations
- Complete installation of the Magnesium Hydroxide Precipitation Process [Mg $(OH)_2$]
- Begin solution stabilization using the $Mg(OH)_2$ precipitation process
- Complete 324 Building FSAR Implementation
- Complete 327 Building Basis for Interim Operation (BIO) Implementation
- Support the Facility Evaluation Board Review at 324/327 Facilities
- Complete ISMS Implementation Validation
- Complete procurement of the Accelerated Site Technology Deployment-funded (EM-50) B Cell Robotics Platform
- Complete 2A Rack size reduction
- Transfer waste materials from the 324/327 Buildings to the low-level burial grounds and Central Waste Complex
- Complete containerization of the bulk of B Cell dispersibles
- Complete Liquid Waste Handling System design and construction
- Maintain the Project Hanford Material Control and Accountability Plan
- Maintain the computer-based security alarm systems at the Patrol Operations Center, to include the Site industrial security and duress alarms
- Complete implementation of DOE Order 435.1, Radioactive Waste Management Plan.

Table 3-5. Planned Fiscal Year 2000 Facility Stabilization Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-TP05, PFP Deactivation					
Complete installation of the production vertical denitration calciner (Comm. 105)	R94-01	09/30/99			X[a]
Deliver two core samples from Tank 241-Z-361 to a laboratory for analysis	M-15-37A	10/30/99	C		
Install two LANL-designed pyrolysis units at Hanford or another site (Comm. 113)	R94-01	12/31/99		X[a]	
Provide the EPA with complete data packages, including validation, for the two cores collected from Tank 241-Z-361	M-15-37B	05/31/00		X	
RL-TP08, 324/327 Facility Stabilization Project					
Submit 300 Area special-case waste project management plan to Ecology	M-92-13	09/30/00		X	

NOTE:

[a]Letter dated July 22, 1999, from DOE EM-60 to the DNFSB, states that this commitment "will not be completed due to the change in path forward from vertical denitration calciner to magnesium hydroxide precipitation for solution stabilization." This milestone will be officially changed when the DNFSB approves Revision 2 of the Implementation Plan for the Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex.

3.6 ENVIRONMENTAL RESTORATION PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.6.1 Environmental Restoration Project Description

The Environmental Restoration Project provides for interim and final cleanup of waste sites and contaminated groundwater and for final decontamination and decommissioning (D&D) of surplus facilities. In addition, this project provides surveillance and maintenance of facilities after transfer from the Facility Stabilization Project. The waste site and facility remediation are regulated under the *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (CERCLA) and RCRA. Cleanup standards and subsequent end-states are established through these regulatory processes.

3.6.2 Environmental Restoration Project Fiscal Year 2000 Planned Actions

Major ES&H-related actions planned for FY 2000 are listed below. A total of 19 ES&H execution commitments are planned for FY 2000, of which 3 are to be rescheduled by Tri-Party Agreement change control and one was completed on July 31, 1998, as shown in Table 3-6:

- Complete excavation of thirteen 100 Area and two 300 Area waste sites
- Continue D&D of 233-S and initiate Assessment of the 224-B Pu Concentration Facilities

- Continue interim safe storage of F and DR Reactors
- Complete expansion and turnover to operations for cells 3 & 4 of the Environmental Restoration Disposal Facility (ERDF)
- Receive 353,000 metric tons (389,000 tons) of contaminated soil, debris, and miscellaneous material at the ERDF
- Continue monitoring and treating groundwater; operate five (5) pump and treat systems, perform passive monitoring and rebound study for the vapor extract system
- Fully integrate Hanford Site groundwater and vadose zone activities; continue characterization of systems, system assessment, science and technology, and management and implementation activities
- Continue RARA surveillance, monitoring, and herbicide activities
- Continue surveillance and maintenance of waste sites and facilities.

Table 3-6. Planned Fiscal Year 2000 Environmental Restoration Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-ER01, 100 Area Remedial Action					
Complete all remaining 100 Area Operable Unit pre-Record of Decision (ROD) site investigations ...(100-KR-2 & 3, 100-FR-2, and 100-IU-2 & -6)	M-15-00A	12/31/99		X	
Initiate remedial action in the 100-FR-1 Operable Unit	M-16-13A	01/31/00	To Be Modified by Change Request[a]		
Complete remediation and backfill of 19 liquid waste sites in the 100-BC-1 and 100-BC-2 Operable Units	M-16-08B	03/31/00	X		
Complete remediation and backfill of 22 liquid waste sites and effluent pipelines in the 100-DR-1 and 100-DR-2 Operable Units	M-16-07B	04/30/00	To Be Modified by Change Request[a]		
Complete remediation and backfill of 10 liquid waste sites and process effluent pipelines in the 100-HR-1 Operable Unit	M-16-26C	08/31/00	To Be Modified by Change Request[a]		
RL-ER02, 200 Area Remedial Action					
Submit 200 U Pond/Z Ditches cooling-water-group work plan	M-13-22	12/31/99		X	
Submit the uranium-rich process-waste-group work plan	M-13-23	08/31/00		X	
Submit general-process-waste-group work plan	M-13-24	08/31/00		X	
RL-ER03, 300 Area Remedial Action					
Submit the 300-FF-2 focused feasibility study report and proposed plan for regulator review	M-15-23B	11/30/99		X	
Complete all 300 Area Operable Unit pre-ROD site investigations under approved work plan	M-15-00B	12/31/99		X	

Table 3-6. Planned Fiscal Year 2000 Environmental Restoration Project Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-ER04, Environmental Restoration Disposal Facility					
Engineering Restoration Disposal Facility Cells 3 and 4 ready to accept remediation waste	M-16-92B	12/31/99	X		
RL-ER06, Decontamination and Decommissioning					
Initiate 105-F Reactor Building (ISS) characterization and design	M-93-07	10/31/99	C		
Issue B Reactor phase II feasibility study engineering design report for public comment	M-93-05	06/30/00		X	
RL-ER08, Groundwater Management					
Install RCRA groundwater monitoring wells at a rate of up to 50 in calendar year 1999 (if required)	M-24-00K	02/29/00		X	
Install three additional RCRA wells for the SST Waste Management Area (WMA) S-SX	M-24-41	02/29/00		X	
Install one replacement RCRA well for the 216-S-10 Pond	M-24-42	02/29/00		X	
Install one additional RCRA well for the SST WMA TX-TY	M-24-43	02/29/00		X	
Install one additional RCRA well for the 216-B-3 Pond	M-24-44	02/29/00		X	
Install two additional RCRA wells for the SST WMA B-BX-BY	M-24-45	02/29/00		X	

NOTE:
[a]Milestone to be modified by Tri-Party Agreement Change Request to reflect schedule impact of increased work scope resulting from plume/waste discoveries at waste sites.

3.7 SCIENCE AND TECHNOLOGY PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.7.1 Science and Technology Project Description

Pacific Northwest manages the Science and Technology Project, which provides waste management services and compliant operations in support of science and technology development for the multiprogram needs of the DOE Complex. In addition, Pacific Northwest manages specific EM-50 funded environmental management and technology development projects, under the direction of the DOE-HQ, which address future cleanup needs with the emphasis on reducing the cost and schedule of cleanup. These EM-50 activities include the National Tank Focus Area technology development activities.

3.7.2 Science and Technology Project Fiscal Year 2000 Planned Actions

The Science and Technology Project has no ES&H execution commitments in FY 2000. Major ES&H-related activities planned for FY 2000 are listed below:

- Continue base program, minimum safe surveillance, and maintenance activities in the laboratory facilities; complete creation of updated drawings of the RPL essential safety systems critical to maintenance of safety and regulatory compliance
- Complete the project to modify the RPL radioactive liquid-waste system to provide liquid-waste storage and a load-out system for waste shipments to the 200 Areas
- Continue base program for waste and effluent management
- Continue base program regulatory compliance activities to maintain compliant operations at the laboratory
- Continue integrated project to identify, characterize, and remediate DOE legacy waste and contamination issues at laboratory facilities and sites
- Develop a waste reengineering transition plan, as directed by EM and SC, to deploy a waste operations cost-recovery system that makes generators directly accountable for disposition of their wastes.

3.8 MISSION SUPPORT AND OTHER PROJECTS FISCAL YEAR 2000 PLANNED ACTIONS

Mission Support and Other Projects consist of the five EM-funded projects/programs described below. Planned FY 2000 ES&H-related activities are included as appropriate. Of these five projects/programs, only the Hanford Environmental Compliance Program funded by PBS RL-OT01 has FY 2000 ES&H execution commitments, which are listed in Table 3-7:

- **The Hazardous Materials Management and Emergency Response (HAMMER) (RL-HM01).** This program provides a premier hands-on regional training center for health and safety training. Training is conducted in specific areas titled Product Lines. The Product Lines are Environmental & Waste Management, Emergency Operations, Fire Operations, Occupational Safety and Health, Technology Supported Learning, Transportation, Technology, and Law Enforcement. HAMMER provides training critical to the cleanup activities at the Hanford Site and the DOE Complex to save lives, reduce injuries, and increase worker productivity. The following FY 2000 ES&H related activities are planned:
  - Continue to focus on meeting the training and education needs of the Hanford clean-up mission and the DOE Complex while serving as a catalyst for a regional training industry

- Continue to build on its success with customer satisfaction, facility utilization, and business development. Specific targets of opportunity include support to the National Counternarcotics Center program, site improvement planning, HAMMER as the training provider of choice for the River Protection Project, and enhanced technology-supported learning capabilities including a training simulation center

- **Mission Support Project (RL-OT01).** This project provides sitewide crosscutting support to all Hanford Site project mission areas. This project consists of Site Planning and Integration, the Hanford Environmental Compliance Program, Site Systems Engineering, and the Pacific Northwest Public Safety and Resource Protection Program. The Hanford Environmental Compliance Program has FY 2000 ES&H execution commitments that are listed in Table 3-7. The following FY 2000 ES&H-related activities are planned:

  - Conduct minimum safe air, river, community, and agricultural products environmental surveillance and oversight activities

  - Operate the Hanford Meteorological Station and provide weather data to support emergency response and programmatic needs

  - Submit the annual radionuclide air emissions report to the EPA

  - Prepare and submit Hanford Site environmental compliance reports mandated by RCRA, WAC, EPCRA, *Toxic Substances Control Act of 1976* regulations and Tri-Party Agreement Milestone M-26-01

Table 3-7. Planned Fiscal Year 2000 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-OT01, Mission Support					
RCRA permit class I modification notification - quarter 1	ECP-00-302	10/01/99	C		
Update estimate of closure and postclosure costs	ECP-00-702	10/22/99	C		
Issue third quarter NESHAP status	ECP-00-901	10/22/99	C		
Annual asbestos notification of intent	ECP-00-306	12/31/99		X	
RCRA permit class I modification notification - quarter 2	ECP-00-303	01/03/99		X	
Issue fourth quarter NESHAP status	ECP-00-902	01/28/00		X	
Annual portable/temporary radiological air emissions report to RL	ECP-00-410	06/15/00		X	
EPCRA 312 tier emergency and hazardous chemical inventory report	ECP-00-501	02/23/00		X	
1999 Hanford Site annual dangerous waste report	ECP-00-503	02/23/00		X	
Annual report of Hanford facility RCRA permit noncompliance	ECP-00-701	02/17/00		X	
Conduct biennial assessments of information and data access needs with EPA and Ecology	M-035-09B	03/31/00		X	

Table 3-7. Planned Fiscal Year 2000 Mission Support and Other Projects Environment, Safety and Health Execution Commitments. (2 sheets)

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
Transmit Effluent Information System/Onsite Discharge Information System data to INEEL	ECP-00-801	04/01/00		X	
Issue annual nonradioactive airborne emissions report	ECP-00-802	04/01/00		X	
RCRA permit class I modification notification - quarter 3	ECP-00-304	04/03/00		X	
Submit an annual Hanford land-disposal restrictions report in accordance with LDR plan	M-26-01J ECP-00-507	04/21/00		X	
Issue first quarter NESHAP status report	ECP-00-904	04/21/00		X	
Issue annual radionuclide air emissions report	ECP-00-803	06/15/00		X	
EPCRA 313 chemical release inventory report	ECP-00-502	06/23/00		X	
1999 Hanford Site annual polychlorinated biphenyl document log	ECP-00-504	06/23/00		X	
RCRA permit class 1 modification notification - quarter 4	ECP-00-305	07/03/00		X	
Annual polychlorinated biphenyl report	ECP-00-505	07/07/00		X	
Issue second quarter NESHAP status	ECP-00-906	07/28/00		X	
Issue annual report on environmental releases	ECP-99-804	08/31/99		X	
Coordinate RCRA pipe mapping and marking	ECP-00-703	09/21/00		X	
RCRA general facility inspections	ECP-00-301	09/30/00		X	

- **The DOE Richland, Operations Office Directed Support Project (RL-OT04).** This project provides for various RL activities, most of which are essential services to the Hanford Site. Other activities include grants to the State of Washington for enhanced emergency preparedness and independent oversight; a grant to the State of Oregon for technical oversight, public information, and emergency preparedness; payment of Ecology fees for RCRA hazardous and/or mixed waste management activities; and a grant to the Washington State Department of Health for radiation protection, and air monitoring. Stakeholder involvement includes the continued participation of the Hanford Advisory Board

- **The Office of Safety Regulation of the TWRS-P Contractors (RL-RG01).** This activity provides RL with independent safety regulation of the TWRS-P Privatization Contractor, BNFL. The objective is to establish a regulatory environment that will permit privatization to occur on a timely, predictable, and stable basis with attention to safety consistent with that which would occur from regulation by an external agency; and one that embraces the fundamental regulatory principles of independence, openness, efficiency, clarity, and reliability

- **The Landlord Project (RL-TP13).** This project provides replacements, major maintenance, and upgrades of the core infrastructure functions to facilitate the Hanford Site cleanup mission. In addition, the Landlord Project is responsible for final disposition of infrastructure facilities, systems, and equipment when they are no longer required to

support the cleanup mission. The following FY 2000 ES&H related activities are planned:

- An ambulance for emergency response and a specialized vacuum excavation unit for reducing the potential of cutting electrical and water lines will be procured

- Installation of a catch basin, which answers an employee concern, will complete resolution of the 2101 M and MO-235 storm water drainage

- The south section of the 325 Building will be re-roofed. The structure of the roof is deteriorating, causing damage to contents inside the building.

  Complete disposition of one contaminated rail car. The car may be sent off site where the non-contaminated metal will be recycled. The contaminated metal will be used for construction of burial boxes for other radioactive waste.

  Procure an electrical utility truck with a manlift that replaces an existing 18 year old truck. This answers an employee concern over the safety of the existing truck.

- Complete road overlay of approximately 8 miles of Route 11A and 1 mile of 23rd Street between Beloit and Dayton Avenue in 200 West Area.

3.9 ADVANCED REACTORS TRANSISTION PROJECT FISCAL YEAR 2000 PLANNED ACTIONS

3.9.1 Advanced Reactors Project Description

The Advanced Reactors Transition Project consists of EM-funded PBS RL-TP11, Advanced Reactors Transition, and NE-funded scope at the FFTF complex. For tracking purposes, the NE-funded FFTF scope is assigned PBS designator RL-MS01, FFTF complex. Advanced Reactors Transition includes the Plutonium Recycle Test Reactor/309 Facility and the NE Legacy facilities.

3.9.2 Advanced Reactors Project Fiscal Year 2000 Planned Actions

The major ES&H-related action planned for FY 2000 is to provide support for the development of the *Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility* (FR 1999). There are no TPA milestones scheduled for completion in FY 2000 by the Advanced Reactors Transition Project.

Table 3-8. Planned Fiscal Year 2000 Advanced Reactors Transition Project Environment, Safety and Health Execution Commitments.

Milestone Description	Commit. ID number	Due date	Status		
			A/S	O/S	B/S
RL-MS01, Advanced Reactors Transition Project					
Submit sodium storage facility and sodium reaction facility closure plan	M-20-29A	12/31/99	In Abeyance By Change Request M-81-98-01[a]		
Complete FFTF sodium drain	M-81-04	03/31/00	In Abeyance y Change Request M-81-98-01[a]		

NOTE:

[a]These milestones were modified by Tri-Party Agreement Change Request M-81-98-01, which was approved on August 24, 1999, to place the milestones in abeyance. As a consequence of FFTF being placed in standby, facility stabilization work has been limited to activities that would not inhibit restart, therefore Tri-Party Agreement work schedules are no longer achievable or appropriate.

4.0 FISCAL YEAR 2000 ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES

4.1 INTRODUCTION

This section provides a summary assessment of the ES&H management risk and compliance vulnerabilities for DOE Office of EM-funded and Office of NE-funded activities scheduled to be performed in FY 2000. An ES&H commitment affirmation response for DOE Office of SC-funded activities is presented in Appendix A.

Compliance vulnerabilities and impacts of the FY 2000 President's budget identified in this report were prepared as of October 31, 1999. Impacts of any changes resulting from the Congressional appropriation process will be reflected in the Hanford Site FY 2002 ES&H Budget-Risk Management Summary scheduled to be issued in May 2000. The following assessment includes:

- A summary assessment of management risk and compliance vulnerability
- Identification of significant ES&H risks that are not or will not be adequately addressed in the FY 2000 work plans
- Identification of the highest ranking unfunded activities
- Identification of unfunded or under-funded activities in the FY 2000 work plans that address emerging ES&H issues.

4.2 SUMMARY ASSESSMENT OF MANAGEMENT RISK AND COMPLIANCE VULNERABILITIES

4.2.1 Summary Assessment of Office of Environmental Management Activities

Impacts of the FY 2000 President's budget of $1,065.1 million for achieving the EM-funded FY 2000 ES&H commitments identified in this report (Tri-Party Agreement, Regulatory and DNFSB milestones) were prepared as of October 31, 1999. These impacts are based on the $106.5 million shortfall needed to fully fund the EM FY 2000 Compliance Baseline of $1,171.1 million identified in the April 15, 1999 PBS submittal and shown in Table 4-1 as Subtotal Compliance.

As of October 31, 1999, the compliance vulnerabilities and impacts identified in this report included missing FY 2000 and out year milestones. Since then, significant progress has been made in reducing or mitigating these impacts to the extent that all FY 2000 ES&H execution commitments, including the November 2000 Tri-Party Agreement milestone for B Cell cleanout, can be met. This has been made possible through settlement of an issue on state

Table 4-1. Fiscal Year 2000 Summary Funding of Hanford Site Office of Environmental Management Project Missions by Priority Category (dollars in millions).[a]

Priority Category	Site Project Mission[b]							TOTAL
	TW	WM	SF	TP	ER	ST	MS	
Essential Safety	111.2	83.5	32.6	124.0	24.2	3.3	13.7	394.5
Essential Services	46.9	36.5	43.4	15.9	45.5	10.6	56.4	255.1
Urgent Risks	172.9	0	112.9	60.1	10.6	0	0	356.5
Regulatory Compliance (Inc. 1)	4.1	0	0	0	54.9	0	0	59.0
President's Budget[c]	**335.0**	**120.0**	**191.0**	**200.0**	**135.1**	**14.0**	**70.1**	**1,065.1**
Regulatory Compliance (Inc. 2)	51.4	14.3	0	6.1	22.2	3.0	9.5	106.5
Subtotal Compliance[d]	**386.4**	**134.3**	**191.0**	**206.1**	**157.3**	**17.0**	**79.6**	**1,171.6**
Additional Requirements	66.8	12.9	0	16.9	0	0	33.7	130.3
Total Requirements[e]	**453.2**	**147.2**	**191.0**	**223.0**	**157.3**	**17.0**	**113.2**	**1,301.9**

NOTES:

[a] Based on the President's Budget of $1,065.1 million for Environmental Management as of October 31, 1999. Any changes in funding resulting from the Congressional appropriation process will be reflected in the Hanford Site 2002 ES&H budget-Risk Management Summary to be issued in May 2000.

[b] TW = River Protection Project; WM = Waste Management Project; SF = Spent Nuclear Fuel Project; TP = Facility Stabilization Project; ER = Environmental Restoration Project; ST = Science and Technology Project; and MS = Mission Support and Other Projects.

[c] Includes funding for Hazardous Materials Management and Emergency Response (RL-HM01; Mission Support (RL-OT01); RL Directed Support (RL-OT04; Office of Safety Regulation of the TWRS-P Contractors (RL-RG01; Advanced Reactors Transition (RL-TP11); and Landlord Project (RL-TP13).

[d] These values refer to the FY 2000 Compliance Baseline funding requirements as identified in the April 15, 1999 Project Baseline Summary submittal.

[e] These values refer to the FY 2000 Total Requirements as identified in the April 15, 1999 Project Baseline Summary submittal.

and local taxes, implementing efficiencies, and deleting low value work scope. There still remains a shortfall of approximately $20 million related to completing FY 2000 work scope by RL programs (PHMC, ERC and S&T Projects) in support of Tri-Party Agreement milestones beyond FY 2000. Additionally, a significant shortfall exists in FY 2000 funding of the River Protection Project to support out-year Tri-Party Agreement milestones.

Allocation of funding to the EM-funded Projects by priority category is provided in Table 4-1. The President's budget of $1,065.1 million, as of October 31, 1999, provides sufficient funding to accomplish the high priority FY 2000 EM-funded activities. Workscope is funded according to the priority categories identified in Table 4-1 and described below:

- **Essential Safety.** Provides for essential safety activities and base operational requirements to maintain safety for workers and the public and to provide protection of the environment

- **Essential Services.** Provides for services and support activities essential to environmental cleanup progress and regulatory compliance

- **Urgent Risks.** Addresses those existing conditions posing the greatest potential for impacting the safety of workers, the public, or the environment. The Urgent Risks being addressed in FY 2000 include:

  - DNFSB Implementation Plan commitments

  - Removal of K Basins fuel from its current location near the Columbia River and safely storing it away from the river

  - Interim stabilization of SSTs, resolving waste tank safety issues, and implementing plans to retrieve and treat tank waste to reduce its risk to workers, the public, and the environment

  - Progress toward cleanup of the 324 Building B Cell and transfer of radioactive material to the 200 Areas for safe storage

  - Progress toward completing stabilization of plutonium at the Plutonium Finishing Plant by December 2004

  - Groundwater remediation of sites along the Columbia River and D&D of the 233-S Plutonium Concentration Facility and the 224-B Facility

- **Regulatory Compliance Increments.** Includes additional regulatory compliance activities that address compliance with requirements or drivers in laws, regulations, enforceable agreements, consent orders, consent decrees, permits, and implementation plans for DNFSB recommendations. Funding of work activities in this category provides a high level of confidence that all ES&H execution commitments will be met in FY 2000 and beyond

- **Additional Requirements.** Those activities that address improvements that would reduce future cleanup risks and costs. Although benefits in FY 2000 would be minimal, the benefit to future cleanup activities could be substantial.

The FY 2000 President's budget funds all of the Essential Safety, Essential Services and Urgent Risks priority categories and about 36% of the Regulatory Compliance activities included in Increments 1 and 2, Table 4-1. As of October 31, 1999, a compliance shortfall of $106.5 million (9.4% lower than Compliance Baseline of $1,171.6 million) existed in FY 2000 to meet the ES&H execution commitments identified in the EM IPL. The most significant impacts of the $1,065.1 million FY 2000 President's budget are to the River Protection Project, which accounts for about 50% of the $106.5 million of unfunded Regulatory Compliance activities in FY 2000.

The following summary highlights the major potential impacts of the FY 2000 President's budget as of October 31, 1999. These impacts are being addressed by RL, the Office of River Protection, and their contractors, to mitigate both the FY 2000 and out year

compliance vulnerabilities, highest ranking unfunded activities, and unfunded or under-funded activities that address emerging issues are given in Sections 4.3, 4.4, and 4.5 for each of the Site EM-funded project missions:

- **River Protection Project.** Funding to support all identified requirements is insufficient. This is a continuing trend that is resulting in a bow-wave of funding needs to meet existing and planned Tri-Party Agreement and regulatory requirements. Although funding is most likely adequate to meet FY 2000 milestones, some out-year milestones will require renegotiations based on decisions to rebaseline the vitrification schedule and proceed with the Phase I Privatization contract. As a result, the FY 2000 President's budget increases the risk that these revised milestones will not be met. In addition, funding shortfalls could impact testing, repair and replacement of tank instrumentation and equipment thus impacting out-year milestones. Funding shortfalls for SST Program Development and alternate retrieval methods could also impact out-year retrieval milestones. To help offset these impacts significant reductions to the FY 2000 Total Requirements funding level identified in Table 4-1 (10% reduction from $453.2 million to $408.5 million) have been made through efficiencies and by deleting low value work scope.

- **Waste Management Project.** Submittal of the Hanford Site TRU/TRUM project management plan by June 2000 will be impacted. Completion of this Tri-Party Agreement Milestone on schedule is important for alleviating any ripple affect on out-year Tri-Party Agreement Milestones (Tri-Party Agreement Milestone M-91-03)

- **Facility Stabilization Project.** Removal of 324 Building B-Cell waste and equipment by November 2000 may be impacted (Tri-Party Agreement Milestone M-89-02).

- **Environmental Restoration Project.** Potential schedule impacts to a number of out-year Tri-Party Agreement Milestones would result if full Regulatory Compliance funding is not received in FY 2000. These potential impacts include schedule delays for completion of the remediation of 51 liquid waste sites by February 2001, F-Reactor surveillance and maintenance plan by July 2003, 105-F Reactor interim safe storage by September 2003, 200 Area Record of Decision by December 2008, and other Tri-Party Agreement Milestones that are to be negotiated (Tri-Party Agreement Milestones M-16-26B, M-93-11, M-15-00C, and additional M-15 and M-24 series Milestones that are to be set through negotiations)

- **Science and Technology Project.** Safety and health risks to onsite workers, the environment, and the public will be impacted because of failure to expeditiously remove excessively high radioactive material from close proximity to population centers and the Columbia River in compliance with RCRA

- **Mission Support.** Activities established to comply with federal laws and regulations concerning the protection and management of ecological resources on the Hanford Site, i.e., Ecosystem Monitoring and Ecological Compliance, will not be maintained.

4.2.2 Summary Assessment of Office of Nuclear Energy, Science and Technology Activities

The FY 2000 President's budget request of $30 million coupled with FY 1999 carryover of $2.7 million would have enabled RL to maintain the reactor in a minimum safe condition. The current funding in the Congressional appropriation of $28 million, plus the $2.7 million of carryover funding from FY 1999, will necessitate layoff or reassignment of staff and would take the facility below the minimum safe level. The project began FY 2000 with $40.8 million of workscope. At the end of October 1999, 24 persons were reassigned and 8 positions remained vacant.

The DOE-HQ Offices of NE and the Chief Financial Officer are working to address this funding shortfall. The DOE is working to obtain Congressional approval to reprogram the necessary funds to maintain the facility in standby.

At minimum safe conditions, all essential safety activities and essential services are provided. (The exact dollar value required to meet this objective is also a function of when the funding level is established). Reduction in funding from the $40.8 million requirements level will introduce additional management risks:

- Reductions of key staff through reassignment and attrition will increase the time and cost required to resume transition to shutdown or to accomplish a restart
- Reductions of key staff through reassignment and attrition will prevent the performance of pre-conceptual design work in support of the Programmatic Environmental Impact Statement and the potential restart of the reactor, adding to the schedule and cost after a record of decision
- The reduced funding will limit the amount of maintenance which can be performed, resulting in degradation of non-safety systems and equipment, which will need to be restored to support either restart or deactivation of the facility. This will add to the cost and schedule in the out-years.

4.3 SIGNIFICANT RISKS NOT ADEQUATELY ADDRESSED

4.3.1 Office of Environmental Management Activities

Identification of significant risks not adequately addressed in the FY 2000 President's budget of $1,065.1 million is described below for each of the EM-funded Projects as of October 31, 1999. Since then, significant progress has been made in reducing or mitigating impacts of the potential risks and compliance vulnerabilities identified below:

- **River Protection Project**

  - Risk reduction activities for operations and planned retrieval are funded at an absolute minimum. There are no contingencies. Critical instrumentation for environmental and safety compliance is old and there is no funding for significant repairs or replacement. Given recent reviews by the regulators, it is anticipated that the existing instrumentation may not be adequate. For retrieval, assumptions are being made that much of the existing equipment (e.g., pumps, instruments) will be operational when needed; yet they are old and have not been operated for many years

  - There continues to be long-term uncertainty surrounding the area of SST retrieval. Processes and technologies are as yet not adequately defined and concern exists as to the adequacy of future funding levels. Integrated leak protection and retrieval technologies suitable for deployment in sound or unsound tanks have not been developed or verified. Testing of such systems has been delayed. Resolution of these issues are critical in order to safeguard the public, the workers, and the environment

  - The FY 2000 baseline does not adequately fund deactivation of inactive, noncompliant facilities. Delays in deactivation of these facilities increases the potential risk to the environment, the workers, and the public. Regulatory agencies have indicated that consent orders and compliance agreements may be necessary to accelerate deactivation. In response to regulatory concerns, the 244-AR and 244-CR vaults, and related inactive Miscellaneous Underground Storage Tanks, are now under consideration for schedule acceleration

  - Understanding of certain regulated chemicals, such as polychlorinated biphenyl, is inadequate to answer regulator questions.

- **Waste Management Project**

  - Significant risks are addressed at the FY 2000 President's budget

- **Spent Nuclear Fuel Project**

  - Significant risks are addressed at the FY 2000 President's budget

- **Facility Stabilization Project**

  - Significant risks are addressed at the FY 2000 President's budget

- **Environmental Restoration Project**

  - Although significant risks and FY 2000 compliance goals are supported in the President's budget, compliance vulnerabilities exist for the 200 Areas assessment and remediation activities and completion of 100B/C remedial actions. In addition,

Reactor ISS activities will cease in early FY 2000, putting achievement of the F and DR ISS efforts at risk, unless additional funding is received.

- **Science and Technology Project**

  - The FY 2000 baseline does not adequately fund implementation of the updated RPL SAR including the safety system upgrades identified for SAR compliance. Implementation of the updated RPL SAR is required to meet DOE commitments to comply with DOE Orders 5480.21, .22, and .23 and 10 CFR 830.120. These commitments include enhancement of worker safety; identification of safety significant systems, structures and components; incorporation of the fire hazards analysis; and conversion to Technical Safety Requirements

  - Safety and health risks to onsite workers, the environment, and the public are impacted because of failure to expeditiously remove excessively high radioactive material from close proximity to population centers and the Columbia River. The River Corridor outcome schedule will be delayed by further delaying completion of legacy waste cleanup in the 300 Area -- up to 45 years from FY 2008 to FY 2053 with an increase of $16 million to complete the cleanup if target funding continues to be limited

- **Mission Support and Other Projects**

  - Several environmental monitoring activities of the Surface Environmental Surveillance Project are not provided for in the funded minimum safe Hanford Environmental Surveillance activity. This shortfall includes measuring radionuclides on nearby farm products and the Columbia River; Hanford Environmental Dose Overview, which ensures consistency in dose calculation methodology and interpretation; and support to RL on the development of a sitewide Environmental Radiation Protection Plan to comply with the anticipated promulgation of 10 CFR 834

  - The activities established to comply with federal laws and regulations concerning the protection and management of ecological resources on the Hanford Site (i.e., Hanford Ecosystem Management [Ecosystem Monitoring] and Ecological Compliance Assessment - 300 Area) will not be maintained. Specifically, the Biological Resources Management Plan cannot be implemented to minimize the impact of future work on Hanford Site biological resources, and sensitive ecological resources in the 300 Area will not be assessed in compliance with the *National Environmental Policy Act of 1969*

  - Characterization of the Columbia River environment to support the Groundwater/Vadose Zone Integration Project will not be performed. This activity would develop credible models to describe and predict Hanford contaminant migration and fate in the river environment. The impact is to delay determining future potential impacts to the Columbia River and the selection of cleanup alternatives.

4.3.2 Office of Nuclear Energy, Science and Technology Activities

Identification of significant risks not adequately addressed in the FY 2000 President's budget of $30.7 million, including $2.7 million of carryover funding, is described below for NE-funded activities. As noted previously, a budget of $32.7 million, including $2.7 million of carryover funding, is required to maintain the FFTF complex in a minimum Safe condition. The current budget of $30.7 million, including carryover funding, coupled with the continuation of work at the higher initial budget level, will create a funding shortfall for maintaining facilities in a minimum safe condition. Specific workscope that wouldn't be performed has not been defined. However, priorities would dictate reductions in the following sequence:

- Facility maintenance, beginning with non-safety equipment and systems
- Administrative requirements; e.g., formal implementation of the ISMS, implementation of the CMS, performance of Standards/Requirements Identification Document (S/RID) assessments not required by statute, preparation of reports documenting the performance of field surveillances.

4.4 HIGHEST RANKING UNFUNDED ACTIVITIES

4.4.1 Office of Environmental Management Projects

Identification of the highest ranking unfunded EM activities from the FY 2000 IPL, which could have an impact on ES&H management risk and regulatory compliance, are noted in this section. These unfunded ES&H-related activities are based on the FY 2000 President's budget of $1,065.1 million as of October 31, 1999. Since then, significant progress has been made in reducing or mitigating impacts of the potential risks and compliance vulnerabilities identified below:

- **River Protection Project**
  - Recent baseline vadose zone data reveal higher than expected soil contamination and show that the contamination is moving. This is creating new public concern regarding protection of the Columbia River that emphasizes the need to accelerate vadose zone characterization to levels above current funding. FSAR implementation is not fully funded for FY 2000, which will result in not implementing the FSAR to full compliance with DOE direction until FY 2001
  - The retrieval of SSTs, specifically the technology, cost of removal, and characterization to support this is not adequate to meet the Tri-Party Agreement schedule. The Tri-Party Agreement requires initiation of the first SST retrieval by December 31, 2003. The first production retrieval of a SST in the multiyear work plan (MYWP) is planned for 2010. The Tri-Party Agreement targets retrieval initiation of 36 SSTs by 2011; the MYWP schedule will have initiated 2 SST retrievals by 2011

- The Hanford Tank Initiative (HTI) "limits of technology" project has been delayed. This project is critical to the determination of performance goals for retrieval projects in SSTs and verification of the performance of the crawler-based technology as a low-water-volume alternative to past-practice sluicing and the anticipated retrieval technology test and demonstration projects incorporated into the HTI for the FY 2000 MYWP. These projects respond to opportunities for significant cost-performance improvement, tank configuration conditions, and retrievals for tanks determined to have leaked

- **Waste Management Project**

  - TRU retrieval activities are the highest unfunded environmental risk in the Waste Management Project. Currently, no TRU retrieval will increase worker risk in the handling and processing of this waste stream resulting from aging waste drums. A one-year delay to this project may lead to continuous delays, which is considered to be unacceptable. Retrieval activities are expected to be accomplished to the extent possible using FY 1999 carryover and FY 2000 cost savings

- **Spent Nuclear Fuel Project**

  - All necessary activities are funded at the FY 2000 President's budget

- **Facility Stabilization Project**

  - A portion of carryover workscope from FY 1999 contains compliance activities dealing with B Cell cleanout activities that are on the critical path to successful attainment of Tri-Party Agreement M-89-02. This milestone is currently two months behind schedule but the schedule is recoverable.

- **Environmental Restoration Project**

  - The highest ranking unfunded candidates are (1) continuation of D&D of the 100 Area Ancillary Facilities, (2) additional 200 Areas assessment activities in support of out-year milestones, and (3) DR Reactor and F Reactor Interim Safe Storage

- **Science and Technology Project**

  - The highest ranking unfunded activity is implementation of the RPL Safety Analysis Report and associated TSR equipment repairs

- **Mission Support and Other Projects**

- The highest ranked unfunded activity is implementing a biological-resources-management approach to minimizing the impact of future work on Hanford Site biological resources.

4.4.2 Office of Nuclear Energy, Science and Technology Activities

This section identifies the highest ranked unfunded activities that could have an impact on ES&H management risk and regulatory compliance. These unfunded ES&H-related activities are based on the FY 2000 appropriation of $28 million plus $2.7 million of carryover funding, as of October 31, 1999. The first two items restore minimum safe conditions; the remaining items must be completed to resume fuel handling for either restart or shutdown:

- Administrative requirements; e.g., formal implementation of the ISMS, implementation of the CMS, performance of SRID assessments not required by statute, preparation of reports documenting the performance of field surveillances

- Facility maintenance, preventive and corrective, on non-safety equipment and systems important to facility mission performance

- Complete the design for repair of the FFTF Solid Waste Cask to ensure that it meets applicable safety requirements for handling spent nuclear fuel

- Perform acceptance testing on the upgraded control system of the FFTF Closed Loop Ex-vessel Handling Machine

- Upgrade the control systems for the FFTF Interim Examination and Maintenance Cell sodium removal system.

4.5 UNFUNDED/UNDER-FUNDED ACTIVITIES THAT ADDRESS EMERGING ENVIRONMENT, SAFETY & HEALTH ISSUES

4.5.1 Office of Environmental Management Activities

This section identifies unfunded and under-funded activities for each of the EM-funded Projects that address emerging ES&H issues, based on the FY 2000 President's budget of $1,065.1 as of October 31, 1999:

- **River Protection Project**

  - Recently released vadose zone data have shown more movement than expected as noted in Section 4.4

- **Waste Management Project**

- Delay in radioactive mixed-waste treatment increases the age of the chemical waste stored at the Central Waste Complex

- **Spent Nuclear Fuel Project**

  - Process validation activities are being developed to provide assurance that fuel drying will be effective. The safety basis is sufficiently robust that no changes in equipment or processes are expected. However, if changes are identified during process validation development activities or as a result of Management Self-Assessment/Operational Readiness Review activities before the start of fuel movement, they would not be within the current project scope. New issues that may arise during safety analysis document development may not be within the current project scope. Additional funding is currently being sought to support the phased startup initiative and to ensure that issues can be addressed promptly with minimum impact to the project

- **Facility Stabilization Project**

  - Although not yet implemented, a gap analysis was requested to determine compliance with DOE Order 435.1, *Radioactive Waste Management*. If implemented in FY 2000, this DOE order represents a significant scope of work that is not planned or funded

- **Environmental Restoration Project**

  - No emerging issues have been identified

- **Science and Technology Project**

  - Implementation of the updated RPL SAR is underfunded. The scope and magnitude of the implementation effort was not known when target budgets were established. This SAR is expected to be approved in early to mid-FY 2000, after which implementation is expected within 4-6 months

- **Mission Support and Other Projects**

  - Implementation of the impending Environmental Radiation Protection regulation (10 CFR 834) is not funded. This will become a compliance issue if the regulation is established in FY 2000.

4.5.2 Office of Nuclear Energy, Science and Technology Activities

This section identifies unfunded and under-funded NE activities that address emerging ES&H issues, based on the FY 2000 President's budget of $28.0 million plus $2.7 million of carryover funding, as of October 31, 1999:

- Although not yet implemented, a gap analysis has been requested with respect to DOE Order 435.1. If implemented in FY 2000, this DOE order would represent a significant scope of work that is not planned or funded.

5.0 EXPENDITURES FOR SAFETY AND HEALTH ACTIVITIES IN FISCAL YEARS 1999 AND 2000

This section identifies the actual FY 1999 expenditures and planned FY 2000 expenditures for direct and indirect-funded S&H activities at the Hanford Site. FY 2000 planning is based on the President's budget of $1,065.1 million for EM-funded activities and $28.0 million, plus $2.7 million carryover, for NE-funded activities, as of October 31, 1999. Impacts of any changes resulting from the Congressional appropriation process will be reflected in the Hanford Site Fiscal year 2002 Budget-Risk Management Summary scheduled to be issued in May 2000.

In this report, S&H expenditures include the labor and support costs for professional staff working in one or more of the nine S&H functional areas as identified in Table 5-1. Activities to improve or upgrade the S&H functional areas are also included in S&H expenditures. Examples are facility upgrades for Emergency Preparedness, procurement of equipment for Fire Protection, Nuclear Safety and Management and Oversight activities to resolve tank safety issues, ect. A detailed definition of the S&H functional areas is given in *Guidance for FY 2001 Budget Formulation and Execution* (DOE 1999).

5.1 SUMMARY OF FISCAL YEAR 1999 SAFETY AND HEALTH EXPENDITURES

Table 5-1 provides a comparison of total Hanford Site FY 1999 planned to actual expenditures for S&H activities performed according to the nine S&H functional areas. Included in Table 5-1 are all direct and indirect S&H expenditures for activities funded by the DOE EM,

Table 5-1. Comparison of Planned to Actual Expenditures for Fiscal Year 1999 Hanford Site Safety and Health Activities by Functional Area (dollars in thousands)[a].

Safety & Health Functional Area	FY 1999 Planned	FY 1999 Actual	Change	Percent Change
Emergency Preparedness	13,197	11,240	-1,957	-14.8
Fire Protection	20,145	21,506	+1,361	+6.8
Industrial Hygiene	7,633	8,412	+779	+10.2
Industrial Safety	12,689	13,424	+735	+5.8
Occupational Medical Services	10,842	10,226	-616	-5.7
Nuclear Safety	24,012	30,473	+6,461	+26.9
Radiation Protection	61,685	60,689	-996	-1.6
Transportation Safety	3,652	3,632	-20	-.05
Management and Oversight	44,057	43,894	-163	-0.4
Total Safety & Health Direct	**$197,912**	**$203,496**	**$+5,584**	**+2.8**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

SC and NE Secretarial Offices. The largest S&H cost differences on a percentage basis are listed below. Explanations of these differences are provided in Sections 5.3 and 5.4:

- Emergency Preparedness (-14.8%)
- Industrial Hygiene (+10.2%)
- Nuclear Safety (+26.9%).

Table 5-2 provides a comparison of total (direct plus indirect) Hanford Site FY 1999 planned to actual expenditures for S&H activities performed by the DOE Secretarial Offices. Actual total Hanford Site expenditures on S&H activities exceeded planned expenditures by $5.6 million (2.8%) in FY 1999. Total Hanford Site direct S&H expenditures exceeded planned expenditures by $2.9 million (2.3%), and indirect S&H expenditures exceeded planned expenditures by $2.7 million (3.8%) in FY 1999. Safety and Health expenditures for direct-funded EM Projects and indirect-funded EM activities, which were $4.1 million and $3.6 million higher than planned, respectively, had the largest cost differences. These differences are explained in Sections 5.3 and 5.4.

Table 5-2. Comparison of Planned to Actual Expenditures for Fiscal Year 1999 Hanford Site Safety and Health Activities by Secretarial Office (dollars in thousands)[a].

DOE Secretarial Office	FY 1999 Planned	FY 1999 Actual	Change	Percent Change
EM Direct Project S&H Costs	$110,000	$114,083	$+4,083	+3.7
EM-10, EM Program Direction	12,642	12,538	-104	0.8
Total Direct EM S&H Costs	**$122,642**	**$126,621**	**$+3,979**	**+3.2**
Fast Flux Test Facility Complex	2,327	2,327	0	0
Total Direct NE S&H Costs	**$2,327**	**$2,327**	**0**	**0**
Pacific Northwest National Laboratory	1,916	815	-1,101	57.4
Total Direct SC S&H Costs	**1,916**	**815**	**-1,101**	**-57.4**
Total Hanford Site Direct S&H Costs	**$126,885**	**$129,763**	**$+2,878**	**+2.3**
Indirect EM S&H Costs	56,466	60,091	+3,625	+6.4
Indirect SC S&H Costs	14,561	13,643	-918	-6.3
Total Hanford Site Indirect S&H Costs	**$71,027**	**$73,733**	**$+2,706**	**+3.8**
Total Hanford Site S&H Costs	**$197,912**	**$203,496**	**$+5,584**	**+2.8**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

5.2 SUMMARY OF FISCAL YEAR 2000 SAFETY AND HEALTH EXPENDITURES

Comparisons of actual FY 1999 S&H expenditures to planned FY 2000 S&H expenditures are provided in Table 5-3 according to the nine S&H functional areas. Included in Table 5-3 are all direct and indirect S&H expenditures for activities funded by the DOE EM, SC and NE Secretarial Offices. Significant S&H functional area cost differences are listed below. Explanations of these S&H cost differences from FY 1999 to FY 2000 are provided in Sections 5.3 and 5.4:

- Industrial Hygiene - $1.1 million decrease (-12.9%)
- Nuclear Safety - $7.9 million decrease (-26.1%)
- Transportation Safety - $1.3 million increase (+35.7%)
- Management and Oversight - $4.0 million decrease (-9.1%).

Table 5-3. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Safety and Health Expenditures at the Hanford Site by Functional Area (dollars in thousands)[a].

Safety & Health Functional Area	FY 1999 Actual	FY 2000 Planned	Change	Percent Change
Emergency Preparedness	11,240	11,209	-31	-0.3
Fire Protection	21,506	21,410	-96	-0.4
Industrial Hygiene	8,412	7,328	-1,084	-12.9
Industrial Safety	13,424	12,408	-1,016	-7.6
Occupational Medical Services	10,226	10,838	+612	+6.0
Nuclear Safety	30,473	22,519	-7,954	-26.1
Radiation Protection	60,689	64,063	+3,374	+5.6
Transportation Safety	3,632	4,929	+1,297	+35.7
Management and Oversight	43,894	39,900	-3,994	-9.1
Total Safety & Health Direct	**$203,496**	**$194,604**	**$-8,892**	**-4.4**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

Table 5-4 provides a comparison of total Hanford Site (direct plus indirect) actual FY 1999 to planned FY 2000 expenditures for S&H activities, summarized by Secretarial Office. Planned FY 2000 expenditures on Hanford Site S&H activities is forecast to be $8.9 million (4.4%) lower than FY 1999 actual expenditures. The primary reason for the reduction in total S&H expenditures from FY 1999 to FY 2000 is attributed to the significant reduction of $9.8 million (16.3%) for EM-funded indirect S&H activities. Explanations for indirect S&H cost differences are provided in Section 5.4.

Table 5-4. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Safety and Health Expenditures at the Hanford Site by Secretarial Office (dollars in thousands)[a].

DOE Secretarial Office	FY 1999 Actual	FY 2000 Planned	Change	Percent Change
EM Direct Project S&H Costs	114,083	114,336	+253	+0.2
EM-10, EM Program Direction	12,538	11,958	-670	-5.3
Total Direct EM S&H Costs	**$126,725**	**$127,433**	**$+708**	**+0.6**
Fast Flux Test Facility Complex	2,327	2,487	+160	+6.9
Total Direct NE S&H Costs	**$2,327**	**$2,487**	**$+160**	**+6.9**
Pacific Northwest National Laboratory	815	1,115	+300	+36.8
Total Direct SC S&H Costs	**$815**	**$1,115**	**$+300**	**$+36.8**
Total Hanford Site Direct S&H Costs	**$129,763**	**$129,896**	**$+133**	**$+0.1**
Indirect EM S&H Costs	60,091	50,308	-9,783	-16.3
Indirect SC S&H Costs	13,643	14,400	+758	+5.6
Total Hanford Site Indirect S&H Costs	**$73,734**	**$64,708**	**$-9,025**	**-12.2**
Total Hanford Site S&H Costs	**$203,496**	**$194,604**	**$-8,892**	**-4.4**

[a] Includes direct plus indirect S&H expenditures for Department of Energy Offices of Environmental Management (EM), Science (SC) and Nuclear Energy, Science and Technology (NE).

5.3 SAFETY AND HEALTH EXPENDITURES ON ENVIRONMENTAL MANAGEMENT DIRECT-FUNDED PROJECT ACTIVITIES

This section provides information on S&H expenditures for the direct-funded Hanford Site EM Projects. These projects are responsible for 98% of the ES&H execution commitments assigned to the Hanford Site and approximately 97% of all direct S&H expenditures.

5.3.1 Fiscal Year 1999 Environmental Management Direct Safety and Health Expenditures

A comparison of planned to actual FY 1999 expenditures on S&H activities is provided in Table 5-5 for the Hanford Site EM-funded Projects. Actual total EM Project S&H expenditures for FY 1999 were $4.1 million (3.7%) higher than planned. Explanations for the most significant S&H cost differences are noted below:

Table 5-5. Comparison of Planned to Actual Direct Expenditures for Fiscal Year 1999 Safety and Health Expenditures by Environmental Management Projects (dollars in thousands).

Project Mission	FY 1999 Planned	FY 1999 Actual	Change	Percent Change
River Protection	23,256	28,313	+5,057	+21.7
Waste Management	9,303	12,165	+2,862	+30.8
Spent Nuclear Fuel	11,605	15,609	+4,004	+34.5
Facility Stabilization	16,704	15,917	-787	-4.7
Environmental Restoration	22,954	14,416	-8,538	-37.2
Science and Technology	3,258	3,205	-53	-1.6
Mission Support and Other Projects[a]	22,797	24,335	+1,538	+6.7
Advanced Reactors Transition	123	123	0	0
Total Direct EM Project S&H Costs	**$110,000**	**$114,083**	**$+4,083**	**+3.7**

NOTE:
[a]Includes Hazardous Materials Management and Emergency Response; Planning and Integration; Hanford Environmental Compliance Program; Site Systems Engineering; Pacific Northwest National Laboratory Public Safety and Resource Protection; U.S. Department of Energy, Richland Operations Office-Directed Support; Office of Safety Regulation of the TWR-P Contractors; and Landlord Project.

- **River Protection Project.** The $5.1 million (21.7%) increase in S&H expenditures resulted from acceleration of activities to close the Tank 241-SY-101 surface-level-growth USQ and activities to remediate the associated tank safety issue. In addition, activities were increased to support RCRA compliance, Air Operating Permit preparation, and resolution of the tank pH issue

- **Waste Management Project.** The $2.9 million (+30.8%) increase in S&H expenditures resulted from increased Radiation Protection support for implementation of 10 CFR 835; enhancing Emergency Preparedness capabilities based on site and project lessons learned; increased emphasis on ISMS implementation, and inclusion of waste transportation/safety support costs into the Transportation Safety functional area

- **Spent Nuclear Fuel Project.** The $4.0 million (34.5%) increase in S&H expenditures resulted from updating plans for preparing safety analyses and conducting technical reviews and resolving comments on the draft analyses. In addition, a CMS was implemented for the project

- **Environmental Restoration Project.** The $8.5 million (37.2%) decrease in S&H expenditures primarily resulted from delay in remediation of waste sites because of the discovery of waste plumes; later than planned transition of facilities; and, lower than planned requirements to support pump-and-treat extraction activities

- **Mission Support and Other Projects.** The $1.5 million (6.7%) increase in S&H expenditures is due to increased funding received by the HAMMER to provide additional S&H training.

A comparison of planned to actual FY 1999 expenditures on S&H direct-funded activities for the EM-funded Projects is given in Table 5-6 according to the S&H functional areas. Six of the nine S&H functional areas had significant differences between planned and actual expenditures in FY 1999. These are listed below along with the projects responsible for the difference in S&H expenditures. Explanations are given above for the difference between planned and actual S&H expenditures for the projects, which help explain the difference in functional area expenditures.

Table 5-6. Comparison of Planned to Actual Expenditures for Fiscal Year 1999 Safety and Health Activities by Functional Area for Environmental Management Projects (dollars in thousands).

Safety & Health Functional Area	FY 1999 Planned	FY 1999 Actual	Change	Percent Change
Emergency Preparedness	8,892	7,041	-1,851	-20.8
Fire Protection	3,077	4,428	+1,51	+43.9
Industrial Hygiene	3,075	4,451	+1,376	+44.7
Industrial Safety	7,379	8,332	+953	+12.9
Occupational Medical Services	912	743	-169	-18.5
Nuclear Safety	15,538	21,347	+5,809	+37.4
Radiation Protection	44,636	43,576	-1,060	-2.4
Transportation Safety	2,390	2,328	-62	-2.6
Management and Oversight	24,101	21,837	-2,264	-9.4
Total Safety & Health Direct	**$110,000**	**$114,083**	**$+4,083**	**+3.7**

- **Emergency Preparedness.** The 20.8% decrease in S&H expenditures was due mainly to the significant decrease in S&H expenditures by the Environmental Restoration Project

- **Fire Protection.** The 43.9% increase in S&H expenditures was due mainly to an increase in HAMMER training activities

- **Industrial Hygiene.** The 44.7% increase in S&H expenditures was due to increased S&H expenditures by the River Protection Project and the HAMMER. The increase is partially offset by decreased S&H expenditures by the Environmental Restoration Project

- **Industrial Safety.** The 12.9% increase in S&H expenditures was due to increased S&H expenditures by the River Protection and Spent Nuclear Fuel Projects and the HAMMER as explained above. The increase is partially offset by decreased S&H expenditures by the Environmental Restoration Project

- **Occupational Medical Services.** The 18.5% decrease in S&H expenditures was due mainly to the significant decrease in S&H expenditures by the Environmental Restoration Project

- **Nuclear Safety.** The 37.4% increase in S&H expenditures was due to increased S&H expenditures by the River Protection and Spent Nuclear Fuel Projects as explained above. The increase is partially offset by decreased S&H expenditures by the Environmental Restoration Project.

5.3.2 Fiscal Year 2000 Environmental Management Direct Safety and Health Expenditures

A comparison of actual FY 1999 to planned FY 2000 expenditures on S&H activities is provided in Table 5-7 for the direct-funded Hanford Site EM-Projects. Planned EM Project S&H expenditures for FY 2000 are forecast to be $0.25 million (0.2%) higher than actual FY 1999 expenditures. While the overall S&H cost difference is low, individual projects have significant differences as explained below:

Table 5-7. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Direct Safety and Health Expenditures by Environmental Management Projects. (dollars in thousands)

Project Mission	FY 1999 Actual	FY 2000 Planned	Change	Percent Change
River Protection	28,313	24,234	-4,079	-14.4
Waste Management	12,165	11,470	-695	-5.7
Spent Nuclear Fuel	15,609	13,217	-2,392	-15.3
Facility Stabilization	15,917	17,866	+1,949	+12.1
Environmental Restoration	14,416	13,184	-1,232	-8.5
Science and Technology	3,205	2,867	-338	-10.5
Mission Support and Other Projects[a]	24,335	31,419	+7,084	+29.1
Advanced Reactors Transition	123	79	-44	-35.8
Total Direct EM Project S &H Costs	**$114,083**	**$114,336**	**$+253**	**+0.2**

NOTE:
[a]Includes Hazardous Materials Management and Emergency Response; Planning and Integration; Hanford Environmental Compliance Program; Site Systems Engineering; Pacific Northwest National Laboratory Public Safety and Resource Protection; U.S. Department of Energy, Richland Operations Office-Directed Support; Office of Safety Regulation of the TWR-P Contractors; and Landlord Project.

- **River Protection Project.** The $4.1 million (14.4%) reduction in S&H expenditures results from early completion of tank core sampling, completion of the FSAR preparation, and resolution of the high-heat tank safety issue in FY 1999

- **Spent Nuclear Fuel Project.** The $2.4 million (15.3%) reduction in S&H expenditures results from a sizeable reduction in Nuclear Safety as a result of completing safety and technical studies in FY 1999

- **Facility Stabilization Project.** The $1.9 million (12.2%) increase in S&H expenditures results from an increase in PFP stabilization activities. The increase in S&H expenditures was partially offset by a decrease resulting from completion of B Plant deactivation and transitioning the plant to the surveillance and maintenance phase

- **Mission Support and Other Projects.** The $7.1 million (29.1%) increase in S&H expenditures results from increased expenditures by the Landlord Project to: renovate the existing 200 Areas fire station (Fire Protection); dispose of contaminated mobile heavy equipment, replace the 200 West Area sanitary water chorination system with a safer treatment system, and partial roof replacement of the 325 Building (Industrial Safety), and road safety improvements (Transportation Safety).

A comparison of actual FY 1999 to planned FY 2000 expenditures on S&H activities for EM-funded Projects is given in Table 5-8 according to the S&H functional areas. Six of the nine S&H functional areas had significant differences between actual FY 1999 and planned FY 2000 expenditures. These are listed below along with the projects responsible for the difference in S&H expenditures. Explanations are given above for the difference between planned and actual S&H expenditures for the projects, which help explain the difference in functional area expenditures.

Table 5-8. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Direct Safety and Health Expenditures by Functional Area for Environmental Management Projects (dollars in thousands)[a].

Safety & Health Functional Area	FY 1999 Actual	FY 2000 Planned	Change	Percent Change
Emergency Preparedness	7,041	6,671	-370	-5.3
Fire Protection	4,428	6,081	+1,653	+37.3
Industrial Hygiene	4,451	3,690	-761	-17.1
Industrial Safety	8,332	8,198	-134	-1.6
Occupational Medical Services	743	1,114	+371	+49.9
Nuclear Safety	21,347	14,598	-6,749	-31.6
Radiation Protection	43,576	47,502	+3,926	+9.0
Transportation Safety	2,328	3,616	+1,288	+55.3
Management and Oversight	21,837	22,866	+1,029	+4.7
Total Safety & Health Direct	**$114,083**	**$114,336**	**$+253**	**+0.2**

- **Fire Protection.** The 37.3% increase is due to increased S&H expenditures by the Landlord Project

- **Industrial Safety.** The 1.6% decrease in S&H expenditures is insignificant. However sizeable reductions by the River Protection and Spent Nuclear Fuel Projects are offset by a sizeable increase by the Landlord Project

- **Industrial Hygiene.** The 17.1% decrease is due to decreased S&H expenditures by the River Protection and the Landlord Project

- **Occupational Medical Services.** The 49.9% increase is due to increased S&H expenditures by the Environmental Restoration Project

- **Nuclear Safety.** The 31.6% decrease is due to decreased S&H expenditures by the River Protection and Spent Nuclear Fuel Projects

- **Transportation Safety.** The 55.3% increase is due to increased S&H expenditures by the Landlord Project.

5.4 SAFETY AND HEALTH EXPENDITURES ON ENVIRONMENTAL MANAGEMENT INDIRECT-FUNDED ACTIVITIES

This section provides information on EM indirect-funded S&H expenditures. These expenditures represent over 80% of the Hanford Site indirect expenditures on S&H activities.

Comparison of planned to actual expenditures on EM indirect-funded S&H activities in FY 1999 are summarized in Table 5-9 for the nine S&H functional areas. Actual S&H expenditures exceeded planned expenditures by $3.6 million (6.4%) in FY 1999. Explanations of significant differences between planned and actual expenditures for S&H indirect-funded activities in FY 1999 are given below:

- **Industrial Hygiene.** The $0.3 million (20.3%) reduction in actual S&H expenditures resulted from initiation of indirect staff transfers to the direct-funded EM Projects

- **Nuclear Safety.** The $0.8 million (28.0%) increase in actual S&H expenditures resulted from indirect safety analysis support provided to the Spent Fuel Project

- **Management and Oversight.** The $3.3 million (35.6%) increase in actual S&H expenditures resulted from completion of PHMC compliance activities in response to DOE Office of Enforcement and Investigation (EH-10) findings and preparation of the PHMC Quality Improvement Plan (QIP). Additional S&H resources also were expended on preparation of the ISMS.

Table 5-9. Comparison of Planned to Actual Fiscal Year 1999 Expenditures for Hanford Site Environmental Management Indirect Safety and Health Activities by Functional Area (dollars in thousands).

Safety and Health Functional Area	FY 1999[a] Planned	FY 1999[b] Actual	Change	Percent Change
Emergency Preparedness	3,568	3,427	-141	-4.0
Fire Protection	16,493	16,536	+43	+0.3
Industrial Hygiene	1,501	1,196	-305	-20.0
Industrial Safety	1,991	2,038	+47	+2.4
Occupational Medical Services	9,804	9,347	-457	-4.7
Nuclear Safety	2,732	3,498	+766	+28.0
Radiation Protection	10,567	10,985	+418	+4.0
Transportation Safety	677	677	0	0
Management and Oversight	9,133	12,387	+3,254	+35.6
Total Safety and Health Indirect	**$56,466**	**$60,091**	**$+3,625**	**+6.4**

Notes:
[a]Based on planning values in DOE/RL-99-28, Revision 0, Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget-Risk Management Summary.
[b]Based on actual FY 1999 expenditures.

Comparisons of actual FY 1999 S&H expenditures to planned FY 2000 expenditures on EM indirect-funded S&H activities are summarized in Table 5-10 for the nine S&H functional areas. Planned FY 2000 S&H expenditures are lower than FY 1999 expenditures by $9.8 million (16.3%). Explanations of significant differences between actual FY 1999 expenditures for S&H indirect-funded activities and planned FY 2000 expenditures are given below:

- **Fire Protection.** The $1.6 million (9.7%) decrease in planned S&H expenditures in FY 2000 results from transfer of costs of the shared services pool from Fire Protection to the direct-funded EM Projects

- **Industrial Hygiene.** The $0.5 million (43.8%) decrease in planned S&H expenditures in FY 2000 results from continuation of indirect staff transfers to the direct-funded EM Projects

  Industrial Safety. The $1.0 million (50.6%) decrease in planned S&H expenditures in FY 2000 results from transfer of indirect staff to the direct-funded EM Projects

- **Nuclear Safety.** The $1.0 million (28.4%) decrease in planned S&H expenditures in FY 2000 results from completion of indirect safety support to the Spent Nuclear Fuel Project and transfer of indirect staff to the direct-funded EM Projects

- **Management and Oversight.** The $5.6 million (45.1%) decrease in planned S&H expenditures in FY 2000 results from reduced support needed for PHMC compliance activities in response to DOE EH-10 findings and preparation of the PHMC QIP.

Additionally, some indirect S&H staff is being transferred to the direct-funded EM Projects.

Table 5-10. Comparison of Actual Fiscal Year 1999 to Planned Fiscal Year 2000 Expenditures for Hanford Site Environmental Management Indirect Safety and Health Activities by Functional Area (dollars in thousands).

Safety & Health Functional Area	FY 1999 Actual	FY 2000	Change	Percent Change
Emergency Preparedness	3,427	3,717	+290	+8.5
Fire Protection	16,536	14,931	-1,605	-9.7
Industrial Hygiene	1,196	672	-524	-43.8
Industrial Safety	2,038	1,006	-1,032	-50.6
Occupational Medical Services	9,347	9,604	+257	+2.7
Nuclear Safety	3,498	2,503	-995	-28.4
Radiation Protection	10,985	10,374	-611	-5.6
Transportation Safety	677	697	+20	+3.0
Management and Oversight	12,387	6,804	-5,583	-45.0
Total Safety & Health Indirect	**$60,091**	**$50,308**	**$-9,783**	**-16.3**

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6.0 REFERENCES

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APPENDIX A

PACIFIC NORTHWEST NATIONAL LABORATORY, U.S. DEPARTMENT OF ENERGY OFFICE OF SCIENCE, ENVIRONMENT, SAFETY AND HEALTH COMMITMENT AFFIRMATION RESPONSE

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TERMS

CFR	*Code of Federal Regulations*
CM	Configuration Management
CMS	Chemical Management System
DOE	U.S. Department of Energy
EJTA	Employee Job Task Analysis
EM	Environmental Management
EMSD	Environmental Management Services Department
EMSL	Environmental and Molecular Sciences Laboratory
ES&H	Environment, Safety and Health
ESH&I	Environment, Safety, Health and Infrastructure
FAD	Facility Acquisition & Disposition
FUA	Facility Use Agreement
FY	fiscal year
IOPS	Integrated Operations
ISMS	Integrated Environment, Safety and Health Management System
OBER	Office of Biological and Environmental Research
PAAA	*Price-Anderson Amendments Act of 1988*
Pacific Northwest	Pacific Northwest National Laboratory
PRF	Plutonium Reclamation Facility
RL	DOE Richland Operations Office
RPL	Radiochemical Processing Laboratory
SC	DOE Office of Science

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PACIFIC NORTHWEST NATIONAL LABORATORY U.S. DEPARTMENT OF ENERGY OFFICE OF SCIENCE, ENVIRONMENT, SAFETY AND HEALTH COMMITMENT AFFIRMATION RESPONSE

A1.0 INTRODUCTION

The consolidated Laboratory of the Pacific Northwest National Laboratory (Pacific Northwest) occupies approximately 332 acres of semiarid desert on the Hanford Site and various offsite locations in southeastern Washington State. Most U.S. Department of Energy (DOE)-owned, Pacific Northwest-occupied facilities are located in the southern part of the Hanford Site's 300 Area. The DOE-leased space associated with Pacific Northwest is located south of the 300 Area.

Pacific Northwest aspires to be the premier environmental science and technology laboratory in the world. Pacific Northwest cannot attain this distinction without achieving excellence in Environment, Safety, Health and Infrastructure (ESH&I) protection. Their ES&H and Facilities and Operations organizations and management systems must provide the highest *quality, most cost-effective products and services to their mission and to the satisfaction of their* customers.

Pacific Northwest is a DOE Office of Science (SC) Multiprogram National Laboratory under the program "landlordship" of the Office of Biological and Environmental Research (OBER). This summary reflects the ESH&I programs necessary to support all work conducted as part of their SC operations (including work for others). In addition, funding to support specific Environmental Management (EM) related activities, such as those conducted in the Radiochemical Processing Laboratory, previously called the 325 Building, is provided directly by EM and is covered in the Hanford Site Summary.

ESH&I Management Plan Information System annual total Safety and Health (S&H) costs for fiscal years (FY) 1999 and 2000 are included as Attachment 1 of this appendix. The S&H costs are reported according to the nine S&H functional areas for direct plus indirect, indirect and direct activities.

A1.1 ESH&I GOALS AND PERFORMANCE OBJECTIVES

Pacific Northwest has established four Critical Outcomes. One of these Critical Outcomes is Operational Excellence, which states:

> *Battelle will conduct all work and operate Laboratory facilities with distinction, fully supportive of and integrated with the Laboratory's science and technology mission and fully protective of workers, the public and the environment.*

This Critical Outcome is supported by two objectives and underlying performance indicators. These objectives and their corresponding performance indicators were negotiated with and agreed to by the DOE Richland Operations Office (RL) before being included in the appraisal plan and incorporated into the operating contract. They also provide the vehicle for

Pacific Northwest to communicate its strategic ESH&I goals to all staff and incorporate appropriate performance indicators into organizational performance objectives, work plans, and individual staff performance and development goals.

A1.2 PACIFIC NORTHWEST ESH&I ISSUES

A1.2.1 Configuration Management

A Pacific Northwest independent oversight study completed in April 1998 validated that basic configuration management elements were developed and executed by competent and knowledgeable staff. However, it also indicated that institutionalization of an overall program and formalization of key program elements was weak or lacking. During FY 1999, institutionalization of the Pacific Northwest Configuration Management (CM) Program was strengthened by completion of the Pacific Northwest Facility CM Program Description, and two CM Program supporting subject areas on PNNL's web page. A Facility CM Program implementation plan for FY 1999 was prepared under the auspices of the Facility Acquisition & Disposition (FAD) Management System, as were several organizational-level implementing procedures and formal roles, responsibilities, accountabilities, and authority statements. While substantial progress has been made toward institutionalization and integration of the Pacific Northwest CM Program, the full integration of all elements has not yet been completed. Most notable is the current commitment to complete the Pacific Northwest Essential Drawings Program by FY 2005. Efforts are required to expand the FY 1999 implementation plan to a multiyear plan and include a specific evaluation of CM Program element status, priority and schedule for completion, and resources required for completion as a work task of the FAD Management System.

A1.3 EXPORTING INTEGRATED OPERATIONS (IOPS)

The initiative will continue the export of the Environmental Molecular Sciences Laboratory (EMSL) Operations concept and tools to additional facilities within the Laboratory, building on the lessons learned in the previous roll-outs in FY 1998 and FY 1999. Pacific Northwest has implemented a tool set that enables the work environment by establishing a conduct of operations philosophy that focuses on people safely doing work at the bench top. This electronic, web-delivered tool, called Integrated Operations (IOPS), covers hazard identification, mitigation, and self-assessment after the institutional definitions of acceptable work have been met, and work is now proceeding at the task level into the work place. The process centers on the definition of a workspace, defining the hazards, creating the self-assessment checklist, and participating in self-assessment and worker registration with the associated creation of individual training matrices. The process covers:

- Hazard assessment conducted in the individual work space
- Hazard assessment automatically linking to consensus-based work practices that provide mitigation of the hazard

- Training and laboratory access, which are linked to an individual's requested level of interaction with hazards in the workplace
- IOPS self-assessment process, which drives hazard inventory update and continuous evaluation
- Roles and authorities transfer from line management to the individual
- Automated facility-level operational boundaries, which are visually communicated, managed, documented, and evaluated using map tools
- Automated work control features that improve the communication process and link to the hazard inventory of IOPS to reduce the time for planning and implementation of maintenance and construction activities
- Feedback and performance mechanisms in/of IOPS that get information back into the system, provide customer information to management in the completion of work, and close the loop in the process of "doing work safely."

A1.4 FACILITY TRANSITION

In 1995, Pacific Northwest reviewed its facility holdings, revealing that approximately one half of the facilities were candidates to be vacated over the next five years. Subsequent to this review, actions were taken to consolidate operations for full use of the strategic facilities and closure of nonstrategic, uneconomical, or under-used facilities. A facility transition team was established to manage the reconfiguration of space and the relocation of staff and equipment. They ensured that each facility transition was accomplished safely, efficiently, and in compliance with all applicable requirements. The team's current responsibility is to expedite the final disposition of the excess facilities and ensure that the facilities are appropriately surveyed and maintained until disposition actions are complete. Seventy-one facilities have been physically removed or transferred to a new operator. Laboratory-level overhead and EM direct funding support the transition effort. Two concerns related to the progress of transitioning facilities are (1) cost of the disposition and (2) the final agreement on DOE landlord responsibilities for the contaminated surplus facilities. The following table summarizes the status of the facility transition effort.

Facility Status	Number of Facilities
Removed or transferred	71
Additional facilities to be vacated	4
Total facilities to be vacated by 2002	106

Of the 30 inactive surplus facilities, nine are known to be radiologically contaminated. The majority of contamination in surplus facilities is the result of defense activities related to fuel processing and production before 1971. The estimated annual surveillance and maintenance budget for the surplus facilities is $90,000, but is expected to greatly increase in the near term

because of roof replacements. The cost of final disposition for the clean and slightly contaminated facilities is estimated at $5.05 million, and the cost for the moderately to highly contaminated facilities is in excess of $17 million. Alternatives to demolition are being sought for surplus facilities in good condition, including leasing to private entities.

A1.5 ENVIRONMENTAL MANAGEMENT SERVICES

Pacific Northwest's Environmental Management Services Department (EMSD) is currently involved in "Reengineering" efforts for Pacific Northwest Waste Operations. Currently, EMSD receives approximately $7 million from EM to fund Environmental Compliance and Waste Management. In FY 2001, a transfer of $1.2 million from EM will be made to SC. This transfer is taking place partly because SC is the new landlord for Pacific Northwest, but also to better allocate costs among the different DOE programs for wastes generated at Pacific Northwest. Drivers for this include life-cycle costing (the decision to fund programs must be based on all costs including waste management) and waste minimization (the idea that waste generation will be minimized if programs have to pay for it). In FY 2001, EM will continue to directly fund the remaining ~$5.8 million because most of the waste generated at Pacific Northwest is from EM projects. However, direct funding for FY 2002 is not certain, and SC has directed their contracted laboratories to come up with a strategy for future cost recovery. RL has directed Pacific Northwest to develop this strategy and has recommended a "commercial-like" waste management structure with some level of funding to be provided by the programs/projects. The cost-recovery strategy must be decided by November of FY 2000 to coincide with the early submittal of FY 2002 field work proposals for SC. During FY 2000, a 5% fee will be added to waste disposal costs at the project level to generate funds for pollution prevention or waste minimization projects. It is expected that in FY 2001 or FY 2002, some level of increased funding from the programs will be needed to recover costs for waste management.

A1.6 CHEMICAL SAFETY

A review of Pacific Northwest's Chemical Management System (CMS) was conducted following the explosion at the Plutonium Reclamation Facility (PRF), and a number of improvements were implemented. Pacific Northwest participated in the PRF Incident Response Subteam on Chemical Management, which developed a Sitewide CMS requirements document. The Laboratory's CMS was assessed against this document, and an action plan was developed to address gaps. The actions of the site-wide CMS requirements document were implemented. Continued review and updating of the Pacific Northwest's CMS has resulted in improvements to the program.

Since this assessment against the Requirements Document was performed, a new issue has emerged. Integration of CMS with the Facility Use Agreement (FUA) identified gaps regarding shifting of chemicals from zone to zone and resolution of fire-zone-limit exceedances. These and other issues were addressed by the working group and an action plan was developed. An operational improvement initiative has been submitted to provide FY 2000 funds to ensure complete and accurate categorization and inventory of all chemicals held by Pacific Northwest.

To ensure the safety of staff working with chemicals, the Employee Job Task Analysis (EJTA) process was adopted by Pacific Northwest to identify the appropriate medical surveillances. This process has been fully implemented with an assessment completed by Tulane University and the University of Washington to ensure that there were no significant quality issues relative to staff members either being placed in or being removed from medical monitoring programs. The assessment was favorable with a few minor areas identified for improvement. These areas already are being reviewed by Pacific Northwest staff to improve the program.

A1.7 NUCLEAR SAFETY RULE COMPLIANCE

In the past year, we have strengthened implementation of management systems related to 10 CFR 830.120, by taking the following steps:

- The Radiochemical Processing Laboratory (RPL) Manager has reviewed all self-assessments performed in the RPL for 10 CFR 830.120 issues.
- The Manager of the RPL has conducted a targeted self-assessment of 10 CFR 830.120 compliance in the RPL.
- The commitment to incorporate requirements for self-assessments of 10 CFR 830.120 implementation in the RPL FUA was reevaluated. Pacific Northwest determined that a more effective approach to assessing compliance with *Price-Anderson Amendments Act of 1988* (PAAA) requirements would be to incorporate this requirement into the Standards-Based Management System; this has been done.
- The Battelle Memorial Institute Corporate Quality organization has included an assessment of 10 CFR 830.120 implementation in its biannual ES&H assessment.
- The Independent Oversight Department has been requested by the Quality Directorate to conduct a special study of 10 CFR 830.120 implementation. This commitment, originally included in the FY 1999 schedule, had been moved to the FY 2000 schedule and will be completed in January 2000.

Two new issues have been identified as areas of concern regarding Nuclear Safety Rule Compliance:

1. **Recurring Work Planning/Control Issues/CMS-FUA**

   Pacific Northwest reported two "significant" noncompliances with nuclear safety rules to the Office of Enforcement and Investigation during the past year. Each of these involved failure by Laboratory staff to comply with work planning and control requirements. These continuing noncompliances with work planning and control requirements, including procedural adherence, indicate that additional corrective actions are necessary.

2. **Subcontract Requirements Flowdown**

Pacific Northwest currently uses a generic ES&H clause in subcontracts; this clause provides "constructive notification" to the subcontractor that it must comply with all applicable ES&H requirements (including PAAA requirements). Although a specific PAAA clause has been drafted and used in a recent subcontract, the generic ES&H clause remains the principal contracting approach. The Laboratory has determined that this area needs to be strengthened. To accomplish this, the Laboratory has developed explicit contract language addressing subcontractor ES&H and PAAA responsibilities and has an action plan to develop and deploy a process to incorporate these clauses into subcontracts, as required.

A1.8 CHANGES DURING FY 1999

Pacific Northwest's ESH&I programs have a significant impact on the way Pacific Northwest delivers ESH&I services in an efficient and cost-effective manner. Pacific Northwest's ESH&I programs are focused on integrating ESH&I into the planning and design of work, resulting in improved performance as evidenced by fewer accidents and incidents, reductions of injuries and illnesses, better control of hazards, and improved compliance with environmental regulations. Pacific Northwest's assessment process is maturing, with emphasis on continuously improving our management systems to develop leading indicators of performance, not solely relying on traditional historical trending analysis. This effort is ongoing, and part of the DOE Complex-wide effort to evaluate performance under Integrated Safety Management. Pacific Northwest has accomplished this by providing managers and staff with the technical resources in ESH&I that they need to meet their responsibilities. This approach has allowed Pacific Northwest to control and reduce risk, even during difficult budget times. By incorporating performance-based measures into Pacific Northwest's contract, management has shown the commitment to improve ESH&I performance. The ESH&I programs are focused on delivering value-added services and eliminating activities that do not provide the benefit of protection of the environment and the safety and health of workers and the public.

Pacific Northwest's Integrated Environment, Safety and Health Management System (ISMS) received Phase 1 and Phase 2 verification by the Safety Management Implementation Team and subsequent approval by RL on October 16, 1998. Some minor deficiencies and areas of improvement were identified during the review. As a result of the verification, corrective actions have been developed and resources have been incorporated into the ES&H planning and budgeting cycles for outyears. As part of Pacific Northwest's continuous improvement process, the ISMS will undergo continuous upgrades.

This year's ESH&I commitments are captured in the annually negotiated performance evaluation agreement supporting the operating contract. The ESH&I commitments are contained in the Agreement's Critical Outcome 2.0 Operational Excellence (Attachment 2): *"Battelle will conduct all work and operate Laboratory facilities with distinction, fully supportive of and integrated with the Laboratory's science and technology mission and fully protective of workers, the public and the environment."* The following two Performance Measures and the status that is reported in the attached draft *FY 1999 Annual Self-Evaluation Report for the Pacific Northwest*

National Laboratory (PNNL) support this Critical Outcome and also address the Unified Field Budget request.

A1.8.1 Historic (Just Completed) Execution Fiscal Year Information (FY 1999)

ES&H specific:

2.1 Objective--Sustain and enhance operational excellence in safety and health, and environmental protection (see Attachment 2)

Infrastructure specific:

2.2 Objective--Increase mission capabilities through enhancement and effective use of Laboratory facilities and assets (see Attachment 2).

Each of these objectives is supported by a suite of Performance Indicators that together comprise the Pacific Northwest FY 1999 ESH&I performance commitments and serve as the basis for objectively establishing Pacific Northwest ESH&I/Operations annual performance ratings. These performance objectives and indicators are negotiated annually and are formally monitored and tracked. Reviews include formal mid-year and year-end evaluations. Because DOE bases its annual appraisal of the Laboratory on these Objectives and criteria, the annual report also will serve as the commitment reporting required by this planning process.

A1.8.2 Facility Capital Project Commitments

To ensure a complete reporting of all items called out in Section VIII "FY1999 ESH&I Commitments," from this year's DOE ES&H Management Plan (DOE 1995) submittal, a status of the capital project commitments is being provided.

In addition, the following Capital Construction Projects will be completed by year-end:

- Line Item - Multi-Program Laboratory Rehabilitation - Completed October 1999
- General Plant Project - Thermodynamic Molecular Geochemistry Laboratory Rehabilitation - Completed February 1999
- General Plant Project - 326 Building "C" Floor Rehabilitation - Completed February 1999
- General Plant Project - 326 Building Piping Replacement - Completed March 1999
- Several Small Projects - 7 Small projects were completed during FY 1999.

The following projects were initiated in FY 1999, with planned completions in FY 2000:

- General Plant Project - 331 Replace Roof Chillers & Fans - Planned for Completion May 2000
- General Plant Project - 337 Building Piping Replacement - Planned for Completion November 2000
- Several Small Projects- 5 small projects are planned for completion during FY 2000.

A1.9 PRIOR YEAR – CURRENT EXECUTION FISCAL YEAR INFORMATION (FY 2000)

Pacific Northwest's ESH&I FY 2000 commitments as negotiated with and agreed to by the RL are incorporated in support of the operating contract. Specifically, ESH&I commitments are contained in the Agreement's Critical Outcome 2.0 Operational Excellence: *"Battelle will conduct all work and operate Laboratory facilities with distinction, fully supportive of and integrated with the Laboratory's science and technology mission and fully protective of workers, the public and the environment."* This Critical Outcome is supported by the following two Performance Objectives:

- *Sustain and enhance operational excellence in safety and health, and environmental protection.*
- *Deliver, operate and maintain an optimum set of facilities and supporting infrastructure that are aligned with current and future mission needs.*

Demonstration of Continuous Improvement as required by the DOE Acquisition Regulation (DOE 1999) clause will be met by successful performance relative to these objectives.

A2.0 CONCLUSION

The ESH&I programs continue to positively impact the way Pacific Northwest delivers ESH&I services. The programs are focused on integrating ESH&I into the planning and design of work, resulting in improved performance as evidenced by fewer accidents and incidents, reductions of injuries and illnesses, better control of hazards, and improved compliance with environmental regulations. Pacific Northwest's assessment process is maturing, with emphasis on continuously improving our management systems to develop leading indicators of performance, not solely relying on traditional historical trending analysis. This effort is ongoing and is part of the DOE Complex-wide effort to evaluate performance under the ISMS. This is being accomplished by providing managers and staff with the technical resources in ESH&I that they need to meet their responsibilities. This approach has allowed Pacific Northwest to control and reduce risk even during difficult budget times. By incorporating performance-based incentives into the contract, Pacific Northwest management has shown the commitment to continually improve ESH&I performance. The ESH&I programs are focused on delivering value-added services and eliminating activities that do not provide benefit to protection of the environment and the safety and health of workers and the public. A risk-based approach has

been adopted so that limited resources may be applied to those areas that will result in the greatest benefit.

A2.1 REFERENCES

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ATTACHMENT 1

U.S. DEPARTMENT OF ENERGY OFFICE OF SCIENCE SAFETY AND HEALTH COSTS

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Table A-1. ES&H/Infrastructure Management Plan Information System Annual Total Costs by Functional Area (Costs in $000's) Funding Source - Direct and Indirect.

Functional Area	FY 1999 Planning	FY 1999 Actual	Delta	FY 2000 Planning
Safety & Health Costs				
EP Emergency Preparedness	164.406	227.700	-63.294	275.220
FP Fire Protection	136.520	84.900	51.620	111.940
IH Industrial Hygiene	2,447.205	2,142.680	304.525	2,381.835
IS Industrial Safety	2,372.345	2,077.295	295.050	2,297.660
MO Management & Oversight	7,181.199	6,233.005	948.194	6,512.875
NS Nuclear Safety	375.430	233.475	141.955	307.835
RP Radiation Protection	3,482.925	3,118.175	364.750	3,266.505
TS Transportation Safety	317.070	340.170	-23.100	360.530
Safety & Health Sub-Total	**16,477.100**	**14,457.400**	**2,019.700**	**15,514.400**

Table A-2. ES&H/Infrastructure Management Plan Information System Annual Total Costs by Functional Area (Costs in $000's) Funding Source: 2 – Indirect.

Functional Area	FY 1999 Planning	FY 1999 Actual	Delta	FY 2000 Planning
Safety & Health Costs				
EP Emergency Preparedness	164.406	227.700	-63.294	275.220
FP Fire Protection	136.520	84.900	51.620	111.940
IH Industrial Hygiene	1,872.465	1,898.240	-25.775	2,047.335
IS Industrial Safety	1,701.815	1,792.115	-90.300	1,907.410
MO Management & Oversight	6,510.669	5,947.825	562.844	6,122.625
NS Nuclear Safety	375.430	233.475	141.955	307.835
RP Radiation Protection	3,482.925	3,118.175	364.750	3,266.505
TS Transportation Safety	317.070	340.170	-23.100	360.530
Safety & Health Sub-Total	**14,561.300**	**13,642.600**	**918.700**	**14,399.400**
Environmental Costs				
CA Protection of Air Quality	75.520	67.430	8.090	77.700
CS Control of Toxic Substances	151.040	134.860	16.180	155.400
CW Protection of Water Quality	75.520	67.430	8.090	77.700
MR Management Oversight & Reporting	339.840	303.435	36.405	349.650
PP Pollution Prevention	113.280	101.145	12.135	116.550
Environmental Sub-Total	**755.200**	**674.300**	**80.900**	**777.000**
Non-ES&H Costs				
Infrastructure	51,638.000	52,343.000	-705.000	52,786.000
Non-ES&H Sub-Total	51,638.000	52,343.000	-705.000	52,786.000
Funding Source: 2 - Indirect	66,954.500	66,659.900	294.600	67,962.400

Table A-3. ES&H/Infrastructure Management Plan Information System Annual Total Costs by Functional Area (Costs in $000's) Funding Source: 1 – Direct.

Functional Area	FY 1999 Planning	FY 1999 Actual	Delta	FY 2000 Planning
Safety & Health Costs				
IH Industrial Hygiene	574.740	244.440	330.300	334.500
IS Industrial Safety	670.530	285.180	385.350	390.250
MO Management & Oversight	670.530	285.180	385.350	390.250
Safety & Health Sub-Total	**1,915.800**	**814.800**	**1,101.000**	**1,115.000**
Environmental Costs:				
WM Waste Management	0.000	0.000	0.000	0.000
Environmental Sub-Total	**0.000**	**0.000**	**0.000**	**0.000**
Non-ES&H Costs				
Infrastructure	6,862.100	5,992.700	869.400	6,213.900
Non-ES&H Sub-Total	6,862.100	5,992.700	869.400	6,213.900
Funding Source: 1 - Direct	8,777.900	6,807.500	1,970.400	7,328.900

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ATTACHMENT 2

OPERATIONAL EXCELLENCE

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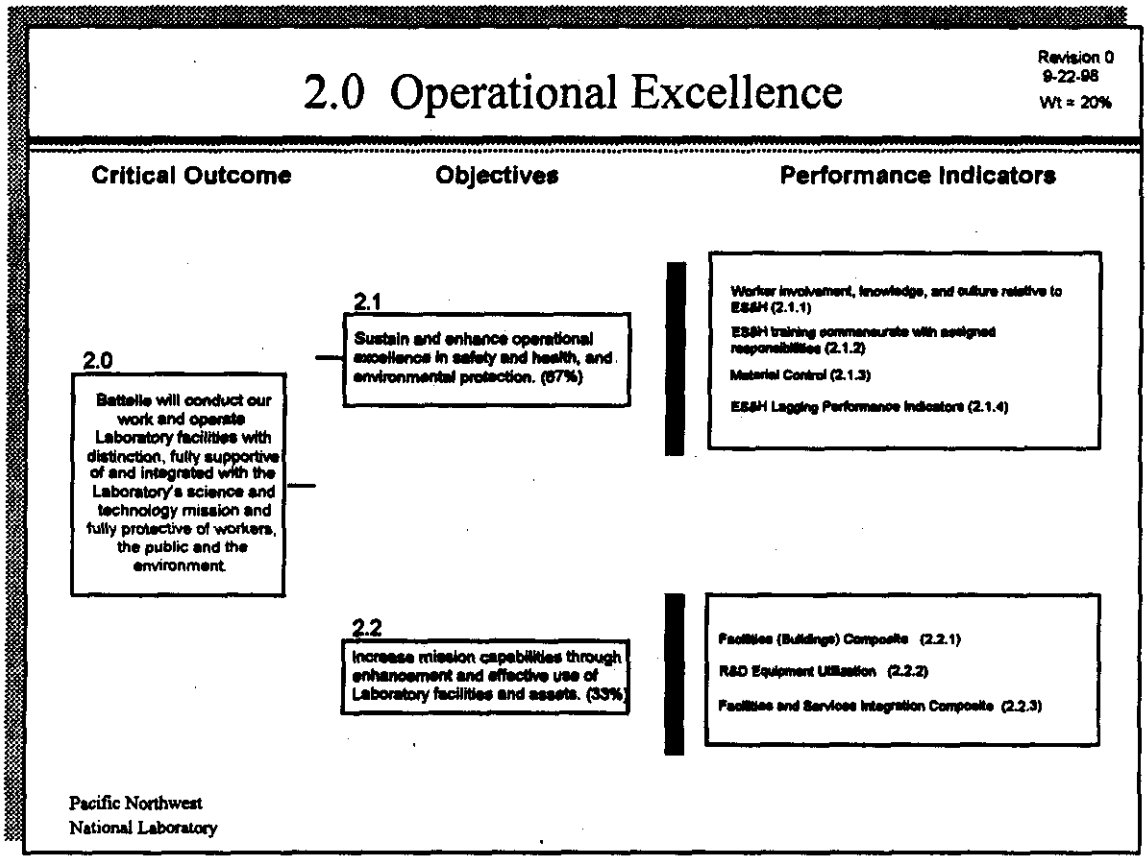
2.0 OPERATIONAL EXCELLENCE

The Department of Energy's Strategic Plan communicates a strong and very unambiguous commitment to operations to ensure the health and safety of our work force and the public, and the protection of the environment.

The Laboratory recognizes that strong scientific and technical performance can not be accomplished at the expense of ES&H or operational performance. In fact, strong ES&H and operational performance is seen as an enabler of the execution of the Laboratory's mission related work. For these reasons, and in partnership with the DOE, the Laboratory has established the Operational Excellence Critical Outcomes and its supporting Objectives to guide our improvement efforts and performance indicators to monitor our progress toward our goals.

The Operational Excellence Critical Outcome Tree, detailing the Critical Outcome and its' supporting Objectives and Performance Indicators, is presented below.



Summary

The Laboratory continues to conduct work and operate facilities with distinction and in a manner that is supportive of the Laboratory's science and technology mission. We have made significant investments over the past six years to integrate sound safety and environmental management practices into daily operations. Staff and managers are taking responsibility for their ES&H related performance: more staff are involved in the planning and safe execution of work than ever before; more than 99% of staff are current on their training, and staff are conscious of the work controls that affect their work. In addition, improvements in awareness and attention to ES&H issues have also been reported as a result of increased staff involvement in work planning activities.

The Laboratory's performance with respect to occupational safety and health, radiological control, waste management, and environmental protection are strong. We have made quantitative improvements in most of the nine lagging indicators we monitor monthly although a couple, most notably in the area of radiation contaminations, have presented us with opportunities to improve. A comparative analysis of OSHA statistics indicated that PNNL's performance is better than the average for other R&D organizations and is improving at a faster rate. Staff continue to perform very well with respect to the OSHA indicators for lost work case rate, recordable case rate, and lost work days. In addition, no events were recorded related to the transportation of hazardous materials or the loss of radioactive sources. Additional attention will be needed to reduce the number of skin and personal clothing contamination events however.

The Laboratory's waste management and environmental protection performance is meeting or exceeding expectations. Chemical "slop jars" achieved a 98% acceptance rate at waste operations, meeting our FY1999 target. Material control assessments however, while surpassing the FY1998 score of 84.3% with a new high of 90.4%, indicate that our systematic approach to managing these hazards requires improvement. This will be an area of focus in FY2000.

The Laboratory has demonstrated strong performance relative to the management and use of facilities and assets. Processes used for acquiring, modifying, and utilizing facility assets are effective. Office space allocations are on par with national benchmarks, finishing at 134 square feet per staff member, while our "churn rate," a measure of the frequency of internal movement of staff, at 20.9%, is significantly below national and R&D standards of nearly 50%. We believe this is due, however, in large part to the lack of offices for staff movement.

We have also pursued benchmarking opportunities aggressively in FY1999, using data as the basis to make improvements. Of specific note is the reduction of more than $1.5M in space cost savings due to the lessons learned as a result of our benchmarking activities. Finally, increased attention and interaction with the Hanford Site Integration Group is beginning to yield positive results as PNNL staff provide significant input to the Group in order to reduce disconnects between site contractors. As part of the Site Integration Group, we submitted a cost reduction proposal for a Waste Identification System that reduced PNNL costs by approximately $1M in FY1999. Other Hanford Contractors have since adopted the process and could save significantly more than $1M each in FY2000. In addition, the increased sensitivity we have created to the integration of site services among the Hanford Contractors resulted in the development of an integrated working group to review eleven site services in FY2000 for possible cost reallocation or privatization.

Based on the evidence provided in this self-evaluation, our overall performance rating on this critical outcome is **Outstanding.**

OBJECTIVE 2.1: SUSTAIN AND ENHANCE OPERATIONAL EXCELLENCE IN SAFETY, HEALTH AND ENVIRONMENTAL PROTECTION.

Results

In FY1999, the Laboratory focused on, three key aspects of ensuring operational excellence in ES&H; worker involvement, training commensurate with responsibilities, and material control. Additionally a set of "Lagging Indicators" were utilized to ensure that previously attained high levels of overall performance were maintained.

In addition to verifying overall operational excellence, the assessments related to this objective indicated that improvement needs to be made in the areas of protecting staff on foreign travel and involving staff in developing the work procedures. Also, although our ability to manage chemicals and chemical wastes are showing significant improvement, these will continue to be areas of focus for the Laboratory in FY2000.

Of specific note is the continual general decline in the Lost Workday Case Rate over the past five years with dramatic improvement over the past year. In FY1999, we reduced the Lost Workday Case Rate to 0.6 cases per 100 staff members. This represents a level less than half our FY1999 target of less than 1.2 cases per 100 staff and is significantly below the DOE 1998 Research Contractor Average Lost Workday Case Rate.

Our performance toward this Objective demonstrates the Laboratory's continuing ability to drive improvement in targeted areas while sustaining and even enhancing performance as a whole.

Based upon the performance indicators that support this objective, our rating for FY1999 is Outstanding.

Analysis

Worker involvement, knowledge, and culture relative to ES&H: To ensure worker involvement in work planning, and an appropriate level of worker knowledge and culture relative to ES&H, management committed to conduct a minimum of 175 assessments of ES&H culture during FY1999. A total of 216 evaluations were conducted. The results of the assessments indicated that staff are engaged in the ES&H program and take ownership of safety. Interestingly, the issue of Foreign Travel Safety was raised as a significant issue during the assessments and will be tracked to resolution.

Dose Index: The FY1999 Dose Index of 0.16, compared with the target of < 0.20, indicates that the levels of interaction between Project Managers and Radiological Engineers in planning and executing work being conducted on the Site is increasing. This is a significantly positive indication that Radiological Engineers are developing a better understanding of work activities and job scope, while work planners are developing a better understanding of radiological ALARA practices.

User Involvement in SBMS Subject Area Involvement: The Standards-Based Management System (SBMS) is the repository for all Laboratory-level procedures, policies, guidelines and requirements. 55% of the SBMS Subject Areas developed in FY1999 were developed with user involvement. This rate is vastly improved over last year's 30% involvement but we believe there is still room for improvement. The improvement is necessary to ensure that the most up-to-date information is contained in SBMS. The need to continuously increase the degree of User involvement in developing and maintaining SBMS Subject Areas has resulted in a proposed modification to the process for developing and revising the Subject Areas.

ES&H Training Commensurate with Assigned Responsibilities: For the second year in a row, this indicator demonstrates the Laboratory's ability to plan training and to execute the training plans. Training staff to a level commensurate with their responsibilities is one of the guiding principles of DOE's corporate program to ensure operational excellence, Integrated Safety Management. In FY1999, 95.6% of staff completed training plans for the duties they perform. This composite has exceeded the target of 85% and is a significant indication of the safety awareness of PNNL staff. Additionally, staff completed 99.1% of their required ES&H training courses, exceeding the 90% target by a significant margin.

Material Control: The two sub-indicators that comprise the material control performance indicator provide measures of the Laboratory's ability to implement one of the core functions of DOE's Integrated Safety Management Program, management of hazards. The first of the two sub-indicators measures the accuracy of the data provided by the Laboratory's Chemical Management System. The score of 90.4% represents substantial improvement over the FY1998 score of 84.3% and significant progress toward the FY1999 target of 95%. We intend to maintain this indicator as a measure of effectiveness of the ongoing improvements to chemical management.

The second of the two sub-indicators that support this indicator measures the percentage of hazardous waste "slop jars," a specific type of satellite accumulation area (SAA) waste, that pass content verification inspections when they are received by the waste operations staff.

During FY1999, staff waste generators achieved a 98% acceptance rate of "slop jars." Our focus in FY2000 will be on improving the communication of requirements to the generators along with the tools and services provided to support their work.

Performance in the material control areas, combined with performance against the ES&H "Lagging Indicators," demonstrates the Lab's ability to manage hazards in a manner that protects workers, the public, and the environment. Other material control assessments however, indicate that our systematic approach to managing these hazards needs improvement. These areas will continue to be areas of focus in FY2000.

ES&H Lagging Performance Indicators: In addition to monitoring the status of the ES&H performance indicators listed above, we also monitor a series of Lagging Indicators, so called because they report data after the fact, as opposed to in-process. The composite of these indicators provides an overall indication of the health of the Laboratory's Environment, Safety and Health program. The composite score for the lagging indicators, which is most sensitive to Lost Workday Cases, Unplanned Doses, and Environmental Protection; indicates that the Laboratory is sustaining excellence in the protection of workers, the public, and the environment.

Specifically, the data indicate that events related to worker injuries and lost workdays are dramatically improved over previous years, and that incidents involving radiation exposures need additional attention. It must be remembered however, that is some cases, the data appear to be reflections of random acts and are not the result of a system or process breakdown.

Of specific note is the fact that PNNL staff attention to safety training and awareness has led to a continual general decline in the Lost Workday Case Rate over the past five years with dramatic improvement over the past year. Table 2.1 indicates that in FY1999, we reduced the Lost Workday Case Rate to 0.6 cases per 100 staff members. This represents a level less than half our FY1999 target of less than 1.2 cases per 100 staff and is significantly below the DOE 1998 Research Contractor Average Lost Workday Case Rate.

Table 2.1. Performance of FY1999 ES&H Lagging Indicators Against Target.

Sub-Indicator	FY 1999 Performance	FY 1999 Target
OSHA Lost Workday Case Rate	0.6 Cases/100 Staff	< 1.2
OSHA Recordable Case Rate	1.7 Cases/100 Staff	< 2.3
OSHA Lost Workday Rate	10.4 Lost Workdays/100 Staff	< 20
Unplanned Doses	0 Events	= 0
Spread of Radioactive Contamination	3 Events	< 2
Loss of Radioactive Sources	0 Losses	= 0
Skin/Personal Clothing Contaminations	12 Events	< 5
Environmental Protection	2 Events	< 1
Transport of DOE Hazardous Material	0 Events	< 2

OBJECTIVE 2.2: INCREASE MISSION CAPABILITIES THROUGH ENHANCEMENT AND EFFECTIVE USE OF LABORATORY FACILITIES AND ASSETS.

Results

This objective has driven the Laboratory to expand its understanding of the business of facilities, space and equipment operations. We finished the year with Total average office space at 134.3 square feet per staff member. While this total fell short of our target, the fact that it fluctuated very little over the course of the year indicates that it is relatively stable. Our churn rate for FY1999 finished the year at 20.9% against our target of less than 50%. This constitutes exceptional performance, but it is not entirely by design. When considered in light of the

comment above that the Laboratory's current space portfolio is of limited flexibility, we concluded that this value is artificially low, in part, due to the lack of office space for staff movement.

As a result of our benchmarking efforts the Laboratory decreased its overall cost per gross square foot of space from $18.51 to $17.77 for a net decrease of 4% against our target of 5%. The $0.74 decrease per gross square foot, amortized over the current 2,040,000 square feet of the Laboratory, yields a cost savings of $1.509M.

The FY1999 Facilities Issues Customer Satisfaction survey showed 2% improvement over the FY1998 survey but fell short of our 4% target. In some areas of the survey however, customer satisfaction increased as much as 13%.

We finished the year collecting 239 of the individual R&D equipment data points needed against our target of 256 proving that this type of information can be collected. The real lesson from this indicator however, was in the knowledge that a piece of equipment existed on site, and not in the fact that it had available capacity.

We finished the year with strong performance in three of the four Facilities and Services Integration Composite sub-indicators. We participated in the Hanford Site Integration Group (SIG). As part of this group, we are trying to establish a long-term transition plan for Hanford Site Services, predominately in the 300 Area, in order to avoid an interrupted transition when the PHMC completes its clean-up work. Facilities staff updated 79% of the Building Life Cycle Plans. These plans are critical to management's understanding of where to invest critical long-term and short-term resources to ensure that the Laboratory has adequate facilities to support future science missions. As part of Hanford Site Integration Group, we submitted a cost reduction proposal for a Waste Identification System that reduced PNNL costs by approximately $1M in FY1999. Other Hanford Contractors have since adopted the process and could save significantly more than $1M each in FY2000. In addition, the increased sensitivity we have created to the integration of site services among the Hanford Contractors resulted in the development of an integrated working group to review eleven site services in FY2000 for possible cost reallocation or privatization. Finally, developed a process to ensure that all network infrastructure projects are managed consistent with other PNNL projects. In this way, we were able to complete four projects over the past fiscal year and at less cost than in previous years when we could only complete three.

Based upon the performance indicators that support this objective, our rating for FY1999 is **Excellent.**

Analysis

Facilities (building) Composite: This composite is composed of three sub-indicators that, together, provide management with an indication of how well the Laboratory's processes for space utilization are supporting the science and technology mission of DOE and Battelle. The three sub-indicators are Total Office Space per Staff Member, Staff Churn Rate, and Continuous Improvement in F&O Operations Realized from Benchmarking.

Total Average Office Space per Staff Member: Total average office space finished FY1999 at 134.3 square feet per staff member, see Figure 2.2.1. While this total fell short of our target, the fact that it fluctuated very little over the course of the year indicates that it is relatively stable. In point of fact, this metric has fluctuated little since our FY1998 average measurement of 133 square feet per staff member. We did discover however, that this indicator is really of little utility to the Laboratory. It was intended to raise an awareness of how each organization was loading its office space. Instead, we discovered that with our current space portfolio, the physical arrangement of fixed walled offices, there is little or no free space to move staff to. This same phenomenon impacts the Churn Rate metric following.

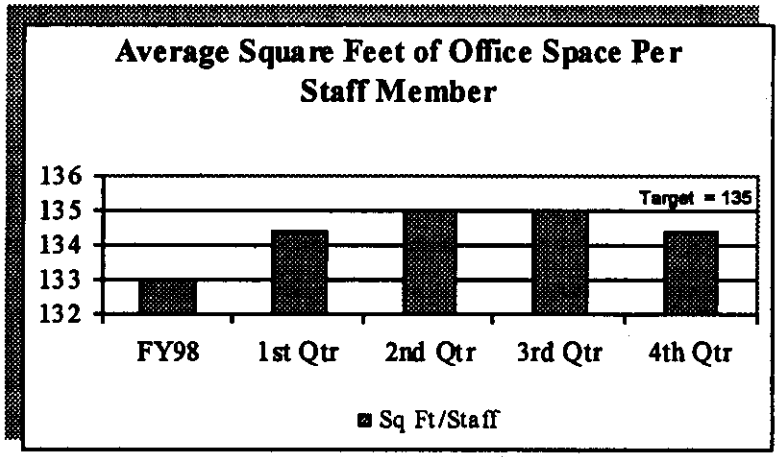


Figure 2.2.1

Staff Churn Rate: Churn rate is measure of the frequency of internal movement of staff and is considered a major benchmark for space managers. Our churn rate for FY1999 finished the year at 20.9% against our target of less than 50%. This certainly constitutes exceptional performance, but it is not entirely by design. When considered in light of the comment above that the Laboratory's current space portfolio is of limited flexibility, we must conclude that this value is artificially low, in part, due to the lack of office space for staff movement.

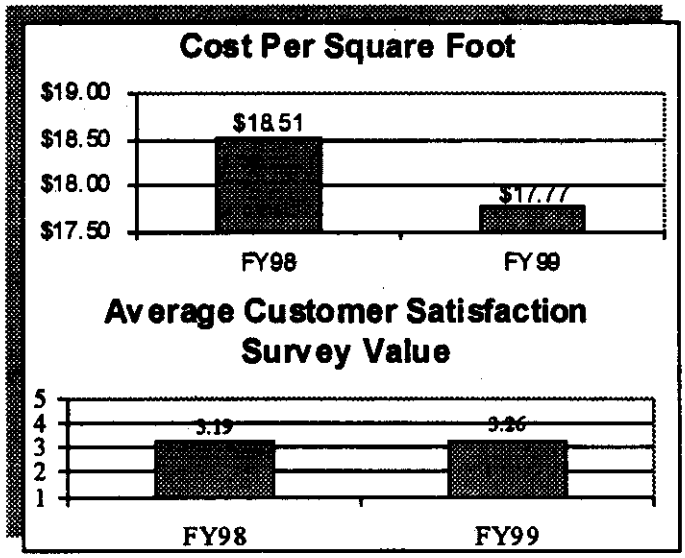


Figure 2.2.2

Continuous Improvement in F&O Operations realized from benchmarking: We entered FY1999 with high expectations for this performance indicator and have made substantial progress. This indicator measures two dimensions: improvement in the cost per unit measure position of the laboratory as a result of engagement in the benchmarking activities, and improvement in the facilities issues customer satisfaction survey. Working with these sub-indicators has given us a better understanding of the business dynamics, especially the labor and non-labor costs, associated with facilities operations and maintenance.

As a result of our benchmarking efforts and the subsequent implementation of lessons learned, the Laboratory decreased its overall cost per gross square foot of space from $18.51 to $17.77, see Figure 2.2.2, for a net decrease of 4% against our target of 5%. While we did not attain the target, we are happy to point out that the $0.74 decrease per gross square foot, amortized over the current 2,040,000 square feet of the Laboratory, represents a cost savings of $1.509M. In addition, it should be noted that total gross operating costs per gross square foot are down 8.7% overall, but were offset by increased Fixed Occupancy Costs, most notably a 9.9% increase in Rent/Lease costs.

The FY1999 Facilities Issues Customer Satisfaction survey showed some 2% improvement over the FY1998 survey but fell short of our 4% target. In some areas of the survey however, customer satisfaction increased as much as 13%. We are pleased with the modest improvement but feel that this indicator represents an area where additional focused attention is needed. Together, these indicators provide measurable positive improvement.

R&D Equipment Utilization: This indicator was intended to help the Laboratory understand the unused capacity existing across a suite of R&D equipment. We finished the year collecting 239 of the individual data points needed against our target of 256 proving that this type of information can be collected. The real lesson from this indicator however, was not in the percent of unused capacity that could be found in certain pieces of Laboratory equipment, rather the

value of this indicator for staff was in the knowledge that a piece of equipment existed on site, and not in the fact that it had available capacity. The issue of modifying an existing database to contain this type of information, making it accessible to research staff, has been suggested as a possible Operations Improvement Initiative.

Facilities and Services Integration Composite: This indicator is composed of four sub-indicators: Increased Interaction with Other Hanford Site Contractors, Minimization of Impact to the Laboratory Due to Infrastructure Failures and Future Usage; Site Services Improvement; and Network Infrastructure Upgrade. It was designed to provide an overall evaluation of the Laboratory's processes for increasing the Laboratory's mission capabilities through its facility assets. We finished the year with strong performance in three of the four sub-indicators.

Increased Interaction with Other Hanford Site Contractors: We finished the year with a 90% participation rate in the Hanford Site Integration Group (SIG) matching our target. As part of this group, we have increased the integration between Hanford Site contractors with an aim of reducing the disconnects between contractors. We are trying to establish a long-term transition plan for Hanford Site Services, predominately in the 300 Area, in order to avoid an interrupted transition when the PHMC completes its clean-up work. Battelle staff also updated the PNNL portion of the Hanford EM Site Specification, establishing the technical baseline for Site clean-up activities.

Minimization of Impact to the Laboratory Due to Infrastructure Failures and Future Usage: In support of this performance indicator, Facilities staff updated 79% (33) of the targeted 42 Building Life Cycle Plans. The balance will be completed in FY2000. These plans are critical to management's understanding of where to invest critical long-term and short-term resources to ensure that the Laboratory has adequate facilities to support future science missions.

Site Services Improvement: As part of our role on the Hanford Site Integration Group, we proposed the development of a Site Users Group to the Site Integration Group. We also submitted a cost reduction proposal for a Waste Identification System that reduced our costs by approximately $1M in FY1999. Other Hanford Contractors have also adopted the process and could save significantly more than $1M each in FY2000, given the size of their waste handling efforts. In addition, the increased sensitivity we have created to the integration of site services among the Hanford Contractors resulted in the development of an integrated working group to review eleven site services, including: fire, locksmith, analytical services, emergency preparedness and other services.

Network Infrastructure Upgrade: This performance indicator was originally intended to serve as a launching pad for becoming Y2K compliant. It evolved to ensure that all network infrastructure projects are managed consistent with other PNNL projects. Specifically, network infrastructure upgrades are now managed as projects, not as ad hoc upgrades. In this way, we were able to complete four projects over the past fiscal year and at less cost than in previous years when we could only complete three. This represents significant savings in terms of cost and improved productivity. Unfortunately, two of the three projects scheduled for completion, were completed more than 30 days after the approved schedule date. As a result, this indicator rates a "Good" rating as opposed to an "Outstanding" rating.

Operational Excellence Performance Evaluation

The overall performance rating for this Critical Outcome is determined by comparing the total value in the following table to the rating scale at bottom.

Table 2.2. Objective 2.1, Indicator 2.1.1 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.1.1 Worker involvement, knowledge, and culture relative to ES&H			
2.1.1.1 Management interactions with workers to ensure staff involvement in work planning, knowledge of requirements and attitude/culture relative to ES&H	216 assessments	100	
2.1.1.2 Dose Index	0.16	20	
2.1.1.3 User involvement in SBMS Subject Area development	55%	45	
	Composite Total	165	4.9

Table 2.3. Objective 2.1, Indicator 2.1.2 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.1.2 ES&H training commensurate with assigned responsibility			
2.1.2.1 Completion of SDTP and required ES&H training	95.5%	100	
2.1.2.2 Completion of ES&H Training Courses	99.1%	20	
	Composite Total	120	5.0

Table 2.4. Objective 2.1, Indicator 2.1.3 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.1.3 Material Control			
2.1.3.1 Chemical Management System	90.4%	50	
2.1.3.2 Generator management of SAA (Slop Jars)	98%	80	
	Composite Total	130	4.4

Table 2.5. Objective 2.1, Indicator 2.1.4 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.1.4 ES&H Lagging Performance Indicators			
2.1.4.1 OSHA Lost Workday Case Incidence Rate (Lost Workday Case Rate)	0.6	100	
2.1.4.2 OSHA Recordable Case Incidence Rate (Recordable Case Rate)	1.7	80	
2.1.4.3 OSHA Lost Workday Incidence Rate (Lost Workday Rate)	10.4	40	
2.1.4.4 Unplanned Doses	0	100	
2.1.4.5 Spread of Radioactive Contamination	3	25	
2.1.4.6 Loss of Radioactive Sources	0	30	
2.1.4.7 Skin and Personal Clothing Contamination Events	12	-3	
2.1.4.8 Environmental Protection	2	50	
2.1.4.9 Transportation of DOE Hazardous Materials	0	20	
	Composite Total	442	4.6

Table 2.6. Objective 2.2, Indicator 2.2.1 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.2.1 Facilities (Buildings): Utilization of space is commensurate with science and technology mission needs			
2.2.1.1 Total office space assigned per number of staff members in an organization	134 sq ft	8	
2.2.1.2 Staff Churn Rate	21%	50	
2.2.1.3 Continuous improvement in F&O services and operations realized from benchmarking	0 pts.	0	
	Composite Total	58	3.4

Table 2.7. Objective 2.2, Indicator 2.2.2 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.2.2 R&D Equipment Utilization	239 pts.	76	4.5
Composite Total	4.5		

Table 2.8. Objective 2.2, Indicator 2.2.3 Performance Rating Development

Element	Performance Level	Effectiveness Score	Value Points
2.2.3 Infrastructure: Physical asset acquisitions and modifications follow an integrated and systematic process			
2.2.3.1 Increased level of interaction with other Hanford Site contractors on key issues supporting facility infrastructure and services	90%	100	
2.2.3.2 Minimization of impact to the Laboratory due to site infrastructure failures and future usage by development/ deployment of effective System Engineering process	79%	85	
2.2.3.3 Improve the scope definition and cost of site services by using activity-based and customer-focused methods	Outstanding	85	
2.2.3.4 Complete Scheduled Network Infrastructure Upgrade Projection Plans and Projects	Good	-10	
Composite Total	260	4.4	

Table 2.9. Operational Excellence Critical Outcome Performance Rating Development

Element	Value Points Tables 2.1-2.7	Weight	Performance Level	Effective Score	Wtd. Value Points	Obj. Weight	Weighted Points
2.0 Operational Excellence							
2.1 Sustain and enhance operational excellence in safety and health, and environmental protection							
2.1.1 Composite from Table 2.1	4.9	30%			1.5		
2.1.2 Composite from Table 2.2	5.0	30%			1.5		
2.1.3 Composite from Table 2.3	4.4	30%			1.3		
2.1.4 Composite from Table 2.4	4.6	10%			0.5		
				Obj 2.1 Total	4.8	67%	3.2
2.2 Increase mission capabilities through enhancement and effective use of Laboratory facilities and equipment							
2.2.1 Composite from Table 2.5	3.4	60%			2.0		
2.2.2 Value from Table 2.6	4.5	10%			0.5		
2.2.3 Composite from Table 2.7	4.4	30%			1.3		
				Obj 2.2 Total	3.8	33%	1.3
						Total	4.5

Table 2.10. Operational Excellence Critical Outcome Final Rating

Total Score	5.0 - 4.5	4.4 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 1.0
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

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